

Kent Academic Repository

Johnson, Paul Owen (1987) A re-examination of Hegel's Science of Logic. Doctor of Philosophy (PhD) thesis, University of Kent.

Downloaded from

https://kar.kent.ac.uk/94445/ The University of Kent's Academic Repository KAR

The version of record is available from

https://doi.org/10.22024/UniKent/01.02.94445

This document version

UNSPECIFIED

DOI for this version

Licence for this version

CC BY-NC-ND (Attribution-NonCommercial-NoDerivatives)

Additional information

This thesis has been digitised by EThOS, the British Library digitisation service, for purposes of preservation and dissemination. It was uploaded to KAR on 25 April 2022 in order to hold its content and record within University of Kent systems. It is available Open Access using a Creative Commons Attribution, Non-commercial, No Derivatives (https://creativecommons.org/licenses/by-nc-nd/4.0/) licence so that the thesis and its author, can benefit from opportunities for increased readership and citation. This was done in line with University of Kent policies (https://www.kent.ac.uk/is/strategy/docs/Kent%20Open%20Access%20policy.pdf). If you ...

Versions of research works

Versions of Record

If this version is the version of record, it is the same as the published version available on the publisher's web site. Cite as the published version.

Author Accepted Manuscripts

If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding. Cite as Surname, Initial. (Year) 'Title of article'. To be published in *Title* of *Journal*, Volume and issue numbers [peer-reviewed accepted version]. Available at: DOI or URL (Accessed: date).

Enquiries

If you have questions about this document contact ResearchSupport@kent.ac.uk. Please include the URL of the record in KAR. If you believe that your, or a third party's rights have been compromised through this document please see our Take Down policy (available from https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies).

A Re-examination of Hegel's Science of Logic

A thesis presented for the degree of Doctor of Philosophy in Philosophy

bу

Paul Owen Johnson

University of Kent at Canterbury

March 1987

Abstract of thesis

Science of Logic is quite inappropriate. They presuppose that it contains an attempt at the logical deduction of the pure categories of thought, and go on to ask whether this attempt is successful or not. I argue that we ought not to make this presupposition, but ought rather to look more closely at what Hegel actually says and does in the text; this leads me to make a complete re-examination of Hegel's Logic, in which I try to relate the various points I believe Hegel to be making to substantive issues, at the same time comparing and contrasting Hegel's viewpoint to that of other scientists and philosophers, both ancient and modern.

Finally, I conclude that Hegel's Logic is not a mere logical deduction of categories, but a critique of concepts productive of a logical hierarchy at the top of which is the concept of philosophical method itself. This critique, then, far from being something we can either take or leave as a whole, is something which itself needs to be looked at critically.

I dedicate this thesis to my father,

Stanley Owen James Johnson

(3/6/20 - 24/9/83)

Acknowledgements

I am indebted to the Department of Education and Science, and latterly to the British Academy, for their financial support; to my supervisor, Prof. R. Norman, for his co-operation; to Prof. A. R. Manser of Southampton University for getting me interested in Hegel as an undergraduate; to my mother, for her support, especially in the last stages of the production of this thesis; and to Dr. R. D. Lins for his assistance in the same.

Preface

The complete transformation of our conception of Hegel's philosophy which has been brought about over the last thirty years or so. largely by students of the Phenomenology of Spirit, has, to adapt a phrase of Hegel's, so far had little influence on our conception of the Science of Logic, although this was previously regarded in both Great Britain and the United States of America as the chief Hegelian text. There has been published a fragment of a commentary, and a short work relating Hegel's logic to the mind-body problem, 2both from across the Atlantic, but so far nothing corresponding to any of the texts dealing with the Phenomenology. Consequently, the picture of the Science of Logic drawn by McTaggart at the turn of the century, and 'touched up' by Mure in 1950, is still generally regarded as a good likeness; and since the Logic, thus portrayed, has been amply criticised, most notably by Russell and Popper, it remains very much a 'dead dog', despite a general revival of interest in Hegel. I contend, however, that the treatment of the text by McTaggart and Mure is misleading, and therefore I attempt in this thesis a complete re-examination of Hegel's Science of Logic.

What I object to mainly about the treatment of the Science of Logic given by McTaggart and Mure is that they present the Logic as a whole as a very dry and unexciting academic exercise. This way of presenting it is largely the result of the presuppositions they shared about the nature of the Logic, which governed their approach to it. They presuppose that it is purely an a priori deduction of the categories of thought, and that therefore it has no relevance to any substantive issues in philosophy or science. Consequently, they concern themselves mainly with the question of whether Hegel correctly makes the transition from concept A to concept

B. I contend, however, that by doing this, McTaggart and Mure take the spirit of Hegel out of the Logic, and leave us with nothing but an empty shell. For the spirit of Hegel is a critical spirit, and though the Logic is certainly described by Hegel as an a priori logical deduction of the system of pure concepts, what he means by 'logical', 'deduction', 'system', and 'a priori' is by no means what is usually meant by those terms. I will argue that the Logic is actually a hierarchy of concepts produced by the criticism of successive concepts, and that it can only really be fully understood and appreciated if those criticisms are related to more substantive issues in the realm of knowledge as a whole, something which I try to do in this thesis.

I intend this thesis, then, to show more what is interesting in the Science of Logic than to run through the same old boring questions about his method, his beginning, his various transitions, etc. I want to try to show what Hegel's Logic has to say to the philosophers and scientists of his time and our own, and I will do this by comparing and contrasting what Hegel says on various issues with the views of Hegel's philosophical and scientific predecessors, in both ancient and modern times, such as Plato and Aristotle, Newton and Kant, and also with the views of those who have succeeded him, such as Russell and Einstein. I am sure that I must have made many errors in expounding the views of the aforegoing, but I crave the reader's indulgence since my main purpose in referring to them is not to make Hegelian criticisms of those views, but to awaken and enlighten interest in Hegel's Logic. If, in the process of doing this, I fail to give a precise account of how Hegel gets from quality to quantity, or why there are four forms of judgement and not three, I will not be overly distressed.

The texts I have used are volumes five and six of the Suhr-

kamp edition of Hegel's Werke, though I also give references to Miller's translation of Lassen's edition of the Wissenschaft der Logik for the convenience of the reader who has little or no knowledge of German. All translations from the main texts contained in this thesis are my own unless otherwise stated. I refer to the texts collectively in the main body of the thesis, either by the full English title, the Science of Logic, or by the shortened form, Logic. The term 'logic', used without a capital letter and not underlined, refers to Hegel's system of logic generally, as contained, not only in the Science of Logic, but also in the first part of the Encyclopaedia of the Philosophical Sciences in Outline.

Notes and References

- 1. J. Burbidge, <u>Fragment of a Commentary on Hegel's Logic</u> (Atlantic Highlands, New Jersey Humanities Press 1981).
- 2. C. Elder, Appropriating Hegel (Aberdeen University Press 1980).
- 3. G. W. F. Hegel, <u>Werke In 20 Banden</u>, ed. E. Moldenhauer and K. M. Michel (Suhrkamp Verlag, Frankfurt am Main 1969), volumes five and six, hereafter referred to as <u>Werke 5</u> and <u>Werke 6</u>.
- 4. Megel's. Science of Logic, transl. by A. V. Miller (Allem and Unwin 1969), hereafter referred to as Miller.

Contents

	Abstract of thesis	1
	Preface	ii
	Introduction	1
1.	Quality	20
2.	Quantity	47
3.	Measure	90
.4.	Essence	124
5.	Appearance	167
6.	Actuality	188
7.	Subjectivity	210
8.	Objectivity	258
9.	The Idea of Life	282
10.	The Idea of Cognition	300
11.	The Absolute Idea	337

Introduction

The Science of Logic was first published in 1812. It was originally intended to constitute just one third of the second part of Hegel's projected work, the System of Science (System der Wissenschaft), the philosophy of nature and the philosophy of spirit comprising the other two-thirds. The first part of the System of Science, the Phenomenology of Spirit, had been published five years before. The fact that the Phenomenology comes at the forefront of the System might lead one to believe that it lays the foundations for what is to follow, but this is not the case. The Phenomenology serves only to elevate the minds of Hegel's public to the standpoint of pure knowing. This is something which is only necessary at a certain stage in human culture, and so phenomenology is not in itself the first science. Really it belongs to the philosophy of spirit, which is the sphere in which it is placed in the Encyclopaedia, the lecture-manual which superseded the unfinished System of Science. The Science of Logic is the real first science of Hegel's system.

The first thing that must be said about Hegel's logic is that it is not to be conceived of as formal logic, or as a rival to formal logic, or as a reformed, re-arranged or modernised formal logic. It is not, as Popper rightly says, a theory of deduction. This is not obvious, and major Hegel scholars, who seem to have paid more attention to what Hegel and others have said about 'his' method than to the contents and procedure of the logic itself, have thought otherwise. Stace, for example, believed that Hegel had a dialectical method which proceeded in a formally deductive manner, and Fure remarked that "the triad of the dialectic might reasonably be called a major discovery in formal logic, a discovery greater than the syllogism". It is such claims as these which serve to dis-

'the Hegelian farce'. I contend, however, that the Hegelian farce is more or less confined to Hegelians, and does not touch Hegel himself, who is doubtless revolving in his grave.

Hegel's <u>Science of Logic</u> is in fact a classic of general philosophy, and ranks as such alongside Spinoza's <u>Ethics</u>, Hume's <u>Treatise</u> and more particularly, Kant's <u>Critique of Pure Reason</u>. The greater part of the latter work is entitled 'Transcendental Logic', and concerns the origin, scope and validity of all pure or <u>a priori</u> knowledge. It also includes Kant's deduction of the pure concepts of the understanding, which as we know was not a formal logical deduction, but merely a justification of their use on the grounds that they were necessary conditions of experience. At least half of degel's logic, his Objective Logic, corresponds to or is based on this Transcendental Logic, and when degel speaks of logic prior to his, it is usually this that he has in mind, though it must be admitted that he often runs the two together. It is certainly Transcendental Logic he has in mind, however, when he calls his work a 'rearrangement' (Umbildung) of logic. The <u>Science of Logic</u> is far more than a 'rearrangement' of the logic of the Schools.

Megel's quarrel with Kant over the nature of logic was that while Kant insisted correctly that logic treated of the concepts which refer a priori to objects, he went on to say that these concepts could only be known to refer to objects of experience, and not to objects in themselves. This meant effectively that there was a sphere of thought, and a sphere of things, and no way of getting from one sphere to the other. The mind was encaged in a prison of its own making. This sort of view was not pew or peculiar to Kant, but rather an inheritance from Kant's immediate predecessors which he was unable to get rid of. It is

regarded by Megel as the more concrete expression of the general assumption of the separation of the form and content of cognition, It is true that Kant thought that Transcendental Logic did not abstract from <u>all</u> the content of cognition, but Hegel would say that the thesis that we cannot know things in themselves contradicts that where the separation of form and content also occurs within common logic, moreover, since this even abstracts from the pure concepts. The belief that all we can know are the trivial truths of formal logic and the material of experience is therefore the extreme point of this separation.

The pre-Kantian metaphysicians did not separate the form and content of cognition. They believed that the ordinary forms of thought used in everyday life were quite adequate for all objects, and that the only question was whether such and such a concept belonged to such and such an object in fact. Thus, for example, it was asked whether the world was finite or infinite in extension, but not whether the concepts of infinity or finitude, taken as fixed and separate notions, were adequate predicates for the world, or whether the two notions were in fact separable in this way. When predicated relatively of objects of experience, they were clearly separable, but when attached to metaphysical objects such as God or the Soul or the world, it was not so objicus. The pre-Kantians thought they had to choose one predicate or the other, however, and since their choice could not be verified empirically, but rather depended on the idea of the object they had already formed, metaphysics abounded with disputes which were in principle unable to be settled.

The response of the British Empiricists to this sort of philosophising was the refusal to acknowledge as knowable any proposition that contained terms not annexed to distinct ideas derived from simple impressions of sense; that is, it was declared a priori of all such propositions

that it was in principle unable to be decided whether they were true or false. This principle appeared to be quite destructive of both school metaphysics and theology, as indeed it was meant to be; but if it destroyed that, it also destroyed the claims of science to deliver up anything more than probable truths, since the categories it employed, such as cause and force, had then to be analysed in terms of sense-impressions, a procedure which robbed them of any objective necessity they might have possessed. In fact, however, it was in no position to destroy either metaphysics or science, for this principle first of all destroyed itself. It was not, after all, able to be expressed in terms of a proposition containing terms that were all able to be annexed to ideas derived from sense-impressions. We cannot learn from experience that we cannot know anything beyond experience.

Kant, who evidently did not see the self-contradictory nature of the first principle of empiricism, sought to justify his continued faith in the distinction of scientifically valid statements and merely subjectively valid statements by showing that the categories had objectivity in the sense of being universal and necessary forms of thought.

Kant's argument amounted to a great reversal of previous thinking, since previously philosophers had begun with the assumption that our thought must conform to the object, and gone on to ask how we could know whether it did or not it did, when all we ever seemed to be acquainted with our own thoughts or perceptions, while Kant began with the assumption that the object had to conform to thought, in order to be our object. Inasmuch, however, as Kant continued to believe that the object was not merely our object, but also had a side which we could not know, this radical change of procedure left him with exactly the same problem that he started out with, namely, that our knowledge is limited to knowledge

of phenomena, which is the same as saying that we have no knowledge at all, but only (at best) true belief.

It was left to Hegel to carry Kant's Copernican revolution through to its logical consequences. He saw that Kant had shrunk from attributing real objectivity to the categories, and left them ultimately as subjective forms to be contrasted with a content which, since we only come across it in those subjective forms, remains unknowable in itself. Hegel promptly made the reversal Kant shrank from making. He assumed that the given material of experience was the truly subjective element in cognition, and the forms we give to that material, the objective element. Thus the categories were no longer conceived of as empty forms which have to be given content from outside, but objects worthy of consideration in themselves, not just forms of truth, but its content. It was the particular material of experience that was insignificant, at least, from the point of view of the pursuit of truth. It had to be transcended if we were to get at the truth, that is, at the nature of the fundamental universals. Science, then, was as Plato thought, essentially concerned with universals. concepts in and for themselves.

This made philosophy into a whole new ball game. In effect, it did away with both pre-Kantian metaphysics and positivism. Hegel did not ask, as did the metaphysicians of the past, if the soul was simple or composite, or if the world had a beginning in space and time, and give reasons in support of one thesis or the other (this is the procedure he called 'external reflection'); instead, he concentrated on the concepts of simplicity and complexity, finitude and infinity etc., and asked if they could really be separated. This amounted to a revolution in philosophy, though negel, who as we know from the preface to the Phenomenology, did not like to appear to be doing anything revolutionary, regarded it as rather the com-

pletion of the Kantian revolution in philosophy. OHe credits Kant with having 'turned metaphysics into logic', but really I think this is an achievement which we should credit to Hegel himself, as his main contribution to philosophy. For it was he that first broke completely with the model of cognition which rigidly separated the form and content of knowledge (or: subject and object, thought and being, reason and reality), by declaring that the content of true cognition is its form.

This must not be misunderstood; Hegel did not believe that the form and content of the empirical sciences were identical, or that the empirical self and the external object were identical, or that ideas and things were the same. The knowledge of the empirical sciences was finite knowledge, or belief, precisely because its form and content were separated; the empirical subject was a finite subject, because it was ope posed to an object; and mere ideas were simply subjective, because they were opposed to things. Philosophical knowledge, on the other hand, was true cognition because its content was its own form; the pure subject was the true subject, because it had itself for its object; and the pure concepts are truly objective, because they are universal and necessary and have a being which is neither mental or physical. The carrying-over of the separation of form and content, subject and object into philosophy is an error, says Hegel, and philosophy is the refutation of that error "throughout every part of the spiritual and natural universe"; i.e. in . all its various forms, whether it appears as the opposition between, for example, finite and infinite or space and time, Indeed, the abandomment of this assumption is a pre-condition of true philosophising.

This fundamental point of Hegel's separates him from most of the philosophers who preceded him (with the possible exceptions of Plato and Aristotle), and all those who succeeded him, including, remarkably,

the so-called Fritish Hegelians. All of them misunderstood and rejected Hegel's identification of metaphysics with logic, and once again separated the two, thus effectively reinstating pre-Mantian metaphysics. Deberweg explicitly rejects the Hegelian view in his System of Logic, arguing instead for the view of Herbart and Schleiermacher, Hegel's opponents, which is the same as the assumption of the pre-Kantian metaphysicians, i.e. that the ordinary forms of thought correspond to, but are not identical with, the forms of things. The German logicians and philosophers who so influenced the British Hegelians, and most of the latter themselves, were in fact part of the conservative reaction against Kantianism, with its stress on epistemology. Lotze, a surgeon as well as a philosopher, protested against "the constant whetting of the knife" in this Metaphysics, and the British Hegelians produced some very traditional metaphysics, for example, Bradley's Appearance and Reality and McTaggart's The Nature of Existence.

It was this sort of metaphysics that Russell was exposed to while he was at Cambridge, and which he identified with Hegelianism. Consequently, whenever he describes Hegel's philosophy, he always presents him as a metaphysician of the old school, to be compared with the likes of Leibniz and Spinoza, one who tries to prove, "by a priori metaphysical reasoning, such things as the fundamental dogmas of religion, the essential rationality of the universe, the illusoriness of matter, the unreality of all evil, and so on". The following passage is pretty typical:

...his main thesis is that everything short of the Whode is obviously fragmentary, and obviously incapable of existing without the complement supplied by the rest of the world...This essential incompleteness appears...equally in the world of thought and in the world of things. In the world of thought, if we take any idea which is abstract or incomplete, we find, on examination, that if we forget its incompleteness, we become involved in contradictions; these contradictions turn the idea into its opposite, or antithesis; and in order to escape, we have to find a new, less incomplete idea, which is the synthesis of our original idea and its antithesis. This new idea, though less incomplete than the idea we started with, will be found, nevertheless, to be not wholly complete,

but to pass over into its antithesis, with which it must be combined in a new synthesis. In this way, Hegel advances until he reaches the 'Absolute Idea', which, according to him, has no incompleteness, no opposite, and no need of further development. The Absolute Idea, therefore, is adequate to describe Absolute Reality; but all lower ideas only describe reality as it appears to a partial view, not as it is to one who simultaneously surveys the Whole. Thus Hegel reaches the conclusion that Absolute Reality forms one single harmonious system, not in space or time, not in any degree evil, wholly rational, and wholly spiritual. Any appearance to the contrary, in the world we know, can be proved logically - so he believes 7 to be entirely due to our fragmentary piecemeal view of the universe...

L would draw the reader's attention especially to that part of the above where Russell says that the Absolute Idea is 'adequate to describe Absolute Reality'; for whatever the Absolute Idea is, it is certainly not an idea
(Vorstellung) of reality. Russell presupposes that Hegel retains the traditional metaphysical dualism of thought and things without going beyond it, and in so doing he reveals that he is ignorant of or misunderstands the most fundamental point of the Science of Logic.

In his 1914 essay, Mysticism and Logic, Russell went on to describe Hegel's philosophy as mysticism. Now there is something in this, because Hegel himself identified his philosophy with what had hitherto been called 'mysticism' in his lectures on logic; however, the two men attach different meanings to the term. The main feature of mysticism for Hegel appears to be the admission of propositions such as 'The way up and the way down are the same', and 'We step and do not step into the same rivers'. Russell mentions this sort of proposition, but lists as the main tenets of mysticism, (a) the belief in insight as opposed to discursive and analytic knowledge, (b) the belief in unity and the denial of opposition and division, (c) the denial of the reality of time, and (d) the belief that evil is just appearance. These beliefs do not characterise Hegel's philosophy, however, but rather the conventional metaphysics of McTaggart, as set forward in his 1909 essay on mysticism and his main original philosophical work, The Nature of Existence.

Russell reacted against the metaphysical mysticism of McTaggart and the other so-called british Hegelians in much the same way as Hume reacted against the metaphysical mysticism of his time, and indeed, the philosophy of logical atomism with which he replaced it, which had its perfect expression in Wittgenstein's Tractatus Logico-Philosophicus, was very much a modern version of dumeanism. This means that the more recent tendency in the study of Hegel to stress the resemblances between what Hegel says, and what Russell says, has a very limited usefulness. There are partial echoes of Hegel in Russell's philosophy, but Hegel always goes just a little further than Russell. I will demonstrate this through various examples in the main body of my thesis, but first I want to indicate some of the more general ways in which the two are surprisingly close to one another, and yet ultimately do not agree. Most of the views attributed to Russell below belong, perhaps significantly, to his early career, and are to be found in his Problems of Philosophy.

Firstly, Megel's view of the nature of universals is echoed by Russell to some extent. Russell also thinks that universals have a being which is neither mental nor physical. 21 They cannot be said to exist, he says, because this would imply that they are in space and time; but they can be said to have being, insofar as 'being' is opposed to 'existence' as something timeless. 22 Russell even goes so far as to say that "The world of universals, therefore, may also be described as the world of being", a statement which recalls Hegel's notorious dictum that what is rational is real. Russell continues to oppose universals to particulars, however, and to regard the former as mere abstractions and the latter as independent concrete existences, acquaintance with which is the closest thing to certain knowledge that we have. Megel, on the other hand, argues that if we oppose universals to particulars, then we put both on the same

level, as independent existences, and that in fact, if we put a universal alongside a particular, we consider it as another particular, and not as a universal; in order to consider it as a universal, we would have to regard it as transcending the particulars, while at the same time permeating them and acting as the the universal ground of their existence.

This is similar to an argument used by Plato to refute what most scholars believe to be one of his own assumptions about the theory of Ideas, namely, that the Ideas exist in separation from sensory particulars. Plato says that if they are separate, then, they must have something in common in virtue of which they are related; but this common property must. be a universal, so that the question, arises once more, how the universal is related to the particular. This is expressed in Plato's dialogues as an infinite regress, but it is essentially a paradox generated by the fact that both particular and universal are treated here as particulars. Plato goes on to say that if the separation assumption is correct, then there is a world of Ideas and a world of sense and there can be no relation between the two of them. If our world is taken to be the world of sense, then the world of universals is unknowable. For Hegel, this separation of universals and particulars is merely the subject-object/form-content dichotomy in another of its many forms.

The world of universals is for Hegel, far from being unknowable. The forms of thought are in fact what is most familiar, and are 'displayed and stored' (herausgesetzt und niedergelegt) initially in language. Everything capable of being thought can be expressed in language, and everything expressed in language contains a category or thought. This does not mean, however, that the pure concepts are known, that is, that everyone is able to articulate their true nature, and it certainly does not mean that their true nature is revealed in the mere common usage of

words, at least not obviously. The common forms of thought expressed in language are only a 'fine thread' or 'the lifeless bones of a skeleton lying in disorder', and the philosopher has to pick up that fine thread or put the bones into some order. He has to discover some sort of rational structure in them, and this can involve doing away with certain ideas which prove to be subjective additions to the necessary structure of thought, as well as revitalising others which have fallen into disrepute.

The fact that a concept is necessary, it must be noticed, does not mean that everybody must employ it, or even that a whole society cannot lack it. Hegel often speaks of this or that philosopher, or this or that society, lacking one of the fundamental concepts of the logic; he says that Spinoza, for example, attains to the concept of an absolute substance, but not an absolute subject, and insists that the true conception of freedom belongs only to the Christian world. The point is that for him the necessity of a concept is the fact that it has a place in the process of the development of thought as such, a development which takes place in time, and is consequently subject to contingency, so that it is not equally rapid everywhere, and many interruptions and dislocations may occur. The development may even be arrested entirely, so that a person or society cannot get beyond, say, the mechanistic viewpoint. The process of development cannot be open-ended, however, but must have some end, and this, for Hegel, is the thought of the Absolute Idea.

The view that everything in language expresses a thought, i.e. a universal, is another view that Russell approaches but ultimately shrinks from. Russell was aware that terms standing for universals had a very important part to play in language, but he still entertained the idea that there existed absolute simples in the form of sensory particulars which language had to refer to in order to get a grip on the world, and

therefore that there had to be some logically proper names, e.g. 'this'

33
and 'that'. He also ranked 'Iô among such 'ambiguous' proper names at one
time, and therefore committed himself to a vain, Humean-style search for
the particular it supposedly denoted. Hegel, on the other hand, thought
that there were no such proper mames and that truly unique particulars
were beyond the reach of language. The terms "this", "here", and "now" are
all universals to him, since anything can be a "this", and "here" and "now"
can mean any place or any moment. It is only the description of the thing,
i.e. something universal, which enables us to determine the individual that
is intended.

Mussell seems to have commted Heger among those philosophers who he accuses of recognising only those universals named by adjectives and substantives to the neglect of those named by verbs and prepositions, and substantives to the neglect of the universals considered in the invescience of Logicoare generally named by adjectives and substantives. However, it is not the case, as Russell suggests, that it is only those unity versals designated by yerbs and prepositions that are relation-concepts, and it does not follow, therefore, that anyone who neglects these must fall into either monism or monadism. Russell forgets, where negel does not, that a language can develop, and that part of this development is the creation of substantive terms for the designation of relation-concepts previously designated by verbs, prepositions, or, in very primitive languages, even prefixes, suffixes, and inflexions. The creation of such substantive terms for these concepts reflects the raising of the human consciousness to the consideration of such concepts in their own right.

The raising of the human consciousness to this level is a long process, says Hegel, and it is not achieved until this consciousness, whether it be the consciousness of an individual, a social class or society has obtained the certainty of the satisfaction of its material needs, and

has obtained the certainty of the satisfaction of its material needs, and begins to seek liberation from the bondage of self-seeking desire and the 40 practical life. In this practical life, the categories are not considered in their own right, but merely used; they serve for the communication of ideas. They are our tools (c.f. Wittgenstein and the notion of language as a tool). In philosophy, however, this relation is reversed; instead of the categories serving as means for us they are ends, they dominate our subjective thought. They do this anyway in practical life, but unconscious—42 ly. Philosophy makes us conscious of the way the categories dominate our thought and helps to clarify them so that we can think more clearly. In attaining to this consciousness we liberate ourselves from the prevailing prejudices of the day. 43

is therefore, for Hegel and for Mussell, criticism. Philosophy is the 44 criticism of knowledge, says Mussell, meaning by that the criticism of the so-called body of knowledge, i.e. the corpus of opinion. Mussell would say here however, that it is a criticism of the principles of science and daily life, directly, and that it cannot itself constitute a body of knowledge, because when it becomes possible for there to be definite knowledge about 45 a subject, it ceases to be philosophy and becomes a separate science. Hegel, on the other hand, would say that it is a critique of thought first and foremost, and only indirectly a criticism of principles, and that it certainly does constitute a science or systematised body of knowledge. If it did not, it would be a purely formal and negative exercise; it would be lack the speculative element which is the truly positive element in philosophy. The systematisation of the new philosophy was seen by Hegel as one of his most pressing tasks. 46

The critical element of philosophy is not therefore brought

ment of the system. Philosophy was therefore very different from mathe48 matics, where systems are constructed purely formally and criticism is merely the external activity of other mathematicians, which consists moreover in indicating formal contradictions within the work, or suggesting ways of simplifying it, etc. This mathematical method is antipathetic to philosophic reasoning, and its application to philosophy by the philosophers of the Enlightenment such as Descartes, Spinoza and Leibniz had done more harm than good. Aussell would agree with this too, though he would carp at Degel's suggestion that mathematics is a subordinate science to philosophy, and that the fundamental concepts of mathematics have to be justified philosophically. Russell continued to see mathematical formalism as the epitome of rigour in reasoning, though Degel would say without philosophy, mathematics can degenerate into the construction of structures of air.

This critical element of philosophy is what Hegel understands by the term 'dialectic'. Dialectic had been considered in ancient times as the art of destroying finite or limited assumptions, and thus as a purely negative activity, what Kant later called a 'sophistical art' and a 'logic of illusion'. Kant himself had reinstated the term to describe what he thought was a necessary feature of reason, i.e. its propensity to fall into contradictions, or generate conflicts, when it applied its categories to things-in-themselves. The important point here, for Hegel, is to uphold the necessity and objectivity of these contradictions or conflicts, and not to put them down to mere trickery; and the next step beyond that is to resolve them by recognising that the conflicting categories were in fact only moments of a higher concept. In this way, dialectic ceases to be a reduction to nothing, and becomes the form off pro-

gress; by negating what is limited or finite, thought progresses on its way toward what is unlimited.

Russell does not seem to have grasped the objectivity of contradictions or conflicts of reason. His own famous contradictions, which are no more meant to be formal contradictions than Hegel's (see chapter four) are not really resolved, as he says they should be, but rather shown to be the result of trickery (or at least erroneous presuppositions) or 'solved' simply by neglecting one side of the problem. For example, as will be seen later in greater detail, he 'solves' the paradox of motion by arguing that motion is a series of rests, which is effectively the same as saying that there is no motion. Russell, moreover, like fant, does not attack the contradictions of reason systematically, but only in a piecemeal fashion. He notes several paradoxes, but does not seem to realise that there is a paradox for all of the fundamental concepts in the logic, at least, according to Hegel. Hegel's attack is systematic, at least in the sense it generates its paradoxes out of the successive concepts of the logic.

The Science of Logic can still appear very dry and barren, but really this is partly the fault of the reader who does not recognise in it megel's attack on the roots of a whole host of theoretical problems. The range of the logic is universal, and this means that it strikes at the heart of intellectual conflicts and dichotomies throughout the whole range of knowledge. This is why megel says that the logic is one thing for the person who comes to it and the sciences for the first time, and another for the person that returns to it from the sciences, and that therefore the value of logic is only appreciated when it is preceded by the experience of the sciences, whereafter it then reveals itself not as a particular sort of science alongside the others, but as their universal essence.

negel tries to encourage the reader to <u>apply</u> the insights of the logic by indluding in the text some lengthy remarks relating them to scientific, philosophical and general cultural issues, but these are insufficient, and a proper commentary on the <u>Science of Logic</u> would have to relate even more of it to more concrete issues. This is one reason why McTaggart's commentary is such a failure. Clearly having no interest in mathematics or natural science, he thoroughly purges it of any reference to substantive or empirical issues, and makes it appear to be a mere scholastic exercise. This is contrary to its spirit, and I hope in this thesis to redress the balance somewhat.

itself, without application to substantive issues, is very abstract. In this respect it resembles mathematics, which although it is abstract, or rather because it is abstract, is a great source of practical power. The gel calls the system of logic "the realm of shadows, the world of simple essentialities freed from all sensuous concreteness", Its abstract nature is the reason for its great range. However, the fact that in studying it we raise our minds above sensuous things and selfish desires, as well as above the common predjudices of the day is even-more important, and conestitutes the value of logic. For this does not lie in its utility for any external end, although it is useful, but in the intellectual freedom it brings from the life of the instinctive man. Russell saw this too, in his early years. The chief value of philosophy, he writes, lies in "the greatness of the objects which it contemplates, and the freedom from the narrow and personal aims resulting from this contemplation".

The material needs of man and his physical freedom, however, are also pressing concerns for him, much more so perhaps than the moral and intellectual freedom philosophy can provide. The hungry man or the

man under the yoke of oppression does not want to be bothered with the analysis of the concept of quantity. Consequently, the preoccupation with purely theoretical matters soon became an unpopular pursuit in the face of renewed social unrest. Even Hegel could not remain unaffected by the distractions caused by the magnitude of contemporary affairs, though he never underwent the same sort of change of attitude as Russell describes in his Autobiography. Nevertheless, Hegel, who in the inaugural address to his lectures on the history of philosophy in 1816, had hoped that, the nationbood of Germany being secured, it was now possible to re-direct our attention to "the kingdom of God", i.e. the realm of knowledge, was left wondering in 1831, shortly before his very prosaic death from cholera:

...whether the noisy clamour of the day, and the stuppfying chatter of the imagination which is proud to confine itself to the same, still leave room for participation in the passionless calm of a know-ledge which is in the realm of pure thought alone. 59

They were not to do so.

Notes and References

```
1. K.R. Popper, Conjectures and Refutations (Routledge and Regan Paul
1963), p.322
2. W.T. Stace, The Philosophy of Hegel (Dover 1955), p.88f
3. G.R.G. Mure, A Study of Hegel's Logic (Oxford University Press 1950),
p. 350-351
4. K.R. Popper, The Open Society and its Enemies, Vol.II (Routledge and
Kegan Paul 1945), p.79
5. Werke 5, p.16; Miller, p.27
6. Werke 5, p.59; Miller, p.62
7. I. Kant, Critique of Pure Reason, transl. N. Kemp-Smith (Macmillan
1985), B80
8. Werke 5, p.44; Miller, p.50
9. G.W.F. Hegel, The Phenomenology of Spirit, transl. A.V. Miller (Oxford
University Press 1977), p.28
10. Werke 5, p.59 (Note); Miller, p.62 (Note)
11. Werke 5, p.45; Miller, p.51
12. Ibid., p.37-38; ibid., p.45
13. Ibid.
14. F. Ueberweg, System of Logic, transl. T.M. Lindsay (London 1871), p.xi
15. Quoted by J. Passmore in his A Hundred Years of Philosophy (Benguin
1965), p.49
16. B.A.W. Russell, The Problems of Philosophy (Oxford University Press
1985), p.82
17. Ibid., p.82-83
18. B.A.W. Russell, Mysticism and Logic (London 1917), p. 8
19. Enc. sec. 82 (Add.)
20. Mysticism and Logic, p. 8-11
21. Problems of Philosophy, p.57
22. Ibid.
23. Ibid.
24. Ibid., p.53
25. <u>Hnc.</u> sec.13 (R)
26. Plato, Parmenides 132a-b
27. Ibid., 133d-134b
28. Werke 5, p.20; Miller, p.31
29. Ibid.
30. Ibid., p.19; ibid., p.31.
31. Werke 6, p.195, p.249-250; Miller, p.537, p.580-581
32. Enc. sec.163 (Add.)
33. B.A.W. Russell, Logic and Knowledge, ed. R.C. Marsh (London 1956),
p.200-201
34. Ibid., p.164
35. Enc. sec.20 (R)
36. Problems of Philosophy, p.54
37. Ibid.
38. Ibid.
39. Werke 5, p.20; Miller, p.32
40. Ibid., p.23: ibid., p.34
41. Ibid.
42. Ibid., p.24; ibid., p.35
43. Ibid., p.27; ibid., p.37
44. Problems of Philosophy, p.87
```

- 45. Ibid., p.90
- 46. Werke 5, p.15-16; Miller, p.27
- 47. Ibid., P.16-17, p.48-49; ibid., p.27-28, p.53-54
- 48. Ibid., p.16, p.49; ibid., p.27, p.53 49. Critique of Pure Reason, B86
- 50. Ibid., A407/B434
- 51. Werke 5, p.52; Miller, p.56
- 52. Ibid., p.53-55; 1bid., p.57-58
- 53. Ibid., p.55; ibid., p.58
- 54. lbid., p.27; ibid., p.37
- 55. Problems of Philosophy, p.91 56. Werke 5, p.33; Miller, p.42
- 57. B.A.W Mussell, My Philosophical Development (Unwin 1985), p.157-158
- 58. G.W.F. Hegel, <u>Lectures on the History of Philosophy</u>, transl. E.S. Haldane and F:H. Simpson (London 1955), Vol.I, p.xii 59. Werke 5, p.34; Miller, p.42

Chapter One: Quality

The question, 'Why does Hegel begin with being?', or, as it might be put, 'What is so special about being?', has the appearance of a dreary, scholastic question which, if posed at the beginning of a course of study on Hegel's logic, acts as a fence at which all students invariably fall. Hegel himself warned against becoming preoccupied with this question and consequently neglecting the rest of the Logic:

Thoroughness seems to require that the beginning, as the foundation on which everything else is built, should be examined before everything else, indeed, that we should go no further, until it has been firmly established, and if, on the contrary, this is not the case, we should reject all that follows. This thoroughness has at the same time the advantage of guaranteeing that the business of thought is made much easier; it has its entire development before it, enclosed within this seed, and thinks that it has done with everything, when it has settled this question, which is the easiest part of the work, because it is the simplest, the simple itself; it is the slight amount of work required by this method that really recommends it to this self-satisfied thoroughness.

Hegel even goes so far as to suggest that there is, in a sense, <u>nothing</u> special about being:

But in addition to this, the determination of being, hitherto taken as the beginning, can be put aside, so that it is only demanded that a pure beginning be made. Then we have nothing before us but the beginning itself, and it remains to be seen, what that is.

I do not think, however, that therefore we should assume that Hegel's beginning is entirely arbitrary and unimportant, that he thought he could, if he had wished, have started with some other concept. The pure beginning turns out to be Hegel's determination of being under another name. It is true that there is nothing special about it, in the sense that it is a very abstract and empty concept, but then, for Hegel, this is precisely what makes it the right concept to begin with. This is itself an interesting point, and it becomes easy to see why if it is placed in its proper historical context.

The question of what ought to form the starting-point of philosophy is one which, as Hegel notes, has only been raised "in modern times", that is, for our purposes and his, since Descartes. The ancients had attached no special significance to beginnings; Aristotle had merely said that we ought to begin in the way most suited to the ease of learning. Descartes, on the other hand, introduced the idea that the starting-point of philosophy ought also to be the foundation on which what follows rests. This starting-point was conceived as a proposition, the truth of which could not be doubted. Descartes believed that he had found such a proposition in his Cogito, and Leibniz agreed, pointing out, however, that the Cogito was not the only proposition of its kind, but only one of many possible propositions expressing immediate experiences, all of which were indubitable. 4The British Empiricists would have wanted to say the same thing. Kant, typically, was more ambiguous, insisting, on the one hand, on the certainty of immediate experience, and on the other, of its need to submit to the categories of the transcendental self.

The later German Idealists, Fichte and Schelling, chose to stress the latter side of Kant's views, and took it to its logical consequences by taking the proposition 'I am' as the fundamental principle of philosophy. Descartes' 'I think' was considered to be superfluous, since the <u>Cogáto</u> was not really an inference, but an immediate datum of consciousness. This principle, known as the principle of intellectual intuition, and sometimes written 'I=I', was not, it should be borne in mind, considered to be an objective truth known absolutely, but rather an absolute postulate, rather like the point or line in geometry, which does not correspond to anything in sense-experience, and is an undefined (or even indefinable) term. It is also important to notice that the 'I' which is in question here is no longer the empirical, but rather the transcend-

al self. It is especially important to notice this, because it was this point that Hegel seized on, arguing that since such a self was not an immediate given, or object of acquaintance, its existence could not be taken as the <u>starting-point</u> of philosophy.

It was in the nature of a beginning, hegel argued, to be something which we are immediately acquainted with. This view as such is not peculiar to Hegel, nowever, but the assumption, conscious or otherwise. of philosophers everywhere and at all times. But Hegel added to it the point that such immediate acquaintance was not knewledge, or did not give absolute certainty. Nor were there any absolute postulates or presuppositions; everything had to be proved. This appears to involve Hegel in the postulation of an infinite regression of proofs, but it does not, since this would only be the case if he considered philosophy to consist in a system of propositions, and he does not; he thinks it consists in a system of universals. The difference is that the proof of a proposition involves demonstrating that it is true of reality, which simply cannot be done a. priori. The proof of a concept, however, is merely its derivation from the unity of self-consciousness, which reveals its universality and necessity; and this derivation in fact has more the character, in Hegel's logic, of an ascent to the highest universal through the transcendence of lesser universals.

Now the universal with which the system of logic begins must also be the one which is most abstract and simple, because otherwise the progress of the logic will not be a genuine one. True progress begins with something which is deficient in some way, and goes on to something more adequate. If this principle is applied to the system of logic, it takes the form of the stipulation that this must develop from a very abstract and simple determination, through progressively more concrete and complex

concepts and determinations to some final concept which is the goal of the entire process. This completely adequate concept cannot be taken as the beginning, for then there would be no need to advance any further than that beginning, and the beginning of logic would also be the end. Or, the advance would merely be a formally deductive one, in which the consequences of our presuppositions are worked out, but no new knowledge is produced. Hegel sometimes speaks as though the beginning of the logic really does contain all the following determinations within: itself, but what he means is that it is capable of developing into a system of concepts, not that everything follows necessarily from the beginning.

The universal with which we began must therefore be that which is most abstract and simple, and this thoroughly abstract and simple conception is being. This latter point is not really controversial. Locke regards the terms 'being' and 'thing' as two of the most universal terms in language in his discussion of general terms in the Essay on Human Understanding, and Leibniz regarded being as a primary and distinct concept, i.e. one of those simple ideas which are not obtained through sense. This does not give the concept a unique status, but Hegel does not need it to. The thought that he is talking about, whose only characteristics are simplicity and universality, is unique; he merely wants a name for it that refers to something very similar to that concept. 'Being' seems to fit the bill better than, say, 'thing', since the latter connotes a particular being with distinct properties, or even a material object; there are similar problems with 'object', and even 'reality' is not quite vague enough.

There is really no problem with the choice of being as the first concept or determination in the system of logic, therefore; but is Hegel right to assume that there must be some one concept with which logic

begins at all, and is he right to look at logic as a system or hierarchy of concepts, or even the activity of ascending through the stages of that hierarchy? It may be that logic has no beginning and no end, like a circle has no beginning and no end, and that we can begin wherever we like, that it is only a piecemeal and selective activity, and that although concepts are interconnected, so that our view of one (e.g. cause) affects our view of others (e.g. action, intention), they do not present themselves in succession, and they do not form a strict logical hierarchy. Perhaps none of these things are the case, but Hegel gives no good reason for ruling out these possibilities. He is correct to criticise Descartes for confusing beginnings with foundations, and for beginning with a proposition rather than a concept, but insofar as he still retains the presupposition that there must be some one point at which (pure) philosophy begins, then he remains sunken in Cartesianism.

Let us assume for the moment, however, that Hegel is correct in saying that logic must begin with the determination of being, and go on to consider his next move. Hegel goes on to say that the determination of being, as a complete abstraction from everything determinate, is identical with the determination of nothing. This view has been found scandalous at various times. If we look at what Hegel felt obliged to say in its defence, we see that it was often taken to imply that, for example, it ought to be all the same to Kant whether his famous hundred thalers existed or not, or even if he existed or not. Hegel's remark that this does not follow from the identity of being and nothing, since this is only an identity of being in general and nothing in general, rather than the existence or non-existence of particular things, seems to me to be quite correct. Popper's remark that Hegel's argument for the identity of being and nothing "might be used for proving all kinds of pretty identities, such as that

pure wealth and pure poverty, pure mastership and pure servitude, pure Aryanism and pure Judaism", 10 a silly attempt to make Hegel's logic seem sinister. Pure wealth, if this is an abstraction from any determinate amount of riches, is as good as pure poverty, but this does not mean that poverty is as good as the possession of a determinate amount of riches.

The statement that being and nothing are identical is in any case not a statement of identity in the conventional sense; that is, Hegel is not saying that 'being' and 'nothing' are simply two names for the same thing, as when we assert that, for example, Ali: = Clay, or Hesperus = Phospherous. This is what Hegel would call a statement of abstract identity. The statement of the identity of being and nothing is, by contrast, a statement of the speculative identity, or the inseparability, of the two determinations. What Hegel is saying, then, is that the determination of being cannot be separated from the determination of nothing, it is impossible to have the one without the other. Being is nothing, in the sense that it is not a determinate thing, but also, and more importantly, Nothing is being, in the sense that it is an abstract universal. The immediate philosophical significance of this is that it contradicts the Parmenidean doctrine that there is only being, and that nothing is not. This doctrine, for Hegel and most modern scholars, is a denial of the reality of generation and corruption. This separation of being and nothing makes it impossible to understand change. Hegel's answer to it is similar to that of Heraclitus, i.e. that being as little is, as nothing is, or that reality is in a constant state of becoming. Or, as Hegel himself would put it, being and nothing are only abstract moments of the more fundamental concept of becoming: "Wherever and in whatever form being and nothing are spoken of, this third must be present; for neither subsists in its own right, but rather only is in becoming, in this third (term)".11

Hegel also equates this Parmenidean doctrine with the doctrine 'Ex nihilo, nihil fit'. What he says is liable to be misunderstood, so it is worth mentioning it briefly to clear up any confusion. This doctrine is usually paraphrased as 'nothing comes from nothing, and something only from something', so that it would seem that Hegel is arguing that things can simply materialise out of thin air. He is not, however. We ought really to substitute the term 'being' for the term 'something' here, since the latter suggests a particular thing, and the doctrine as Hegel understood it was not so much concerned with denying the creation of particular things ex nihilo, as the creation of the world ex nihilo, and the reality of change. Hegel regarded such a doctrine as Pantheism, and equated it with the belief in the eternity of matter (though in the Encyclopaedia, paragraph eightyseven (remark), he warns against equating being and matter). Pantheism, as he called it, resulted from the <u>logical</u> error of rigidly separating being and nothing, and then behaving as if one had to choose between the two. Both were mere abstractions.

Plato expressly rejected the Farmenidean dictum that 'Nothing is not' in his dialogue, the <u>Sophist</u>, arguing that it leads to the denial of falsehood, and therefore the obliteration of the distinction between truth and falsity, and the adoption of the standpoints of subjectivism and relativism. ¹²The dictum itself, he suggests, results from from the sophistical separation of concepts, so that, for example, we must not speak of many things as one, or one as many, or even of man as good - we must only say that 'Good is good', and that 'Man is man', ¹³which anyway has as its immediate consequence the 'complete abolition of all discourse', ¹⁴and what Plato thought was more serious, the disappearance of philosophy, for 'To rob us of discourse would be to rob us of philosophy'. ¹⁵The separation itself can be put down to the assumption of self-predication, therefore,

and the refusal to go beyond it. The separation of concepts by the understanding, proceeding solely in accordance with the law of identity, is, of course, one of Hegel's central themes.

St. Augustine also addresses the problem of the being of Nothing, when, in his dialogue <u>De Magistro</u>, he asks Adeodatus, who has just put forward the view that words are the signs of things, what sort of thing the term 'nothing' signifies. Adeodatus is lost for a reply, and the question is shelved, but it remains in the background as a problem for his theory of language. It remains a problem for us, insofar as we still want to advance this very natural theory, and I think we still do. It is often thought that Wittgenstein destroyed this view of language in the <u>Philosophical Investigations</u>, but really this is not so. What Wittgenstein destroyed was one version of this view, which we owe mainly to Mill, which says basically that words are names of things, where 'thing' is opposed to 'idea'. It is true that words are neither signs of things in this sense, nor of ideas. But they might still be signs of universals, which, in Russell's terminology, have being but not existence. There would not then be any problem with the significance of the term 'nothing'.

The existence of falsehood comes down to the same issue, as Plato said. If true propositions are taken to refer directly to reality, and to be meaningful in virtue of their reference to reality, then false propositions appear to be meaningless, since what they refer to is not the case. If we argue that they signify universals, however, then there is no problem, because the universal <u>is</u>, even if the proposition is not true. The thought 'Socrates is alive' is still able to be thought, even though Socrates is dead. The so-called Hegelian Harold Joachim, whose Monistic theory of truth Russell criticises in his essay On the Nature of Truth, argued that the correspondence theory of truth has to be wrong because

it involves the consequence that error is 'thinking of nothing'. In fact, although it is certainly a problem for the theory to explain how this 'thinking of nothing' is possible, it is more of a problem for Joachim to explain how he can omit the possibility of such thinking, and still retain the distinction between truth and falsity.

More important than this issue of the thinking of nothing. however. is the thinking of becoming. Hegel explains how, by saying that either there is being, or there is nothing, that either things are, or are not, one does away with coming-to-be and ceasing-to-be, with change and its related concepts. This point is to be fundamental in the Logic, and will be echoed throughout its course. It has already affected Hegel's view of the beginning (of philosophy). If one presumes that one either knows, or does not know, the truth, then there can be no such thing as progress in philosophy. Hegel opts to reject the former assumption, and to retain the possibility of progress. Progress and development are essential notions for Hegel, for he believes that being and nothing are actually only 'vanishing, transcended moments' in the processes of generation and corruption; that is, at the moment something comes-to-be, something ceases-to-be, and at the same time as something is ceasing-to-be, so something else is coming-to-be. This reversal of attitude may seem to be of only metaphysical importance, but in fact it has great ramifications throughout the world of thought. It helps to make sense of the notions of motion and change, and to justify the use of infinitesmals in mathematics, as we will see in the next chapter.

The processes of coming-to-be and ceasing-to-be presuppose something which comes-to-be and ceases-to-be, however, which is determinate being (<u>Dasein</u>). The notion of becoming turns out, then, to have been only a transitional concept; it is, Hegel says, 'inherently self-contradictory',

since it involves the being of what is not, and the non-being of what is; and while he does not think that this is a defect in it as such (insofar as he thinks that contradiction is a necessary moment of truth), he nevertheless thinks that this contradiction or paradox (see chapter four) must be transcended (aufgehoben). This does not mean that it must merely be put aside, as he explains here in a remark on his employment of the German term 'aufheben', but that the encepts which form the different sides of the contradiction, the being which is not and the non-being which is, or generation and corruption, must be reduced to moments of the higher concept of determinate being. Hegel thinks the notion of transcending something is one of the most important concepts in philosophy, and it is certainly vital to him. I have translated the German term 'aufheben' by the English verb 'to transcend', because it is the only word I know in English which possesses the dual sense of retaining something and yet going beyond it that Hegel notes in the original German expression.

(b) Determinate Being

Dasein is determinate being. It has emerged from the process of becoming, and therefore appears as something immediate. It is consequently the starting-point for a new development. The term 'dasein' suggests being (sein) in a certain place, being there (da), but Hegel is quick to point out that the notion of space does not belong here. Basein is immediately quality (Qualität), which, insofar as it is taken as an existing determinateness, is reality, and insofar as it also contains an element of negation, is negation (Negation). It contains the element of negation, of course, because being is only determinate if it excludes some qualities; being as the totality of qualities is actually just an

3.1 ...

abstraction from particular qualities, and therefore the same, empty, indeterminate being Hegel began with. Hegel applies this argument, in a remark, to the notion of God as the embodiment of all realities (<u>Der Inbegriff aller Healitäten</u>), which he says formed the basis of the Ontological Argument. If God is taken in this way, he argues, then he is a mere abstraction, and not a reality.

It is in a remark here that we see the realist in Hegel. He does not believe that subjective ideas and abstractions are to be regarded as supremely valuable over against reality, as the Romantics did, and also Kant and Fichte to some extent. It is after all Kant who Hegel is attacking when he says that "as against so-called mere Ideas (Ideen), mere concepts, the real alone counts as true", 19 for Kant says in the Critique of Pure Reason that, useful as they are, we must nevertheless admit that the Transcendental Ideas are still 'only ideas'. Hegel, of course, used the term 'Idea' to signify something of which it is impossible to say, disparagingly, that it is 'only an idea', for it is something in which subjectivity and objectivity are united. It is in fact the separation of the ideal and the real that Hegel is basically criticising here; for as much as he dismisses ideas which have no basis in reality, he also dismisses the reality which has not been shaped by ideas, and more precisely, the view that takes correspondence with reality alone as the criterion of the worth of an idea.

It is important to note that the negation which is contrasted here to reality is not the abstract nothingness we were concerned with previously, just as reality is not the abstract being we were concerned with previously. The negation of a reality is another reality which excludes the first; to say that reality contains negation within itself is to say that the reality of something implies the non-being of other

things. This point of view is very much opposed to the Kantian viewpoint; Kant had argued that reality is the element of sensation in an empirical intuition, and negation the absence of sensation, and that there are infinite degrees of reality, so that the existence of an empty space or time cannot be preven empirically. ²¹This effectively means that it is impossible to witness the negation of something, and that Pantheism and the doctrine of the etrnity of matter cannot be empirically disproven. Hegel counters this view point by saying that reality is the reality of something, and the negation of that something is its replacement by something else.

The concepts of something and something else, or something and other, thus come up for consideration here. Something and other are, Hegel contends, both implicitly identical notions, insofar as what is regarded as 'other' is also a 'something', and what is regarded as 'something' is also an 'other', that is, it is the other of the other. This implicit identity is brought out in the Latin expression "aliud ... aliud". Of course, one of the things must be taken positively, or in its own right, and the other merely as something different from the first, but this is done purely arbitrarily and does not involve any consideration of the nature of the thing. This means, however, that these determinations or characterizations are partly only the result of an external reflection, that is, they are external to the things; either can be regarded as 'something' or as 'other'. There is another sort of otherness, however, according to Hegel, whereby the other is not merely something different from something else, but actually opposed to it. Nature, or the Not-Self, for example, is the other of spirit, or the Self, in this sense. The interesting thing about this sort of otherness, which for Hegel is true otherness, is that the other is not merely a relative other, but an other in its own right; spirit is not equally to be regarded as the other of nature. This is presumably

because Hegel thinks that nature is only negatively defined in relation to spirit, it is the Not-Self, or non-spiritual.

Otherness in general seems to be taken by Hegel as a primitive determination through which we conceive of the nature of the phenomenal world. What is other, he says, must alter. This is presumably because it has no self-subsistence, but only exists in relation to other somethings. This otherness of the something, or as Hegel goes on to call it, its 'being-for-another', is only one aspect of it, however; it also contains the aspect of 'being-in-itself'. Now there is a temptation here to assume that it is what the something is in itself that really matters, and that this alone constitutes its "inner, true worth". Hegel argues, however, that what something is in itself it must also be for another, and vice-versa, and that the being-in-itself which is separated from being-for-another is mere abstraction. The Kantian 'thing-in-itself' is, for Hegel, just such an abstraction from all being-for-other. This is why it is unknowable, why we cannot say what it is; for in order to do this, we would have to assign some predicates to it, but since it is precisely the thought of something in abstraction from all its predicates, this is impossible.

If the being-in-itself of the something is expressed in a universal predicate which implies or is the principle of all the other essential predicates of the something, then this predicate represents the determination of that something, according to Hegel, if I understand him correctly; the determination of man, for example, is 'thinking reason', since this is that part of his existence that corresponds with his essence, which distinguishes him from the other animals, and explains all his subordinate spiritual predicates. The determination of something is to be distinguished from its constitution, which is merely its external existence; the constitution of man, for example, is his physical constitution, his

body. It is only this constitution of the something that can change, and not its determination, because it is only this that, as an external existence, is open to external influences, and even here, the determination of the constitution of the thing from outside is conditioned by the determination of the thing; a rational being reacts in different ways to outside influences than a non-rational one.

The thought of the determination of something, as the thought of its distinction from other things, presupposes the idea of the limit. Now this is a very important concept which Hegel has some very interesting things to say about. Firstly, that the limit is the non-being of the other. not the something, so that something limits its other, rather than viceversa; and secondly, that therefore, something is what it is through its limit. It is usually thought that the limit of a thing limits it, but in fact, Hegel argues, it is a limitation or barrier only for the other which is thereby excluded from being; it makes the thing what it is, and therefore cannot be a barrier for it. The limit is not the final term before the thing ceases to be, moreover, but that with which the thing ceases to be: consequently, we must say that, in its limit, the thing both is, and is not. That is, in its limit, which makes it what it is, the thing at once passes away, and becomes something else. The fact that that which constitutes the being of the thing also presupposes its non-being means that the thing must be called finite.

Finitude, for Hegel, therefore means not only that a thing is limited, but that its being is just as much non-being, that is, it is, but equally, it is destined to pass out of existence. This passing-away is not merely a possibility; finite things are, only insofar as they will one day cease to be, and they begin to pass away at the same time as they come into being. Finitude is "the most stubborn category of the understand-

ing", ²² says Hegel, insofar as the latter takes it as absolute and refuses to go beyond it, even more stubbornly than it refuses to go beyond other fixed categories. No philosophy can remain at this standpoint, however; the notion of infinity is even implied in the assertion of the being of the finite, for to say that something is limited, is <u>only</u> finite, is to imply that something is unlimited, or infinite. The question is not therefore whether or not there is an infinite as well as a finite, but how the infinite and the finite are to be characterised, whether they are to be placed alongside one another, as self-subsistent particulars, or whether there is not a higher form of infinite, than that which is merely opposed to the finite.

Hegel goes on to consider the concepts of restriction or limitation (Schranke) and the 'ought' (Sollen). These concepts, he says, are very much bound up together. The limitation is only a limitation for something which, in its own nature or as such, transcends the limitation, and it is only of such a restricted being that one can say it ought to be thus. The 'ought' raises the thing above its limitation (but only because it ought to be different is it restricted), and the limitation prevents it being what it ought to be (but only insofar as it essentially reaches beyond its limited state). This may seem obvious, but it is opposed to some very influential theses, which Hegel goes on to criticise, the first of which is the dictum that 'You can, because you ought', which is a corruption of the Kantian dictum that 'ought implies can'. The former is correct, says Hegel, in the sense that one implicitly transcends any limitation; but it is equally correct that 'You cannot, simply because you ought', that is, the 'ought' nevertheless presupposes limitation.

A more important thesis which Hegel criticises is the view that thought or reason has limitations which, presumably in principle,

cannot be transcended. Far from this being the case, Hegel argues, in accordance with the above, that in order for thought or reason to be determined as having a limitation at all, this limitation must already be transcended, in the sense that thought as such or in accordance with its concept is free from this limitation. If it were not, then the limitation would not really be a limitation for thought. This means that every limitation of reason is in principle capable of being actually transcended by reason, or indeed, even that every limitation of reason must, in principle, be transcended in order to count as a limitation. This might also be expressed by saying that every particular scientific or philosophical question is in principle capable of a solution, and must be so in order to be a genuine question. Thus there is no cause for any sort of scepticism. Hegel, indeed, argues that reason is nothing but the overcoming of limitation, and is therefore as much infinite as finite.

The question of the nature of limitation and the 'ought' also bears on moral philosophy, of course. Kant and Fichte argued that reality only places limitations on our freedom, so that freedom consists in making reality how it ought to be. Hegel, however, thought that this view was only true of finite reality and subjective freedom, that is, it is only those aspects of reality which are in themselves transient and inessential that can act as limitations on our freedom, and it is only one aspect of freedom that consists in altering those transient features of the world. The world also has features that are essential, eternal and rational, however, and which, far from limiting or restricting our freedom, are the concrete embodiment of it. These are, in other words, as they ought to be. Consequently, the view of Kant and Fichte, which stops short at the prescription of how the world ought to be, clings to finitude, and in so doing, misses out an important aspect of morality. It is also necessary to recog-

nise the non-being or superficiality of the bad or irrational.

The fundamental point here is that, in order to attain to the infinite, what we have to do is not to overcome this or that limitation, this or that finite state of affairs, but to raise ourselves above finitude as such, to cease to take finite states of affairs for the absolute. For the finite is really only a moment of the infinite, not something else existing alongside it. If we consider the finite and the infinite as merely existing alongside one another, so that besides the finite, there is also the infinite, then we effectively reduce the infinite to a particular which limits the finite, or simply to another finite. The transcendence of this limitation, and therefore of the first finite, merely realises the second finite, and the transcendence of the second, a third; and so on to infinity. This progress to infinity, which, however, never attains to the infinite, but is only an unending succession of finites, is the expression of the fact that the infinite here is being treated as something finite, rather than as something truly infinite.

This <u>finitized</u> infinite is what Hegel calls the bad or spurious infinite (<u>Schlecht-Unendliches</u>) or the infinite of the understanding, which regards it as the absolute truth. The true infinite is different from it, because it transcends the finite instead of standing opposed to it, or alongside it; it contains it as a moment of itself, and therefore is not a particular, and does not act as a limit to the finite. Consequently, it generates no infinite progression. The true infinite is real in a much nigner sense than the finite, which is at best only real in the sense of being sensible, not in the sense of being the foundation of the sensible. The finite is essentially something negative or limited, so that the infinite which transcends it represents the positive in the form of the negation of that negative, the negation of a negation. The transcending of

the finite is therefore the restoration or the return of the infinite out of finitude. Only the infinite which has thus re-emerged out of the finite is the true infinite.

The concept of the true infinite described here is sometimes thought to be peculiarly Hegelian, but this is not quite true. It closely resembles Spinoza's conception, and it is implicit in Christian thought, particularly in the myth of the Fall and the stress on putting aside finite things and raising one's mind to God, a common Augustinian theme Hegel sometimes alludes to. The use of the ring in the marriage ceremony to symbolise eternity also suggests this conception. Hegel himself says that the image of true infinity is the circle, in which the line returns to itself. and is therefore without beginning or end. This image is also used to represent the form of the whole system of logic. The profound religious and philosophical significance of this image may explain the appeal of Einstein's paradoxical idea that the universe is 'finite, but unbounded', an idea which he illustrates by means of a circle, and which people have often regarded as having a metaphysical significance. It has none, however, since 'universe! for Einstein here only means the space which geometry describes; and since geometry for him is Riemannian geometry, which is the geometry of the surface of a globe, it is hardly surprising that that space should have the properties of a globe.

The fundamental point which Hegel makes here is that true infinity is real in a more important sense than finitude. Finitude is a moment or aspect of infinity, and can therefore be termed 'ideal' in comparison. This proposition, that the finite is ideal (ideell) constitutes idealism for Hegel. Every philosophy that is worthy of that name is an idealism in this sense, he contends, since they all go beyond immediate experience and try to grasp the world in terms of some fundamental con-

cept, such as matter, atoms etc.; even water, as the principle of the philosophy of Thales, was more than just the empirical stuff we are familiar with. Now this sort of idealism is clearly to be distinguished from what is normally called 'idealism', and what Hegel calls <u>subjective</u> idealism. This form of idealism, which says basically that the world consists of my ideas, or that the only world I can know consists of my ideas, only concerns the form of thought or knowledge, according to Hegel, while idealism in his sense concerns its content, that is, the various thoughts or concepts.

This is interesting because there has been a push in modern times away from the conception of philosophy as basically an epistemological exercise, which aims at ascertaining the foundations and/or limits of knowledge (see, for example, Richard Rorty's Philosophy and the Mirror of Nature, as well as the works of those philosophers whose 'alternative' approach he examines, that is, Heidegger, Dewey, and the later Wittgenstein). This conception was introduced by Descartes, and was retained by philosophers throughout the seventeenth and eighteenth centuries, but not, we now know, by Hegel in the nineteenth. This separates the latter from the tradition to which he is usually presumed to belong, and even to some extent substantiates his claims to be doing something very new and important, even if, from another point of view, he is also doing something very old, that is, if he is only returning to the methods of the ancients; and it associates him with those modern philosophers afore-mentioned, of course, though only in the negative aspect of their work.

(c) Being-for-Self (<u>Das Fürsichsein</u>)

The result of the transcending of the finite is infinite

being, or being-for-self. Being-for-self is 'for-itself' in that it is that which has transcended its relation to its other, made the other into a mere moment of itself, and returned to itself. Consciousness is implicitly being-for-self, argues Hegel, insofar as it represents the external object to itself, so that the conscious self is really only immediately aware of itself. The external object therefore becomes only a moment of this whole process, although the self is still aware that it is representing something outside itself. Consequently, consciousness still basically involves a dualism of subject and object, whereas self-consciousness does not. The latter, therefore, is for Hegel the more perfect example (and, so far as I can see, the only example) of being-for-self; it is, he says, "the most immediate example of the presence of infinity", that is, of the fact that the finite or the other is able to be transcended, and the return-to-self achieved.

Being-for-self is being-for-one, says Hegel, which as far as I can see means nothing more than that there is only one thing which is involved in this relation, and which is both nominal subject and object. Or rather there is something more to it, namely, the idea that both sides of the relation must be considered as 'ideal'; Hegel says that this notion is present in Leibnizian Idealism insofar as the Leibnizian monad is essentially only related to itself, although the Leibnizian account is defective, because the monad is still considered as one of a plurality created by an external being. I do not want to say too much about this, however, since I am not sure if I understand it. The important thing here is that somehow this category enables Hegel to make the transition from the consideration of being-fer-self as such to the consideration of the concept of the One (Eins), which is a far more important concept both in intellectual life in general, and the nistory of philosophy in particular, and

therefore deserves closer attention.

Parmenides is credited with the thesis that 'all is one', a thesis which Plato criticises in several dialogues, notably the Sophist and the Parmenides. It is related to the doctrine that 'being is, and nothing is not', and also involves the denial of the reality of change; the One is unalterable. Now despite any accusations that Hegel is a monist and a holist, since it has been seen that Hegel opposed the doctrine that all there is, is being, it seems to me that we ought to expect him to oppose the doctrine of the oneness of being too. And this is what he does; but not, initially, by showing the necessity of plurality as such, but by arguing that the One, as a One, contains no difference, and therefore has nothing in it; and that this very fact means that we must introduce another principle, i.e. nothing, which here takes the form of the void. Now this seems to me to be a very silly argument, which Hegel would have done better to have omitted here as he does in the Encyclopaedia. Nevertheless, the consideration of the concepts of the One and the Void prompts him to say some interesting, even if equally incorrect, things about the notion of Atomism.

Hegel identifies the One with the Atom of the ancients, and argues that the philosophical standpoint of the early Atomists was indeed a great advance on that of their predecessors, such as Heraclitus and Parmenides. He contends, however, that the principle of Atomism is misunderstood if it is thought that atoms exist alongside the void. This is how the matter has been understood in modern times, he argues, difference being accounted for by the different composition or arrangement of atoms constituting physical things, but this is a barbarous conception and a corruption of the views of the early Atomists. He does not explain here exactly why he thinks this conception of the relation of atoms and the

void is so poor, but one gets the impression that it is because their separation excludes the possibility or denies the reality of change, and would thus leave this principle in roughly the same position as that of Parmenides, instead of constituting some kind of advance on it. In any case, this would be a good reason for criticising it.

He mentions in support of his view that the modern view of Atomism is a corruption of the ancient view, the point that the ancients recognised the void as "the source of movement" (der Quell der Bewegung), and this, not in the trivial sense that it is necessary for there to be empty space for the atoms to move around in, if they are to move, because, as he so rightly says, this would only make the void a pre-condition, not a source, of movement. There is no evidence, however, that the Atomists did recognise the void as a source of movement. It is true that, according to Theophrastus, Leucippus held that "not-being exists as well as being, and the two are equally causes of things coming-into-being". But according to Aristotle, he only believed that the void was a material cause, and not a final or efficient one, which is what Hegel seems to think that he believed it to be. Moreover, as Hegel himself admits, practically everything else that the early Atomists say about atoms, for example, the talk of the different shapes and arrangements of atoms, supports the modern view, and this is hardly surprising, because the major proponents of physical and chemical atomism, for example, Boyle and Dalton, took their inspiration from Leucippus and Democritus. Hegel consequently overestimates the latter, in a vain search for allies among the ancient Greeks.

In fact, I do not think that this is the right place for Hegel to talk about the notion of Atomism. Its principles, after all, are not the Atom and the Void, so much as Atoms and the Void, that is, not the One, but many ones, and Hegel has not yet introduced the concept of

the many. He does so next, however, arguing that the One must divide iterself into the many. What he seems to mean by this is that any unity must be the unity of some multiplicity, or more specifically, that many concept must be the universal of a lot of particulars, for example, the concept of man is one, but it is also many, in that it is realised in the multiplicity of men. On the other hand, the many are many ones, that is, they are a multiplicity of some unity, instances of some concept. The many particular men are all instances of the concept of man. Thus, whatever is one is at the same time many, and the many are all one. This has been regarded as a very paradoxical conclusion, and one typical of Hegel, but in fact it is the only rational conclusion possible here, and has been made by other philosophers besides Hegel.

The concepts of the one and the many had been the subjects of a great deal of controversy prior to the time of Plato and Aristotle. The problem was that after Parmenides asserted that whatever was one could also be many, the ancients, at least, according to Aristotle, "were in a pother to avoid having the same thing at the same time one and many". 27 Plato argued against such scruples in the Sophist, the Parmenides and the Philebus, and when he asserted that the one was many, he did not just mean that what was one at one time could be many at another time, or that what was a unity in relation to x was a multiplicity in relation to y, as he explains in the Philebus, but rather that the same thing was in itself and at one and the same time both one and many. The Idea of man, again, is a unity, but at the same time, it is realised in the multiplicity of men; indeed, for Flato, the identity of the one and the many is present in every sentence we utter. 32

Russell seems to have thought that the inseparability of unity and multiplicity was of great significance for the philosophy of arith-

metic:

The philosophy of arithmetic was wrongly conceived by every writer before Frege. The mistake that all of them made was a very natural one. They thought of numbers as resulting from counting, and got into hopeless puzzles because things that are counted as one can equally well be counted as many. Take, say, the question, 'How many football clubs are there in England?'. In answering this question, you treat each club as one, but you may just as well ask: 'How many members has such and such a football club?'. In that case, you treat the club as many. And, if Mr. A is a member of one of these clubs, although he counted as one before, you may ask, just as legitimately, 'How many molecules make up Mr. A?'. And then, Mr. A counts as many. It is obvious, therefore, that what makes anything one from the point of view of counting is not its physical constitution, but the question 'Of what is this an instance?'.

It is true that Russell thinks here that an instance is a member of a class or collection rather than an instance of a concept, and that there is an important distinction to be made between the two (which I make in the next chapter), but for our purposes here, Russell's view can be considered identical to Hegel's. Russell does not take the identity of the one and the many seriously enough, however. In his afore-mentioned essay, On the Nature of Truth, he argues that the notion of 'identity in difference', which, again, for our purposes, is identical with the notion of unity in multiplicity, is incompatible with monism, and with the doctrine that relations are merely internal; this is correct, but he ought also to have said that it is incompatible with his own pluralism, and with the doctrine that relations are purely external to objects. Russell ought really to have denied the possibility of a philosophical monism or pluralism, as did Wittgenstein in the Tractatus. 37

Hegel calls the splitting-up of the One into many ones 'repulsion', and their relation to one another as ones of a certain type, 'attraction'. Repulsion presupposes attraction, says Hegel, since we only significantly distinguish those things which are related in some way. Repulsion is the distinction of the many, not the absence of all relation; that is to say, it is not the same as the void. Attraction, on the other

hand, however, also presupposes repulsion, since only that which is already distinct can be related. The two are therefore inseparable. Kant had recognised this inseparability up to a point, in his so-called 'construction' of matter in his Metaphysical Principles of Natural Science, when he argued that, besides possessing a repulsive force, material objects also needed to possess an attractive force. The reason for this, according to one commentator, is that if bodies possessed only a repulsive force, they would be infinitely distant from one another; similarly, the repulsive force must be present to counteract the effect of the attractive force, or else the whole universe collapses into a mathematical point of infinite density. However, with regard to the first half of this point, 'infinitely distant' things do not even belong to the same sphere, and cannot therefore enter into a relation of repulsion; and with regard to the second half, a mathematical point of infinite density is a single thing, a one, not a relation of ones, that is, a relation of attraction. The notions of attraction and repulsion do not even make sense if they are separated, therefore, and Kant, says Hegel, quite rightly, in my view, was wrong to look on attraction and repulsion as independent forces.

The concepts of attraction and repulsion are the last concepts within the sphere of quality, and the sphere we are entering is pretty clear. The notions of the one and the many are quantitative notions, even though Hegel does not treat them as such, for reason or reasons unknown. The concepts of attraction and repulsion are most familiar as physical concepts, but Hegel shows here that they are pure concepts, concerning the relation and the difference of ones or units, and therefore also basically quantitative notions, the attractive and repulsive forces of physics being only metaphysical entities used to appear to explain something which is really a conceptual truth. The logical sphere we are entering, therefore,

the same that it is the

is the sphere of quantity, where it will be seen that the concepts of the one and the many, and attraction and repulsion, appear once again in various different forms, and count as fundamental concepts of that sphere. It will become apparent before long that echoes like this are quite a common feature of the Logic.

Notes and References

```
1. Werke 5, p.32; Miller, p.41
2. Ibid., p.73; ibid., p.73
3. Ibid., p.65; ibid., p.67
4. G. W. Leibniz, Philosophical Writings, ed. G. H. R. Parkinson; transl.
G. H. R. Parkinson and Mary Morris (Dent and Sons 1973); p.15
5. See Fichte's Science of Knowledge, transl. Heath and Lachs (Cambridge
University Press 1982), p.100 (I, 100); Schelling's System of Transcendent-
al Idealism, transl. Heath (University Press of Virginia 1978), p.26 (367-
368); Hegel argues in the \underline{\text{Mncyclopaedia}} (section 64(R)) that this is how
Descartes regarded it too.
6. See Schelling, System of Transcendental Idealism (which I refer to
subsequently as System), p.29 (371-372)
7. Hegel is not actually occupied with this question in the Science of
Logic; he refers us to his treatment of it in the Phenomenology, and in
the Encyclopaedia (section 61f).
8. J. Locke, An Essay Concerning Human Understanding, abridged and edited
by J. W. Yolton (Dent and Sons 1961), Book III, Chapter III, Section 9.
9. Philosophical Writings, p.ll
10. The Open Society and its Enemies, p.76
11. Werke 5, p.97; Miller, p.93
12. Plato, Sophist 260b-d
13. Ibid. 251a-d
14. Ibid. 259<del>d</del>-260
15. ibid. 260
16. The Early Writings of St. Augustine, selected and translated by
J. H. S. Burleigh (London 1953), p.71
17. J. S. Mill, System of Logic (Longmans, Green and Co. 1896), Book
III, Chapter II, section 1.
18. Werke 5, p.116; Miller, p.110
19. Werke 5, p.119; Miller, p.112
20. Critique of Pure Reason, A329/B385
21. Ibid., A168/B210
22. Werke 5, p.140; Miller, p.129
23. Werke 5, p.173; Miller, p.158
24. Ibid., p.185; ibid., p.166
25. G. S. Kirk and J. E. Raven, The PreSocratic Philosophers (Cambridge
University Press 1962), p.400 (Quotation no. 546)
26. Ibid., p.404 (Quotation no. 554)
27. Aristotle, Physics 185b25
28. Plato, Sophist 251b
29. Plate, Parmenides, passim.
30. Plato, Philebus 14c-16
31. Ibid., 14d-15c
32. Ibid., 15d-e
33. My Philosophical Development, p.53
34. J. L. Esposito, Schelling's Idealism and Philosophy of Nature (Assoc-
iated University Press, New Jersey 19 ), p.53
```

Chapter Two: Quantity

Quantity, for Hegel, is quality or being transcended, and thus the concepts of the sphere of quantity are the concepts of a higher sphere than that which we have just been dealing with. This might seem unnatural; it might seem to be more appropriate to consider the concepts of quantity as concepts of a lower sphere, qualitative determinations being more concrete than quantitative ones. However, one must remember here that the quality of a thing, for Hegel, is not one of its many qualities, but a simple determinateness which is identical with the being of the thing, so that the alteration of this determinateness makes that thing cease to be. Quantity, in contrast to this, is another determinateness, the alteration of which does not cause the thing to cease to be. Thus, if we call oxygen the quality of a thing, then the alteration of that qualityis the ceasing—to—be of the thing; but if we only alter the quantity of oxygen, the oxygen does not cease to be, the thing continues in existence.

Hegel begins by taking the important step of rejecting the ambiguous term 'magnitude' (Grösse) in favour of a clear distinction between quantity and quantum, i.e. quantity as such and the specific quantity. Kant had used the latin terms 'quantitas' and 'quantum' to distinguish between two senses of the word 'magnitude', but Hegel was the first to employ them as replacements for it. This was an important move, because it did away with a source of much confusion. The mathematical definition of magnitude as 'that which can be increased or diminished' applied only to magnitude in the sense of quantum, not in the sense of quantity. It was also circular, Hegel argued; to say that magnitude is that which can be increased or diminished is to say that magnitude is

ment is only intended as a reminder of the meaning of the term, but not if it is supposed to give us the concept. In fact, Hegel thinks that magnitude (or quantum), as a universal, is in this sense indefinable.

Hegel's terminology, however, did not catch on, and the term 'magnitude' continues to be used today. Russell, in his Principles of Mathematics, distinguishes between quantity and magnitude, but only in order to reject the former and retain the latter, the former being the concept or something physical, and therefore having no relevance to the philosophy of mathematics, the latter being a mathematical concept (Hegel seems to regard it as obvious that quantity is not to be identified with a physical entity - Russell's distinction seems rather to correspond to Hegel's distinction between quality and quantum). Russell's definition of magnitude as 'anything which is greater or less than something else', moreovery appears to be circular in just the same way as the one Hegel criticises, i.e. because to be greater or less than something else is to differ from it in respect of magnitude. This definition is fine, however, if (as I commented of the other) it only serves as a reminder, or if it i is only meant to be the definition of an arbitrarily made coneept, that is, if the term is only being used as a snorthand for the formula of the definition; and I think this is how it must be regarded, along with the other definitions in Russell's Principles. They must not be considered as definitions of concepts (let alone pure concepts), but only declarations of how Ruscell intends to use various terms.

(a) Pure quantity (Die reine Quantität)

Pure quantity is being-for-self transcended; this means that it is not bounded by any limit, that it is not an exclusive unit. It is

therefore absolutely continuous; at the same time, however, it contains limitation within itself, that is to say, it is divisible into discrete units. This division, however, does not interrupt the continuity of quantity. This is the essential point here. Continuity is not to be confused with composition, it is not merely an external relation of discrete parts. This confusion is the result of clinging to the ideas of the previous logical sphere, and is therefore characteristic of Atomism. We ought not really to say, then, that time consists of points of time (or time-atoms), or that the spatial line consists of points, since these, which Hegel regards as concrete examples of pure quantity, are absolutely uninterrupted. It is not that we get a number of points (which would then have to have a finite length) and put them together. The units are only the product of the division of the line; and to speak of an infinite number of them is precisely to say that the line is not an external combination of parts at all.

Hegel believed that this account of the nature of pure quantity provided the basis for the true resolution of Kant's Second Antinomy, Kant's treatment of which he criticises in some detail. I mentioned in my general account of Hegel's approach to the antinomies that he regards Kant's 'proofs' of their theses and antitheses as sham-proofs, in fact containing nothing but the assertion of two opposed propositions; but in regard to this antinomy, Hegel does not even seem to think it contains that much. The thesis - i.e. that 'Every composite substance in the world is made up of simple parts, and nothing anywhere exists save the simple or what is composed of the simple'4- does not require proof, he says, because it is tautologous; to be composite is just to be composed of simple parts. Of course, the parts of a composite might only be relatively simple, and in themselves composite, but nevertheless, insofar as this comple

posite is said to be composed of them, they must be regarded as simple. To conceive of something as a part is to take it as something simple.

Even if this statement was not a tautology, however, Kant's 'proof' of it would still be a mere show. Basically, this proof comes down to the point that composite substances must consist of simple parts, because composition is a merely external and contingent relation of substances, which is true, but has here only the form of an assumption; and Kant even includes it in his conclusion as part of the thesis that has expressedly been proven. Similarly, in the proof of the antithesis, Kant assumes that all composition is possible only in space, and that space does not consist of somple parts; and he really does not need to make these assumptions, since he makes it clear in a remark to this proof that the statement that "nowhere in the world does there exist antthing simple." Sonly means that the existence of the absolutely simple cannot be established by any experience or perception, so that, according to Hegel, his 'proof' of the antithesis comes down to the following:

...all our experience, visual, tactile etc., shows us only what is composite; even the best microscopes and the keenest knives have not enabled us to come across anything simple. Therefore reason ought not to want to come across anything simple.

That is, since phenomena are always divisible, we ought never to conceive of things as simple.

Now the fact that the use of the word 'composite' in the thesis makes it tautologous, prevents there being a true conflict here. One arises, however, if we substitute the term 'continuous'. If we make this substitution, then according to Hegel, we see that the proof of the thesis consists in the dogmatic assumption of the contingency and externality of the relation of the discrete units, and therefore their absolute indivisibility, while the proof of the antithesis dogmatically assumes continuity, and therefore infinite divisibility (in the sense of a capacity to be actually divided into an infinite number of parts). Thus, for

Hegel, the entire antinomy reduces to the separation of discreteness and continuity. The truth is that what is continuous is also potentially discrete (divisible into relatively simple units), and what is discrete is nonetheless absolutely continuous with the units either side of it (there are no gaps between units of a continuum). Hegel is inspired here by Aristotle's solutions to Zeno's paradoxes of the infinite. 7

Russell was aware of Hegel's views on these matters, and was not impressed by them. He made the following comments in his Principles:

The notion of continuity has been treated by philosophers as a rule, as though it were incapable of analysis. They have said many things about it, including the Hegelian dictum that everything discrete is also continuous, and vice-versa. This remark, as being an exemplification of Hegel's habit of combining opposites, has been tamely repeated by his followers. But as to what they meant by continuity and discreteness, they preserved a discreet and continuous silence; only one thing was evident, that whatever they did mean could not be relevant to mathematics, or to the philosophy of space and time.

Russell, in other words, criticised Hegel for not defining his terms. But it has already been seen that Hegel considered himself to be operating with concepts which were incapable of definition, and that Russell's definitions were not really the products of an analysis of the concepts in question, but only declarations regarding the way he used particular terms. They also had the form of assumptions, to the extent that it was not certain whether anything in reality answered to the description contained in the definition. There is nothing wrong with such definitions; but equally there is nothing wrong with operating with undefined terms—not every term can be defined, and not every term need be. Moreover, regarding the second part of Russell's last sentence, though it is true that Hegel's treatment of the concepts of continuity and discreteness does not affect either the operations or the results of mathematics, it does affect our understanding of mathematics, and it is certainly relevant to the philosophy of space and time.

(b) Quantum

Quantity, considered in the form of discreteness, that is, as actually divided into the discrete units which before it was only regarded as implicitly or potentially divided into, is quantum, or determinate magnitude. There are an indefinite number of such quanta, each of which, regarded as excluding the others, forms a unity (Einheit), and, regarded bm itself, is a multiplicity (ein Vieles). Quantum in its most developed and therefore completely determinate form, is number (der Zahl). Number, in accordance with the aspects of unity and multiplicity it contains as quantum, can be regarded either as unity or sum (die Anzahl); that is, the same number can be expressed either as three (e.g.), or one plus one plus one (e.g). Spatial and numerical magnitude are usually considered to be just two different sorts of magnitude, the former being the object of geometry, the latter, of arithmetic. Hegel, however, argues that spatial magnitudes are only truly definite, and therefore truly quanta, to the extent that they are determined by number; a circle as such is a very ind definite object, a triangle whose sides are in the ratio of four by three by two, far more definite. This point implies that it is wrong to separate geometry and arithmetic, as Kant, for example, does when he calls the former, the science of space, and the latter, the science of time (with regard to this more specific way of distinguishing between them, Hegel says in the Encyclopaedia that "There corresponds to geometry, the science of space, no such science of time"). In fact, Hegel makes the further point here that there is actually no science of number, since arithmetic does not have number as its object, but only operates with numbers.

The operations of arithmetic form part of the subject of another very interesting remark at this point. These pperations, Hegel

complains, are usually presented one after another, as if they are just different species of calculation. However, it is clear that one depends on the other, and the thread (Faden) which ties them together merely meeds to be drawn out. Their systematic presentation is in fact based on the determinations of the concept of number. At bottom, all calculation is counting (Zählen), and therefore diversity in the species of calculation can only be explained by a diversity in the sort of numbers counted. Now since the only qualitative difference in the concept of number is that of unity and sum, all difference in the sorts of number must be traced back to this difference. But difference in relation to numbers has the forms of equality and inequality, so that the equality of unity and sum formed the principle of the arrangement. Further, since numbers can be produced either by aggregation, or the separation of a given aggregation, we ought also to speak of a positive and a negative set of operations.

In accordance with these principles, Hegel produced the folwing systematic presentation of the operations of arithmetic. The most basic operation is addition; this is distinguished from simple enumeration by the fact that it involves the construction of number out of
specific existing numbers rather than abstract units; however, each number to be counted in addition is generally different from the next, and
counted only once, so it is impossible to distinguish between unity and
amount. This first becomes possible in multiplication, where the same
number is counted a specific amount of times, e.g. in the sum, seven multiplied by five, the number seven has to be counted five times. Thus the
unit here is seven, the amount, five. Either member in this operation,
nowever, can be taken as unit or amount, since it is just the same whethone multiplies five by seven or seven by five. The two coincided in -

some cases, of course, i.e. when a number was multiplied by itself. For example, in the sum five times five, five was both the unit and the number of times it is to be counted. This, therefore, formed another distinct operation, that of raising to a rower; and as involving the equality of unit and amount, completed the positive operations of arithmetic.

Since the negative operations are arranged in much the same way, I will not concern myself with their presentation. What needs saying much more urgently, is that Hegel does not regard this set-up as part of philosophy. He says explicitly that:

It cannot be said of the progressive determination of the species of calculation given above, that it is a philosophy of them, or that it is a presentation of their inner significance, because it is not in fact an immanent development of the concept.

It is not an exposition of the concept of number, but only an artificial set—up based on the different aspects of number. I think Hegel would like to see it compared as an exercise with Theaetetus' division of numbers, into square and oblong numbers, i.e. numbers which are the products of numbers multiplied by themselves, and numbers which are not, in Plato's Theaetetus. It is impossible to give a properly philosophical treatment of the operations of arithmetic because the simply have no inner significance or purposiveness. This relates to what Hegel has to say about the possibility of a philosophical mathematics in the Encyclopaedia. 12 The philosophical form of cognition is not, he says, appropriate with regard to the objects of mathematics. As the science of the fonite determinations of magnitude, it is essentially a science of the understanding. This is not to say, however, that philosophy cannot clarify what is going on in mathematics, change the way mathematicians see what they are doing.

negel also takes this opportunity to criticise the Mantian view that the propositions of mathematics are synthetic and <u>a priori</u>.

Mant thought that arithmetical propositions were synthetic because the

predicate—term of an arithmetical proposition is not contained among the analysed constituents of the subject—term; in the proposition '7+5=12', for example, the concept of twelve is not a constituent of the concept of seven added to five. But really, '7+5' cannot be the subject of this prop proposition. The subject must be a simple; '7+5' is complex. The true subsubject of this proposition is therefore the number twelve, and the proposition ought to be written as '12=7+5', which is more obviously an analytic or identical proposition; and this, in fact, is just how arithmetical propositions had been written in philosophical treatises prior to Kant's — back to front.

Actually, it is more accurate to say that arithmetical propositions are written back to front in arithmetical exercises; for here one does not really meet with propositions, or theorems which have to be proyed, but problems. One is asked, for example, to add seven to five and to to give the result of this operation. It might be supposed that the state statement of the problem, together with the solution, constitutes a proposition insofar as it maker a truth-claim, that is, it says that the sum of seven and five is twelve (and not, say, eleven). However, Hegel will argue later on in the Logic that there is more to being a proposition than merely having the capacity to be true or false. A proposition ought to possess a logical subject and a predicate; but this would-be proposition has neither. It does not tell us anything about a subject, but only names one. It says that the sum of seven and five is called 'twelve', A just as the statement 'The element with the atomic number 79 is gold' says that the mame of the said element is 'gold'. Or it says that the term 'twelve' can serve as an abbreviation for the complex description 'the sum of seven and five'.

Hegel similarly criticises Kant's vi w that the fundamental

propositions of geometry are synthetic. Mant in fact offers only one example to support his case; he argues that the proposition that a straight line is the shortest line between two points, is synthetic, because the concept of straightness "contains nothing of quantity, but only of quality. The concept of the shortest is wholly an addition, and cannot be derived, through any process of analysis from the concept of the straight line. Intuition, therefore, must here be called in; only by its aid is the synthesis possible". ¹³In opposition to this, Hegel contends that the concept of a straight line (the term 'concept' being taken in its common sense, as synonymous with 'idea') is reducible to that of simplicity of direction (die Einfachheit der Richtung), that the simplest with respect to quantum is the least, and the least, with respect to the length of a line, is the shortest; so that the proposition is analytic after all.

Hegel continues on a similar theme in a second remark on the use of numerical determinations for the expression of philosophical concepts. This remark, ostensively a criticism of Pythagoreanism, is actually directed at Schelling, who, in his works on the philosophy of nature, had used the term Potenz (power) to denote the different level of his system. Schelling actually intended to suggest an analogy between these levels and the different powers to which numbers could be raised in mathe ematics, negel, however, argues that mathematical terms are inapproprie ately employed in philosophy, since they are so devoid of content, so little is expressed by them, negel agrees with Flato's placing of number mid-way between sense and thought in his metaphor of the Divided Line, and therefore regards it as hopeless to attempt to express thoughts in terms of numbers. The thought of the Holy Trinity is a case in point; the employment of numbers here only confuses the issue. Hegel also regarded the fact that his system appeared to consist of triads as an irrele-

vance. 15

The use of numbers and geometrical figures as symbols, he continues, is harmeess in itself; but even here we must beware of deluding ourselves that more can be expressed in this way than can be grasped in thought, or expressed in ordinary language. On the contrary, thought and ordinary language are needed to articulate the content of such symbols. The sensuous element of the symbol (the actual shapes drawn in ink on paper) is in one respect a distraction from the content or meaning of that symbol; it gets in the way. Hegel's remarks here apply to the use of symbolism in philosophy generally, not merely to the use of numbers and geometrical figures as symbols. Consequently, I think he would be against the use of Symbolic Logic in philosophical treatises. Symbolism requires explanation in terms of ordinary language, and is to that extent superfluous. A good example of the inappropriate use of symbolism is Alvin Plantinga's essay, Which Worlds Could God Have Created? One has to decipher the symbolism in order to get at Plantinga's argument, so that it serves basically as an obstacle to understanding.

But Hegel's main argument against the employment of mathematical terms to express philosophical thoughts, is that, in fact, to the extent that certain expressions used in mathematics do contain important thoughts, their meaning "has first to be given, determined, and justified in philosophy". ¹⁷This is a very important statement, in which is contained the whole project of Hegel's work on quantity. It is not enough, there therefore, to criticise what Hegel says about the concepts of this sphere by showing that it does not conform to what it is permissible to say about the corresponding mathematical concepts; Hegel would say that we ought to be asking whether the mathematical concepts conform to the philosophical ones. He goes on to say that:

In its concrete philosophical sciences, (philosophy) must take the logical element from logic, not from mathematics; it can only be an expedient of philosophical incapability to have recourse to the shapes which the logical element assumes in other sciences, many of which give only an incling of that element, others being defective forms of it. The mere application of such borrowed forms is, besides, an external relating; the application itself must be preceded by a consciousness of their worth and of their meaning; but such a consciousness comes only from a thinking consideration, not the authority of consciousness from mathematics. Logic itself is such consciousness, and this consciousness strips off its particular forms, renders them superfluous and unnecessary, rectifies them and gives them their justification, sense and worth.

This paragraph could easily be directed at Russell, who often introduces mathematical concepts into philosophy, and even appeals to the authority of mathematics in the solution of philosophical problems ("...owing to the labours of the mathematicians, notably Georg Cantor, it has appeared that the impossibility of an infinite collection was a mistake"). 19

This is interesting, because Russell saw his own philosophical career as "a gradual retreat from Pythagoras". 29 If Hegel were alive. I think he would comment that Russell clearly did not retreat either far enough or fast enough. It is not that Hegel disparaged mathematics; far from it. He merely believed that from the philosophical point of view, it was a subordinate science. Consequently, he was concerned at the tendency of his time to effectively 'raise quantity to an absolute category! by recognising as 'exact sciences' only those sciences whose objects could be submitted to mathematical calculation. This tendency was characterist tic of materialism, he argued, and especially of that of the Erench Materialists of the eighteenth century. They tried to reduce objects such as the mind to matter and motion, so that they could subject them to the laws of mechanics, and thereby make them susceptible of a mathematical treatment. Needless to say, Hegel thought such objects were irreducible to this level, and that to imagine that one could give an adequate account of them in mathematical terms was to overestimate the range and power of mathematics.

It seems to me that Russell, even in later life, continued to rank mathematics more highly than philosophy (at least in terms of the relative certainty of both disciplines). Certainly he seems to have believed that it was only those sciences whose objects could be submitted to mathematical calculation that deserved to be called 'exact'. Consequently, if we accept Hegel's assertion of a connection between an overemphasis on the quantitative side of things and materialism, it is not surprising to see that Russell has a materialist streek. Despite 'officially declaring himself a weutral Monist from 1918 onwards, he still feels able to maintain in his philosophical autopiography (and elsewhere) that 'people's thoughts are in their heads', that is, that 'the occurence in the brain is a visual sensation'. This is only the same as William James held, of course, but if this is Neutral Monism, there is nothing very neutral about it; the location of a thought in the brain makes it just as material as an electrical discharge.

Quantum has so far been considered as being limited by its amount; that is, by the plurality of units which go to make it up; as such it is extensive magnitude. But in this case we do not consider the limit as a simple determinateness, but only as an aggregate, for example, we do not conceive of one hundred as a unit, but as one plus one etc., each unit being able to be taken as the hundredth. If, on the other hand, we do consider it as simple, then the magnitude is an intensive magnitude, and the quantitative limit is a degree. One hundred degrees is not the same as one plus one etc., but is a simple unit of, ex.g. temperature. One might further illustrate the difference between the two by conceiving of extensive magnitude in terms of a certain amount of weights on a scale; the removal of any single weight will lessen the load. Intensive magnit-

ude, on the other hand, ought to be conceived of in terms of the degrees on a thermometer; one cannot merely remove any single degree to lessen the number, but only the nth, where n is the number of degrees.

Intensive and extensive magnitude are basically distinguished, however, by the fact that the latter contains the plurality which limits it within itself, while the former has it outside itself. Twenty, as an extensive magnitude, contains within itself the twenty units which go to make it up; the same number, considered as an intensive magnitude, however, is what it is insofar as it excludes all other numbers from itself. In the first instance, the magnitude is determinate in its own self or absolutely, but it is not a simple determinateness; in the second case, it is a simple determinateness, but it is only determined relative to others. Hegel concludes from this that intensive and extensive magnitude are 'one and the same determinateness of quantum', that is, that extensive magnitudes are just as much intensive, and vice-versa; the same quantum can be regarded either as intensive or extensive; and the same thing must have both an extensive and an intensive quantum (the category of the something now re-appears as indifferent to quantum).

We must be careful not to confuse Hegel's assertion here of the <u>speculative</u> identity of extensive and intensive magnitude with the assertion of their strict or abstract identity. Hegel in fact argues against the identification of the two, in the sense of the resolution of the one into the other. The urge to identify the two in this way, he feels, is at the bottom of the controversy between mechanism (in the sense in which this excludes the notion of force) and dynamism, which is a false opposition. Thus, although he agrees with Kant in criticising the view that where two different bodies have the same volume but different weights, it is because the lighter body contains more pores, or what is

the same thing, because the heavier body contains more atoms; on the other hand, he also criticises Kant's own view, i.e. that density must be understood solely in terms of the space-filling force of matter, for being equally one-sided. Everything, in fact, insofar as it is taken quantitatively, is just as much an extensive as an intensive quantum.

This can be seen, initially, in the system of numbers, and this is where I have taken my examples from so far. But it can also be seen in the objects of geometry; the degree of a circle is at once an intensive magnitude, determined only by the amount of other degrees, existing outside it, into which the circle is divided, and an extensive magnitude, with a certain area. Physical objects, too, exhibit this feature; the weight of a mass is at once an extensive magnitude, insofar as it is constituted by so many pounds and ounces, and an intensive magnitude, insofar as it exerts a certain degree of pressure; heat is at once an intensive magnitude, as a certain degree of heat, and an extensive magnitude. tude, insofar as it is spread over a certain area. Hegel even thinks this phenomenon exhibits itself in the psychological realm, insofar as we speaklof both the intensity of thought or the degree of genius a thinker exhibits, and the extent of his influence. These sort of examples reappear at a later stage, when megel asserts the identity of the inner and the outer.

Since, insofar as quantum is intensive quantum, that which makes it what it is lies outside of it, quantum must be regarded as an external determinateness. This means that, insofar as something is taken quantitatively, it must transcend any particular quantitative determinateness, it must be able to increase or decrease. Here we see the truth which is contained in the mathematical definition of magnitude; this says that it is that which can increase or diminish, and the truth is that it

must increase and decrease in order to be what it is (though this still will not do as a definition, because it is still tautologous). Thus every given magnitude is potentially transcended; a limit is set up, then gone beyond, then another is set up and gone beyond, and so on to infinity. Infinity in this instance, however, has the form of an infinite quantitative progression, and therefore the expression 'and so on to infinity', which seems to suggest a final goal to which we are progressing, is not strictly appropriate, as Hegel explains.

The infinite quantitative progression, he says, is in general the expression of a contradiction. Here, for example, it is the expression of the centradiction that quantum both has, and does not have, a limit. It is sometimes thought that such progressions are progressions to infinity, but in fact, this progression never gets beyond the finite; for every finite transcended, another takes its place. Thus there can be no 'infinitely great' or 'infinitely small'. The increase of quantum - and this is to be an important point -

is no approach to the infinite, for the difference between quantum and its infinity has also essentially the moment of not being a quantitative difference. It is only the more precise expression of the contradiction; it ought to be something great, i.e. a quantum, and infinite, i.e. not a quantum. — Similarly, the infinitesmal is, as something small, a quantum, and consequently remains too big for the infinite, and opposed to it. There remains preserved in both the contradiction of the infinite progression, which ought to found its goal in them.

This all has dramatic consequences for the calculus, or at least the way it is conceived, as will be seen shortly; but for the moment I want go concentrate on the point that the infinite quantitative progression only contains the expression of a contradiction, and not the resolution of one; for it is sometimes assumed in philosophy that the opposite is the case. One notable instance of this is Russell's so-called solution to his 26 Tristram Shandy paradox.

Tristram Shandy, the reader will recall, took two years to re-

cord the history of the first two days of his life, and reflected that, at the rate he was going, material would accumulate faster than he could deal with it, and so, even if he lived forever, he could never complete his autobiography. Russell, however, maintains that if he really did live forever, and continued at his task, then every part of it would eventually be written down. Russell bases his argument on Cantor's theory of infinite quantities. Cantor had said that if two infinite classes could be shown to have a one-to-one correspondence, then one could conclude that they contained the same number of objects. Thus, the class of positive whole numbers could be shown to contain the same number of members as the class of reciprocals, namely, the number designated by Cantor as 🔧 (aleph-null). Now there is also a one-to-one correspondence between the days Tristram Shandy records and the years he takes to record them. Consequently, he will have the same number of years to write his autobiography as he has days to write about, and therefore, Russell concludes, no part of it will remain unwritten.

However, even if this is true (and I will shortly conclude that it is not), it only tells one side of the story. For it remains the case that there will never come a time when Tristram Shandy has completed his entire autobiography, or when he has not already lived many more days than he has written about. Consequently, we might just as easily conclude that he will never finish his autobiography, that there will always remain some unwritten parts. In fact, the truest statement of the case here is the statement of the paradox that while each part of it must be written, not every part of it can be written. This paradox, or contradiction, is not resolved in the infinite progression, but rather the latter, as Hegel has it, is the expression of that contradiction. Russell's method here is the method of pre-Kantian metaphysics; he merely neglects one

side of the argument, effectively relying on the infinite progression to continually defer the necessity of facing up to it. In fact, it actually indicates its presence.

This paradox actually came as one of a pair, its partner being Russell's version of Zeno's paradox of Achilles and the Tortoise. Achiles les and the tortoise run a race in which the tortoise is given a headstart. Now at each instant of the race, each is at some point on its path; but since he started from a position behind the tortoise, Achilles has to run through a greater number of points. Hence, he can never overtake the tortoise. Russell presents this paradox alongside the Tristram Shandy because it makes the opposite assumption to the one made in the solution of the latter, that is, it assumes that whole and part cannot be similar, i.e. cannot have the same number of terms. Russell argues that since the abandonment of this assumption solves one paradox and prevents the other from getting off the ground, it ought to be abandoned. I have already argued that it does not solve our problems in the first case; I now wish to argue that it does not solve any of our problems in this case either.

I think the negative side of Russell's solution is correct; that is, I think he is right to question what he calls the 'common-sense' assumption that if Achilles is to catch up to the tortoise, he must run through a greater number of points in the same time. But he is incorrect to say that the number of points that Achilles must traverse to win is the same as the number that the tortoise traverses. This is because it is absurd to speak of number here. If we are talking about mathematical points, then there is no fixed distance between them, they are absolutely continuous; and in that case there is no number of such points, they are literally innumerable. Of course, it is possible to say that there must

therefore be an infinite number of such points, but this raises the question whether an infinite number is really a number. Hegel thought that the very expression was a contradiction in terms, and I am inclined to agree with him. This leads me of necessity, however, to question the very foundations of Canter's enterprise.

Mathematicians from Galileo onwards assumed that it was permissible to speak of the number of whole numbers, and that such a number would have to be infinite. They also saw, however, that the number of even whole numbers (e.g.) would likewise be infinite, and asked which of these two numbers would be the greater. This causes difficulties, because although one intuitively says the former, there is a one-to-one correspondence between the two, which ought to signify equality of numbers. Galileo himself finally abandoned the problem, calling infinity 'incomprehensible'. Leibniz, considering the same question, concluded that the notion of the number of whole numbers is self-contradictory and ought to be rejected. Cantor, however, resurrected this notion, as well as the notions of the number of members of other 'classes' or 'collections' of numbers, such as the collection of fractions, and the collection of real numbers, and attempted to solve the problems that went with it.

The fundamental problem was the positive enumeration of the membership of these classes. Clearly, it was impossible to count the number of members in each class (though it is not always clear whether this is meant to be a logical or merely a practical impossibility); but merely to say that there are infinitely many (supposing that this makes sense) is not to assign to them some definite number. However, if there is a one one-to-one correspondence between two infinite classes, Cantor reasoned, we can at least say that they contain the same number of objects, and

Cantor employed the symbol \aleph_0 to designate the number of objects in the classes of positive whole numbers and their reciprocals (the class of positive even numbers was also supposed to share this number of members); and similarly, the number of numbers between 0 and 1 is designated by the symbol C. Any collection whose objects stand in one-to-one correspondence with the objects of this collection, it should be noted, will also contain C objects. This means that the number of points on any line segment is always C, which was the assumption we needed to make to solve the paradox of Achilles and the tortoise.

Hegel would say, however, with Leibniz, that it is not correct to speak of the number of whole numbers etc., precisely because there is an infinite progression of such numbers; and I would agree with them both. It is nonsense to suppose that Cantor's \aleph_0 is or represents a number. It no more represents a number than \circledast or $\lozenge \lozenge$. Kline tries to argue that this so-called number is at least as informative as the number one billion billion. Certainly, he argues, no-one can count \aleph_0 objects, but then equally, no-one has ever counted one billion billion objects; it is theoretically possible to do so, he admits, but then "it is also theoretically possible to assign numbers to infinite collections of objects". The trouble is that it is not, it is a conceptual impossibility; and Kline here presupposes what he is trying to prove. Indeed, I would even go so far as to suggest that the very notion of an infinite collection is, like that of an infinite number, contradictory, collections necessarily containing only a finite number of items.

It is, I centend, the attempt to treat things whose nature in principle precludes their enumeration, or which are conceived under a description which in principle precludes their enumeration, as coblect.

ions or classes, which is what is really behind Russell's paradoxes. If one looks at Russell's examples of classes which are supposed to be members of themselves, we see that they are of two sorts, i.e. positive and negative. The negative examples, e.g. the class of things which are not teaspoons, are not legitimate, because there are an infinity of things which are not teaspoons (or elephants, or anything else you like), including the class of things which are not teaspoons, and therefore they cannot be contained in a collection or class. The positive examples are also of things which are, by their nature, innumerable; for example, Russell speaks of the class of all classes. This notion is contradictory, because there is an infinity of classes, and one cannot therefore speak of 'all' classes, or put them 'all' into one class. It goes without saying that the notion of a class of classes which are not members of themselves is also contradictory, for the same reason.

Russell comes very close to realising all this. He notes that all the contradictions have in common the characteristic of self-reference, and explains that "in each contradiction something is said about all cases of some kind, and from what is said a new case seems to be generated, which both is and is not of the same kind as the cases of which all were concerned in what was said". He develops from this the rule that

Whatever involves all of a collection must not be one of the collection'; or, conversely: 'If, provided a certain collection had a total, it would have members only definable in terms of that total, then the said collection has no total'.

where the phrase 'the collection has no total' means that "statements about all its members are nonsense" ³⁰But why should this be the case? In what conditions could this be the case, if these are true collections? Really, it is only nonsense to speak of all the members of a collection if those members are innumerable; but this is just to say that they cannot be contained in a collection, i.e. because they are infinite.

It is often thought that the so-called progress into infinity is something great, rather than merely being the sign of a contradiction. Hegel dismisses this idea, ridiculing Kant's exaltation of this infinite progress at the close of his <u>Critique of Practical Reason</u>. This account is praiseworthy, he says, only insofar as it contains the admission that this progression, if it truly aims at reaching the infinite, is a failure. "Thought fails in the face of this conception of the immeasurable", writes Kant; "just as a dream, in which one goes on and on down a corridor which stretches away endlessly out of sight, finishes with falling of fainting"; but according to Hegel,

What makes thought succumb, what causes falling and fainting, is nothing else but the tiresome repetition which makes a limit vanish, reappear, then vanish again. 31

Similarly, what he finds so praiseworthy about the poet Haller's description of eternity, is that he too declares such a progress to be a vain striving, and closes with an expression of his recognition that it is only by giving up such striving that he can actually attain to the true infinite. Again, Hegel criticises those astronomers who see something sublime in their science because it concerns 'an innumerable host of star stars' and 'immeasurable spaces'; of these men, he writes:

The shallow astonishment to which they thereby surrender themselves, the tasteless hopes of travelling in another life from one star to another, and into immeasurable space to acquire new knowledge of the same kind, they declare to be the most important feature in the excellence of their science, — which is admirable, not because of such quantitative infinity, but rather, on the contrary, because of the measure-relations and the laws which reason cognises in these objects, and which are the rational infinite as against that irrational infinite. 32

In other words, it is not the endlessness of the data of astronomy that is its best feature, but the laws (i.e. Kepler's) which make much of it intelligible.

But it was most especially in the practical realm that the in-

finite progression had its importance, in Hegel's day. Both Kant and Fichte had reasoned that man's freedom consists in a struggle to realise the Good, which, however, he could never quite attain to; indeed, they believed that the concept of freedom demanded that man could never attain to the Good, for if he did attain to it, he would no longer have anything to strive toward, and therefore could no longer be free. Freedom is here conceived of as necessarily involving the continual re-adjustment of the world of sense. But since the Good is never realised, indeed, can never be realised, this seems to be a vain struggle; herein is contained the contradiction that, on the one hand, men ogght to realise the Good, but then again, they ought not. The infinite progression here is the expression of this contradiction, and does not resolve it. Its resolution lies rather in the realisation that the true will logically requires expression in reality, and experience, so far as it expresses that true will, is no longer opposed to it (see chapter eleven).

Hegel goes on to note that it is only in quantitative terms that Fichte, in his <u>Wissenschaftslehre</u>, is able to express the relation between the 'I' and the 'Not-I'; he says that the 'Not-I' is <u>partly</u> determined by the 'I', and <u>partly</u> not. In this way, the two remain in qualitative opposition, though each has an external relation to the other. Thu Thus, for Fichte, the 'Not-I' always remains something standing over against the 'I', he never gets beyond this opposition. Similarly, Schelling thought it important to stress that all opposition was quantitative, i.e. that the opposed terms always have the same content; that each side of the opposition contains both sides of the opposition, but on one side, one factor is predominant, on the other side, the other factor. But insofar as the difference between the two terms, e.g. thought and being, is represented in this way, both are represented as completely external to

one another, in the same way that, e.g. carbon is external to nitrogen. If thought, say, really is predominant on one side of the opposition (and how one side of an opposition can be no more than a factor in itself I fail to see), being will be cancelled out (or the two will remain a mere mixture). I will consider this in greater detail at the end of the next chapter.

It is at this point that Hegel introduces his (fairly brief) discussion of Kant's First Antimomy. He can afford to be brief, because his major criticisms of the antinomies apply to each of them, and have already been made. All that remains to be done here is to apply these general criticisms to the particular antinomy in question through an analysis of it. Kant's First Antinomy, Hegel contends, concerns the opposition of quantitative infinity and finitude, as opposed to the opposition of qualitative infinity and finitude which was the subject of the antinomy previously mentioned; in other words, it deals with infinite progression rather than infinite divisibility (why Hegel now chooses to call the latter quantitative infinity, when he previously said it concerned the moments of the concept of quantity, is beyond me). More precisely, he contends that it concerns this in the shape of the dilemma between the limitation and non-limitation of the world in space and time, this ferm, however, being quite external to the main conflict.

The proofs of both sides of the antinomy are equally, superfluous, according to Hegel. Once again, all Kant really does is to bring together two conflicting assertions, in this case, (i) that the world is limited in space and time, and (ii) that the limit must be exceeded (es muss uber die Grenze hinausgegangen werden) (actually I do not think these assertions conflict at all; Hegel really ought to have said (i) there is a limit, and (ii) there is no limit). The thesis of the First

Antinomy runs: "The world has a beginning in time, and is also limited as regards space". Now the preef of this thesis, says Hegel, presupposes what it is supposed to prove; for at the beginning of his proof, Kant presupposes some point, or rather 'any given point of time' prior to which an infinite time has elapsed and an infinite series of states of affairs has passed away (he goes on to reason that this latter is impossaible, since it presumes that such a series can came to an end; but then i it would not be infinite; therefore the non-limitation of the world in time is impossible, and the world must have a beginning). But this 'given point of time, Hegel argues, is nothing less than a limit; so all Kant shows is that the antithesis is false on the assumption of the truth of the thesis, he does not prove the truth of the thesis.

Similarly with the so-called 'proof' of the antithesis. This runs: "The world has no beginning, and no limits in space; it is infinite as regards both time and space". But the proof of this assertion proceeds with the argument that, if we assume that the world has a beginning, then it follows that it must have been preceded by a time in which the world was not; Kant goes on from this point to conclude that therefore, since it is not possible for anything to originate in an 'empty' time, because no time in-itself possesses a distinguishing condition favouring the origination of the world at that time ratner than any other, the world can have no beginning (although its contents can). But the first part of this argument presupposes what is to be proven, inasmuch as it assumes that every existence presupposes a prior one, or at least a time prior to its existence; if the world really did have an absolute beginning, then time would have begun woth it; there is no question of the postulation of a time at which nothing, not even time, was.

Kant's conflict, then, really only expresses the point that

there is a limit, and that equally, that limit must be transcended, or that there must be something beyond that limit. Far from being a contradiction in the strict sense, this rather tells us something about the nature of a limit, i.e. that it is never absolute, but always presupposes something on the other side of it, which is attainable in principle, if not in fact. It must be said here, however, that this, which is as much (if not more) than Hegel has to say here, hardly deserves the title of a 'solution' or a 'resolution'. Hegel just seems to be coming down on the side of the antithesis, that is, arguing that the world simply is infinite in space and time. For Kant does not appear to mean, when he writes of the non-limitation of the world in space and time, the complete absence of limitation, but only the absence of an absolute limit, a beginning which is not merely arbitrarily chosen. Nevertheless, I still think Hegel is right.

The infinite quantitative progression, however, is not the true infinity of quantum, says Hegel, for in this progression, quantum and its 'beyond' are really identical, what lies beyond this particular quantum is nothing but another quantum. In this endless succession of particular quanta, therefore, we hever get beyond the finite, we never actually get beyond quantum as such. Now the true infinite, according to Hegel, is "nothing less than quality", in the form of being-for-self, or independent being. The infinite quantum, therefore, will contain both a quantitative and a qualitative aspect. As such, it has the form of the quantitative relation or ratio (das quantitative Verhältnis). The quanta in a quantitative relation are no longer to be taken in their immediate signification, but rather as instances of numbers in a certain relation, and can therefore be replaced by other numbers while the relation, which transcends each of its instances, and is their foundation, remains the

quantum in its truth is external relation.

I mentioned earlier that Hegel's views on the infinite have important consequences for our understanding of the calculus, and it is at this point, in a series of three remarks covering nearly a hundred sides, ridiculously described by McTaggarthas "some mathematical digressions", that he spells these out. The mathematical infinite, he remarks, by way of introduction, is interesting for two different reasons; firstly, because of the expansion of ...mathematics and the important results which its introduction into the science has brought, and secondly, because "this science has still not succeeded in justifying its employment of the same through the concept". In the final analysis, all its justifications are based on the correctness of the results obtained by the calculus, such being established by the success of their practical employment in predicting phenomena perhaps. This procedure, however, is "unscientific (unwissenschaftlich)", and it brings with it the disadvantage that mathematicians are unable to determine the range of its application, and therefore guard against its inappropriate use.

But Hegel is not merely saying here that mathematicians must learn from philosophers; he also believes that philosophers can learn by studying the behaviour of the mathematical infinite, since the true concept of the infinite underlies it; and this is a very different concept (he says) from the one which is in the minds of those who criticise the use of the infinite in mathematics. Many mathematicians, he continues, try to avoid these criticisms either by disparaging metaphysics, or by saying that metaphysical problems are none of its concern, and that it only has to operate consistently within its own sphere, perhaps also pointing out the brilliant results that have been obtained by the employment of the calculus. Now Hegel partly agrees with this, since if it were

just the nature of the concept which was at issue, mathematicians need take no notice of the debate. They are only concerned with the essential features of their objects as expressed in mathematical definitions and theorems, and not with the concept proper. But with the calculus, mathematics also breaks with its previous methods, and permits modes of proced dure which are not permissible when we are concerned with finite quantities, while also continuing to employ conventional procedure. This apparent breaking of its own rules stands in need of justification, which must from a higher science.

It is true that the results obtained by means of the calculus generally agree with the results obtained by the conventional methods of mathematics, i.e. the geometrical and analytical methods, Hegel continues, but firstly, this is not true of every result, and secondly, the calculus is not merely intended to provide a short-cut in comparison with existing methods, but to achieve results not otherwise obtainable. And anywaym the fact that the calculus yields correct results is not sufficient to justify its mode of procedure. Indeed, the correctness or exactitude of the results it achieves is part of the reason why we should be suspicious of that procedure (or at least the way that procedure is conceived). For according to the general conception of the procedure of the calculus, its results ought only to be approximations (see following pages), but in fact they are perfectly exact. Now mathematics, as a science, needs to be able to show how its results are produced, and therefore cannot rest satisfied with this inadequate conception.

Hegel proceeds, therefore, to examine more closely the mathematical concept of the infinite, together with some of the more important attempts at justifying its employment and ironing out the conceptual difficulties involved the procedure of the calculus. He intends both to shed

just the art of the cuerts, the same and the structure mesters as a constant of the essential features of the constant and the case that features of the colorest as a same and the critical features of the colorest and the critical features. The respective of the colorest of the critical features of the continuity to the constant are constant and continuity to the constant are constant are continuity to the constant are constant. The continuity to the constant are constant, and the continuity to the continuity of the continuity.

As a read to the results of the results of the concents of setsods of seconds. In the results of seconds. In the results of the concents, the construct of the seconds. In the construct of the seconds, and the concentration of the concentration with seconds. In the concentration of the concentration of

Anticol concept of the characters, so the and sets the color of the same the sets of the color o

light on his own conception of infinity, and show that it provides a basis for the justification of the procedures of the calculus. This conception is far from being contained in the mathematical definitions of the infinite as either a magnitude than which there is no greater (the infinitely great) or a magnitude than which there is no smaller (the infinitesmal). These definitions as they stand, says Hegel, are self-contradictory. Nevertheless, if we reflect on the fact that in mathematics, magnitude id defined as that which can be increased or diminished, and that the infinitely great or small are logically incapable of increase or dimunition, and cannot therefore be regarded as magnitudes, then we begin to make progress.

To be fair, Hegel was not the first to criticise the above definitions, and he quotes with approval Kant's remarks in the Critique of Pure Reason to the effect that the concept of an infinite whole is not the concept of a maximum or a minimum, but rather only that of the relation of the whole to a given unit, i.e. that it must be greater than that unit. But it is only really the negative side of these remarks that he approves of; Kant's concept of the infinite, the fundamental feature of which is the stipulation of its immeasurability, that is, in his own words, "that the successive synthesis of units required for the enumeration of a quantum can never be completed", is still only the concept of an infinite progression, and that represented from a subjective or psychological point of view, that is, from the point of view of the intellect trying to assign a definite number to the infinite quantum. This means that Kant has not yet got beyond the contradiction of which this progression is the expression, but, as Hegel says, merely distributed it evenly between subject and object, ascribing limitation to the latter, and infinite progress to the former.

Since he thinks that the true infinity of quantum is the quantitative relation, Hegel proceeds by examining the various stages of the expression of a quantum as a moment of a quantitative relation, pointing out the imperfections in each, until he finally comes to consider the variables x and y as they appear in the Dxy of the calculus, which he presents as the most perfect expression of a quantum as a moment of a quantitative relation. In this way he hopes to show that it is this true infinite which manifests itself in the calculus, rather than the infinite quantitative progression, and that it is the concept of this true infinite which makes the procedure of the calculus intelligible, and indeed, provides its justification. The ascent through the vardous stages here is based primarily on the extent to which the quantitative element has been pliminated from the relation, or at least subordinated in the relation, and therefore corresponds to the ascent throughtthe stages of the transcendence of the sphere of quantity as such.

Hegel begins by considering fractions. It is evident, he says, that $\frac{2}{7}$ is not a number of the same type as 1, 2, 3, etc. Although it is still just a finite number, it is determined by two other numbers which are related as unit (the denominator) and amount (the numerator); and although these numbers, if they are abstracted from the relation in which they stand here, count as numbers in their own right, here they are just moments of a relation; as such, they are significant only in virtue of the relation which holds between them. Thus, they can be replaced by other numbers, such as four and fourteen, which stand in the same relation, without altering the fraction. Indeed, there is an infinity of numbers we can substitute for them in this way. Thus, we have started to transcend quantum as such. However, the fractional number is still am imperfect representation of infinity, firstly, because the numerator and de-

nominator can be taken out of the relation and count as ardinary quanta, and secondly, because their relation itself can be expressed by an ord-inary number, which is the exponent (der Exponent) of the ratio (in this case, the number 3.5).

Secondly, Hegel considers the fractions employed in algebra which contain letters instead of numbers. Clearly, these do not have a specific numerical value of themselves, but are rather only universal symbols for which we can substitute any arbitrarily chosen numerical values. As such they afford a far more adequate representation of infinity. However, it remains the case that these symbols signify finite quantum, even if they cannot be abstracted from their relation and taken as finite quanta, and therefore the same imperfections which are present in the representation of the infinite by ordinary fractions are implicitly present in its representation by algebraic fractions also.

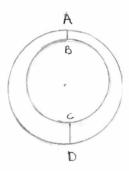
Thirdly, the fraction can also be expressed in terms of an infinite series of numbers beginning 0.285714... Similarly, the algebratic expression can be expressed in terms of the series 1 * a + a 2 1 - a + a 2 + a 2 + a 2 + a 2 + a 2 + a 3 + a 2 + a 3 + a 2 + a 3 +

ion gives us all we can have, and also all we need.

Hegel argues, then, that we must distinguish between the infinity of the infinite series, in which an element of inexactitude is actually present, and true infinity, where there is only a show of inexacti itude. What we have here is basically two sorts of mathematical infinite. corresponding to the two sorts of philosophical infinite. Hegel is saying that the representation of infinity in the form of a series, which is perennially popular, enly applies to one sort, a very inferior sort. It cannot represent the true infinite, because it represents rather the failure to attain that infinite; it never quite gets there, never becomes what it ought to be, and is therefore, in the proper sense of the word (according to Hegel) finite. Thus we ought really to invert our terminology; instead of calling the fractional expression of a number the finite expression, we ought to regard it as an infinite expression; and the infinite series we ought first to regard as an attempt to express an infiniite quantum in the form of an aggregate, then, seeing that the attempt is a failure, we ought to call it the true finite expression.

Hegel's concept of the infinite was largely inspired by that of Spinoza, which Hegel goes on to expound. Spinoza defines the infinite according to Hegel, as "the absolute affirmation of any existence", and the finite as determinateness or negation. This definition, however, provides (for Hegel) only a necessary, and not a sufficient condition of infinity, since the proper definition would also have to state that this affirmation is the result of the negation of a negation (so that the infinite is then declared to be the negation of the finite). The fact that Spinoza does not attain to this supposedly more adequate definition is regarded by Hegel as being in accordance with the fact that the principle of his system is the concept of substance rather than subjectivity, an

immediate rather than a mediated unity. Spinoza illustrates his concept of infinity with the following mathematical example, which Hegel quotes. The space ABCD in the figure below can be said to contain infinitely



many unequal distances. But this does not imply that it contains an infinite amount of parts, since its size is fixed and bounded, and anyway, it will continue to contain infinitely many unequal distances whatever its size. This is because, in Spinoza's words, "the nature of the thing surpasses every determinateness", the nature of the space precludes the possibility of assigning a definite number to the unequal magnitudes contained within it, and this is what causes us to introduce the notion of infinity here.

This would appear to be parallel to the case of the finite and infinite expressions of a fractional number. What was ordinarily termed the finite expression would be, in Spinoza's terminology, the infinite of thought, or the actual infinite (infinitum actu), while the infinite series would be called 'the infinite of the imagination'. The former is actually infinite, because it is complete, it is actually what the series strives to be. The terms of the fraction can also be made greater, like the space between the two circles, without this involving the absurdity of an increase in the size of the infinite, because this increase does not alter the relation between them, or the nature of the space. This is the qualitative aspect which is present here. Thought alone takes notice of this qualitative aspect, the relation which in fact constitutes the

the ground of the incommensurability.present in both Spinoza's example, and the example of the fractional number, while the imagination confines itself to the representation of quantum after quantum.

The discussion of this example leads Hegel into the consideration of infinity as it appears in relation to the consideration of the functions of variable magnitudes in higher analysis. Infinity as it appears here is infinity in its true form, he says, just as Spinoza conceived it. He begins with some important remarks on the concept of a variable, however. Variable magnitudes, he notes, are not supposed to be variable in the way that 2 and 7 are in the fraction $\frac{2}{7}$, or even in the way a and b are in the fraction $\frac{a}{b}$; that is, the significance of the symbols x and y as they appear in higher analysis is not merely that an infinite number of numbers can be substituted for them. If this was all there was to them, they would be indistinguishable in their employment from the symbols a and b. In fact, they are treated quite differently, and therefore, despite their name, their variability is not to be regarded as their main feature. Now this is interesting, since, to this day, the variable is still regarded as being characterised by its variability, and therefore as serving essentially the same function as a symbol like a or b. Even when someone such as Russell has an intimation that there might be more to it than, this, he cannot say what that is. "The variable", he says, "is perhaps the most distinctively mathematical of all notions; it is certainly also one of the most difficult to understand". He was far from confident about his own theory of it, moreover, calling it only "the least objectionable that I have been able to imagine".

What, then, does Hegel think is the true nature of those magnitudes with which the calculus is primarily concerned? If we recall the two main examples he has been dealing with so far just once more, we see firstly, that the denominator and the numerator of the fraction $\frac{2}{7}$ are both quanta which can exist outside this relation, while a and b in $\frac{a}{b}$ represent such quanta; and secondly, that both $\frac{2}{7}$ and $\frac{a}{b}$ are or represent fixed quanta. However, neither of these things can be said of the sides of the relation $\frac{y}{x}$ in the function $\frac{y}{x}$ = p. It is true that x and y can both stand for definite quanta, but it is not x and y that are supposed to represent quanta here, but only x and y. Hence x and y do not appear here as definite quanta, and moreover, their relation is not a fixed quantum, but rather, as quantum, absolutely variable; that is, we may consider it as expressing any quantum at any time, without the change-making any difference to our calculations. This is because x does not have a relation to y here, but only to the square of y, and the relation of a magnitude to a power is not a quantum, but a qualitative relation.

It is therefore the power-relation which is the most distinctive feature here. This is, of course, not present in the function of a straight line, i.e. y = x, and therefore Hegel concludes that x and y here do not really signify variable magnitudes, but only serve the same function as the symbols a and b, i.e. they represent definite quanta. It would have been better, he complains, to have introduced a different name for the variable magnitudes that appear in the calculus, and to consistently employ different symbols to represent them than those used to represent unknown quantities, since these are not merely unknown, but not even definite quantities. Indeed, Hegel goes so far as to say that it is enly a failure to grasp the nature and function of the calculus that can have led to the inclusion of ordinary functions such as the function of the straight line in its treatment. One ought not to mistake the need for the generalisation (Verallgemeinerung) of a method for the mere emission of its most important feature.

We can go a stage further than this, however, In the relation of powers, x and y taken by themselves still signify quanta; this is no longer the case when x and y are taken as sides of the symbol Dxy, or alternatively, Dy/Dx, which denotes the instantaneous rate of change between two variables. Dy and Dx neither are, nor signify quanta, but only have signification in relation to each other. Moreover, justaas they do not signify quanta, neither do they signify the absence of quanta, that is, they do not denote zero (this is a very important point for the unederstanding of the calculus). It is here that we see the mathematical infinite in its purest form, since it is here that the qualitative aspect is most prominent, and it was the infinite as it appears here (the second controversy since Newton's time. This controversy, Hegel argues, can only be settled by a philosophical examination of the question, that is, by a consideration of the concept of infinity.

Hegel does not believe himself to be entirely out on a limb here, however, for he believes that the great mathematicians who applied themselves to this problem all had a basic grasp of the true concept of infinity. Newton, for example, shows that he possesses a correct intuition of the matter when he says that his 'fluxions' are not to be regarded as indivisibles, but rather as 'vanishing divisibles'; not as sums or ratios of determinate parts, but as limits of sums and ratios. Newton described the limit as a 'prime and ultimate ratio'. It might be objected that such magnitudes can have no final ratio; hee. because the rationbefore the magnitude vanishes cannot be counted as final, and after it has vanished there is no longer a ratio; but Newton explicitly says that "by the ultimate ratios of evanescent quantities is to be understood the ratios of the quantities, not before they vanish, nor after, but that with which they vanish". The quantities in question are not really to be

taken as quantities, therefore, but as limits.

The history of the attempts to justify the procedure of the calculus can be described as the history of the precise formulation of the limit concept. Carl Boyer thinks that the main cause of the persistent failure of mathematicians from Newton to Cauchy to formulate the concept was "the fact that it was based on a geometrical intuition". As long as it remained grounded on this intuition, it was unlikely to be precisely formulated, he says. Now this is interesting, because Hegel, not surprisingly for someone who rejects Kant's view of mathematics as based on intuition, albeit pure intuition, appears to want to reject the grounding of the limit concept in a geometrical intuition too. He explicitly criticises those who would "bring the differential calculus back to the evidence of a strictly geometrical method", and thus hopefully "attain to the rigour of the ancients", since "the principle of infinitesmal analysis is of a higher nature than the principle of the mathematics of finite magnitudes".

Hegel, however, is not himself concerned with the precise formulation of the limit concept (that is, simply with the definition of the term 'lämit'), since this does not solve the philosophical problems he is concerned with; it does not, in other words, clear up the inconsistencies present in the procedure of the calculus. This can be demonstrated in the following way. The expression:

(i)
$$k/h = 96 + 16h$$

says that the average speed (k/h) of a falling body in the time interval of h seconds after the third second of falling is a function of h, i.e. 96 + 16h. As h becomes smaller, k/h represents the average speed over a smaller and smaller interval of time. Now the usual procedure employed in the calculus to obtain the instantaneous speed at the end of the third second, would be to simply disregard the 16h. This would leave us with a speed of

nninety-six feet per second at the end of the third second, which appears to correspond to the results of experiment. The problem here, however, is how to justify this procedure. We cannot simply substitute zero for h, because k would then also have to be equated with zero, and k/h would become zero divided by zero, which, to say the least, is not equal to ninety-six.

The idea of the limit is supposed to help us to get around this problem. It is reasoned that as h becomes smaller, so k/h represents the average speed over a smaller and smaller interval of time measured from the end of the third second; then it is said that the successive values of k/h therefore approximate to the speed at the end of the third second, and that the instantaneous speed must therefore be the value which is approximated to as h approaches zero. But firstly, it is hard to make sense of this idea that the limit is approximated to. Kline gives the example of the sequence 0, $\frac{1}{4}$, $\frac{7}{8}$, $\frac{15}{10}$; etc., which might be a sequence of successive values in a similar example. It might be said that these values were approaching the number one, but no term of the sequence will ever be greater than one half. In what sense, can this sequence be said to be approaching the number one? It never even gets anywhere near it. And this is not just the case with this example; no sequence ever arrives at the limit, because the differences, as quanta, must be able to get smaller and smaller without limit.

Kline credits Cauchy with discovering the rigorous formulation of the limit concept, but really it does not seem to me, and I am sure it would not have seemed to Hegel, that it is much af an improvement on the ones that preceded it, at least with respect to resolving the difficulty outlined above, since it still employs this notion of approximation. Cauchy wrote that:

When the successive values attributed to a variable approach indefinitely a fixed value so as to end by differeng from it by as little as one wishes, this last is called the limit of all the others.

Interestingly, something very like this definition appears in the <u>Science</u> of Logic. Hegel writes that:

The limit here does not have the signification of ratio; it counts only as the final value to which another magnitude of the same kind continually approximates, so that it can differ from it by as little as one wishes (sowenig als man will), and so that the final ratio is a ratio of equality.

This might have been written in 1831 for all I know, and therefore Hegel might have actually been alluding to Cauchy's definition, but since he does not explicitly mention his name, I will assume that this was written in 1812, and that he is not alluding to him. Either way, Hegel's response to it remains the same, that is, that the notion of approximation is not appropriate, and therefore not helpful here.

... approximation is a category which of itself says nothing and explains nothing; dx already has approximation begind it, it is neither near nor getting near; and 'infinitely near' itself means the negation of nearness and approximation. 50

One might also criticise the phrase 'as little as one wishes'. The fact that the difference can be made as small as one pleases implies that the succession of values is endless, and therefore one cannot say that it end ends by difference from the limit by any amount at all.

The underlying problem here is the urge to base our conception of how the calculus works on our conception of how more elementary mathematics works; in the above case, to base our conception of the calculation of an instantaneous rate of change on our conception of the calculof an average rate. It has to be recognised that this approach just will not work. If we want to understand the calculus, Hegel suggests, we ought rather to approach it from a consideration of what is really involved in the concept of infinity. Hegel says much more in these three long remarks on the calculus – I have so far only discussed some of the material con-

tained in the first of these, without even touching on the second or third - but I have neither the space not the time to discuss any of the remaining material. I also lack the specialised knowledge of mathematics and its history needed to appreciate it fully. I have so far merely written about what I think I understand, and what seems to me to be imported ant. I console with the thought that I have still gone further than my predecessors, and hope that what little I have done is sufficient to inspire an interest in these passages in others more able than myself to understand them.

(c) The Quantitative Relation or Ratio

I really do not have much to say about this section, partly because its detail is so dense, but partly also because the basic gist of it is fairly clear and unproblematic. We have already seen that Hegel regards the quantitative relation as the true mathematical infinite; basically what he does here is to describe its different forms, which, as one might expect, are not treated as merely different species of quantitative relation, but as stages in the development of the concept of quantitative relation. Consequently, they form a hierarchy, beginning with the direct relation or ratio (das direkte Verhältnis). This is exemplified by relations like that between the numbers two and four, the former being half the latter, the latter double the former. This relation can be expressed in terms of an immediate quantum, the exponent of the relation, here the number two; when the exponent alters, the relation alters, although we can substitute an infinite number of other numbers for two and four without altering it, for example, three and six, five and ten etc.

The indirect relation (das indirekte Verhältnis), or, as Hegel also terms it, the inverse relation (das umgekehrte Verhältnis), is

equally straight-forward. It simply means that relation where, say, one quanta increases and the other decreases in proportion to it; the number of employees on a factory pay-roll has an inverse relation to the number of redundancies in that factory, so long as no new staff are taken on. This represents a stage beyond the direct relation, insofar as it is no longer directly a relation of numbers. When it is said that the number of employees is inversely related to the number of redundancies, this does not refer to some particular number, say, twelve, and relate it to another number, say, two; twelve does not have an inverse relation to two. What is meant here is that the number of employees, whatever that number is, has an inverse relation to the number of redundancies, whatever that number is. The qualitative element is once again begoning significant in this relation.

The ultimate stage in the development of the concept of the quantitative relation, however, is the relation of powers (Potenzenver-hältnis). This is exemplified by formula's like that of Kepler's third law, i.e. that the square of the time of the revolution of any planet is equal to the cube of its distance from the sun. This is the perfect form of the quantitative relation for Hegel, because it contains no reference to immediate quanta at all. The relation is incapable of being expressed in these terms. It is a relation of equality, and not even between two quanta, but between the square of one quanta and the cube of another. As such, it takes us up to the limit of the sphere of quantity, and the beginnings of the sphere of measure, since quantitative relations such as these are no longer external to the nature of things, but, at least in those sciences dealing with the less complex objects, can actually be used to characterise them. This will become clearer in the course of the next chapter.

Motes and References

```
1. Critique of Pure Reason, A162+3/B203-4
2. Section 151
3. That is, as what Kant called mathematical definitions. See the section
on definition in my chapter on Cognition.
4. Critique of Pure Reason, A434/B462
5. Ibid., A437/B465
6. Werke 5, p.225; Miller, p.197
7. Ibid., p.226; ibid, p.198-9
8. Section 271
9. Again, see the section on definition in my chapter on cognition.
10. Enc., section 259 (R)
11. Werke 5, p.243; Miller, p.211-12
12. Ens., section 259 (R)
13. Critique of Pure Reason, Bl6-17
14. Erster Entwurf eines Systems der Naturphilosophie, Jena and Leipzig:
Gabler, 1799; Ideen zu einer Philosophie der Natur, Leipzig: Breitkopf
and Hartel, 1797
15. See Werke 6, p.564-565; Miller, p.836-837
16. Journal of Philosophy, Vol.70 (1973), p.539-532
17. Werke 5, p.248; Miller, p.216
18. Ibid.
19. Problems of Philosophy, p.85
20. My Philosophical Development, p.154
21. For example, de la Mettrie and d'Holbach.
22. My Philosophical Development, p.18
23. Werke 5, p.254; Miller, p.220
24. Ibid, p.256; ibid, p.222
25. Ibid, p.263; ibid, p.228
26. Principles of Mathematics, section 340
27. Morris Kline, Mathematics in Western Culture (Penguin 1953), p.447
28. Legic and Knowledge (Allen and Unwin 1956), p.61
29. Ibid., p.63
30. Ibid., p.63 (note)
31. Werke 5, p.254; Miller, p.220
32. Ibid., p.266-267; ibid., p.230
33. Critique of Pure Reason, A426/B454
34. Ibid., A427/B455
35. Above, p.62
36. McTagart, A Commentary on Hegel's Logic (New York, 1910), p.63
37. Werke 5, p.279; Miller, p.240
38. Ibid., p.280; ibid., p.241
39. Critique of Pure Reason, A432/B460
40. Actually, Spinoza does not give a proper definition of infinity; this
formula appears in the first note to proposition VIII of his Ethics.
41. The Correspondence of Spinoza (London 1928), p.120
42. Principles of Mathematics, section 86
43. Ibid.
44. Newton, quoted Boyer (see below), p.216
45. Carl Boyer, The History of the Calculus and Its Conceptual Develop-
ment (Dover 1959), p.271
46. Werke 5, p.305; Miller, p.261
47. Kline, p.268
```

- 48. Cauchy, quoted Boyer, p.272.
 49. Werke 5, p.317; Miller, p.270
 50. Ibid.

Chapter Three: Measure

Morris Kline, in his book Mathematics in Western Culture, argues that what distinguished the science of the seventeenth century from all previous science was the fact that pioneers such as Galileo set a new goal for science, i.e. that of obtaining quantitative descriptions of phenomena independently of any physical explanations. Greek and medieval science, by contrast, had concentrated on explaining, in causal or teleological terms, why phenomena occured as they did. If one considers the sort of physical explanation which the Greeks and medievals sometimes employed, for example (this is Kline's example), Plato's view that the earth maintains its fixed position in the centre of the universe 'for a thing in equilibrium in the middle of any uniform substance will not have cause to incline more or less in any direction', or Scholastic explanations' of the behaviour of chemical substances in terms of powers, both of which are very tautological, it is not hard to see why this should be considered an advance.

ght after for their own sake. They were sought after because they were considered to be essentially bound up with the quality or nature of things. As such, they were what Hegel called measures. When we occupy ourselves with number or quantitative relations, he once remarked in his lectures on logic, it is invariably the measure of a thing we are after. Thus, in astronomy, we collect data concerning the positions of the planets at different times in order to determine their paths; similarly, in chemistry, we try to determine the quantities of the substances brought into combination in order to discover the measures in which they combine; and the statistics collected in the social sciences are only of interest

insofar as they help us to draw general conclusions about the nature of society. In each case, quantitative studies are only important insofar as they enable us to predict, or even to bring about, qualitative change, that is, insofar as they give men power over nature. The mere collection of numerical facts, as Hegel says, is otherwise without interest.

The range est significance of quantitative studies, therefore, appears to be determined by the extent to which number and quantitative relations are bound up with the qualities of things, that is, by the applicability of the concept of measure. Now it seems undeniable that this concept is applicable, in its purest form, within the sphere of mechanics, which can be described adequately for our purposes as the science of matter (in the abstract) in motion; it also seems undeniable that it is applicable to a large extent in the sphere of chemistry. However, the make concrete the science, and the more complex the objects under consideration, the less obviously quantity and quality seem to be bound up together in them, and the more controversial are the attempts to apply the concept of measure to them. Hegel mentions some notable examples in the organic, social and psychological spheres where considerations of measure are still relevant, but generally he feels that measure is not so important in these higher spheres.

If he is right, then, despite its huge successes in mechanics and chemistry, we ought not to expect the Galilean approach to be equally successful elsewhere, or equally adequate elsewhere. The areas in which it has been most successful are precisely those in which it was most likely to be successful. Consequently, the revolution in scientific thought which Galileo is supposed to have initiated must be conceived as being far more limited in scope than has previously been thought. Although it set up a new goal for science, it did not establish the goal of all

scientific activity; and although modern science can perhaps be characterised by the fact that it has as its goal the discovery of quantitative descriptions for natural phenomena, it does not follow that this is the defining characteristic of science as such. This would be a very narrow definition of science, and it lacks justification. For the achievements of the Galalean approach cannot justify the restriction of the meaning of the term 'swience' to the intellectual activity that employs that approach.

More than this, however, Hegel does not even appear to think that the Calilean approach is completely adequate even where it is primarily appropriate and successful. The results obtained by this approach, he thinks, even if they can be shown to correspond with experience, still have to be comprehended philosophically, and so justified. This means that these descriptions have to be shown to reflect the development of the relevant concepts in the Logic; in this case, it means that the different sorts of quantitative description we get in mechanics and chemistry have to be shown to reflect the development of the concept of measure and its sub-categories. Hegel regards this exercise as the 'proof' of these destriptions, but it is regally not a proof in any cordinary sense. He gives his usage of this term some justification later on when he tries to revise our concept of necessity, but for the moment we just have to bear with him. Whether we think this constitutes 'proof' or not, this is in any case what he calls 'proof'.

(a) Specific Quantity (die spezifische Quantität)

Measure, writes Hegel, in its ordinary sense as a rule or standard (Massstab), is a quantum which is adopted arbitrarily as the unit of a given external amount. Now although he recognises that there

are cases where the unit adopted is the measure of a thing in his sense (for example, the imperial measurements feet, inches and yards were all based originally on magnitudes of the human body), Hegel rejects the idea of a natural standard of things. "A universal standard", he writes, "ought only to serve for external comparison". and therefore it does not matter what is used for this purpose. Nothing, taken as a standard, will give the 'natural' measure of a thing. Hegel thus distinguishes himself from Newton, who, while denying that an absolute standard existed anywhere in nature, nevertheless thought that space and time were capable, at least in principle, of absolute measurement. That is, he believed that, because our measurements of space and time can become more and more precise, it follows that there ought to be an absolutely correct measurement.

In fact, this is the same sort of error we met with in the previous chapter, in the consideration of the way the concept of approximation features in the calculus. There is no approximation here, because there is no point we can arrive at which can be regarded as the goal of our approximations; we can always be more precise, because we are effectively just dividing up the quantum into smaller and smaller units, an operation which can be carried on ad infinitum. The measure we give to some something always depends on the quantum which is taken as unit. If we choose to measure it in inches, then our measurement of it will be the correct measurement in inches; if in millimetres, then our measurement will be the correct measurement in millimetres. An absolute standard would actually be of no use, because something can in fact only serve as a standard insofar as it has a length in common with other things. The absolute standard, however, would have to be a universal, and as such, it would have no particular length.

The abandonment of the Newtonian dogma of the absolute mea-

surement of space and time, in the sense of a single correct measurement to which our empirical measurements approximate, was brought about finally, of course, by the advent of relativity theory. Now the replacement of the one by the other has often been seen (by Kline, for example, and also 10 by Einstein himself) as a victory over or a liberation from philosophical dogmatism. But while it was indeed 'one in the eye' for Kant's uncritical Newtonianism, it was not a blow against philosophy as such. Far from shaking up all previous philosophic thought, it was anticipated by Hegel, as has been seen; he could tell from purely conceptual considerations that the Newtonian metaphysic was inadequate. And it is not even correct to say that relativity theory supports Hegel's view; really it is the other way around, Hegel's arguments lend support to relativity theory. Certainly they show how it does not lead to relativism, but in fact leads away from the relativism present in Newtonianism.

What I mean by this is that the absolute measurement of space and time was, for Newton and Kant, nevertheless something we were not capable of, something only a superhuman observer, God, was capable of. In reality, therefore, this theory placed limitations on our knowledge where —as relativity theory does not. In relativity theory, the measurements obtained in any frame of reference are absolutely correct, and it is just this which many people find difficult to understand. This difficulty is resolvable, however, through the consideration of the notion of a measure or standard. This reveals that the measure of a thing in this sense is, by its very nature, its determination relative to any arbitrarily chosen unit or standard, and that increased precision means a change of standards, not an approximation to an absolute standard. Russell was more or less aware of all this, and regarded pelativity theory as concerned with the exclusion of any element of relativity to a subject from the state—

11

ment of physical laws. He was, however, blind to the extent to which Hegel was critical of Kant and Newton, and anticipated Einstein.

Measure is distinguished from quantum as being the <u>limit</u> of the merely quantitative alteration of a thing. At the limit, a merely quantitative change brings with it a qualitative change. It is sometimes suggested that there is no such point, that really, all change is gradual alteration (<u>Veränderung</u>). Hegel, however, insists that to say this is simply to deny the reality of qualitative change, for a gradual alteration is nothing other than a quantitative one. The neglect of the fact that, at a certain point, quantitative changes bring with them qualitative changes is, for Hegel, at the bottom of the paradoxes of the bald and 'the heap' which Aristotle mentions in his treatise <u>On Sophistical Refutations</u>. In these paradoxes, it is asked whether the removal of a single grain from a heap of grain, or a single hair from a mands beard, makes the heap cease to be a heap, or the beard cease to be a beard. The answer appears to be that it does not, but if the process is repeated for long enough, eventually both heap and beard will disappear.

The trouble I find here is that these paradoxes seem to work against Hegel rather than for him, since there does not seem to be one precise point at which a heap of grain ceases to be a heap, or a beard ceases to be a beard. These notions are not defined in such a precise way that it is possible to say, after the removal of the nth hair or piece of grain, "There is no longer a heap", or "There is no longer a beard" — precisely because a single hair does not make a significant difference. It is possible, however, that Hegel does not mean that measure is the lim that of merely quantitative change in the sense of a precise point at which change ceases to be merely quantitative, but only that quantitative alteration can result in qualitative change. This would leave open the

possibility that the measure of some things is incapable of precise definition. Certainly, Hegel needs to leave open this possibility, but it is not clear from the text whether he did so or not. In the lectures, he speaks several times about 'reaching a point' where a quantitative alteration brings with it a qualitative change.

One important thing to notice about the doctrine that the destruction of anything which has a measure takes place through the alteration of its quantum, is that it means that change can result purely threugh things going on in much the same way, through the repetition of a process. A state, for example, continues to expand until it outgrows its own form of government, which is no longer suitable for a great empire (hence the fall of the Roman Republic). Similarly, a tree continues to grow until it overtops itself, that is, it can no longer feed itself from the soil it grows out of, and so dies. In each of these cases, the destruction of the thing is unexpected, says Hegel, meaning that it interrupts the monotony of the quantitative progress (this is to be important to the consideration of Hegel's views on the nature of social progress). More significantly, it has no external cause; the thing has certain more or less precisely defined quantitative limits which it must keep within in order to survive. Its own exceeding of those limits brings about its destruction. This internal principle of change is what Hegel means by didlectic, and as far as I can see, no other meaning of the term denotes any thing of worth to be found in his work.

Measure, then, is initially a rule or standard (Regel oder Massstab), that is, a magnitude which serves as a unit relative to a quantum which exists in something other than the something of the rule (welche Einheit gegen ein Quantum ist, das eine besondere Existenz ist, an einem anderen Etwas, als der Regel ist, existiert), and is measured

by it, that is, it is determined as an amount of that unit. This constitutes an external comparison, in Hegel's terminology, in the sense that the unit is itself an arbitrarily chosen magnitude which can also be determined as an amount of some unit; Hegel gives the example of a foot being also an amount of inches, but perhaps a better example would be it being determined as an amount of a unit of some other system entirely, for example, centimetres, since lft=12ins seems to be an axiom of the imperial system rather than an actual measurement. The point here is that the measure of a thing is here still external to its quality as such. But not all measures are external in this way.

We must distinguish between external measure, and specific or specifying measure (das spezifizierendes Mass). If we consider the example of temperature, then we see that there is both the external temperature of a universal medium such as air, which increases or decreases uniformly, and the temperatures of the different bodies in that medium, which do not necessarily increase or decrease in a direct relation with either the temperature of the medium, or the temperatures of the other bodies. The comparison of the temperatures of the different bodies in the medium gives their specific heats, that is, a quantum denoting the relative capacity of the body to absorb heat, rather than its immediate or external temperature. However, since the medium is itself also a specific substance, which is therefore also capable of having a specific heat, the relation between its temperature and the temperature of another body is not merely a relation between an external and a specific measure, but a relation between two specific quanta.

There is a stage further than this, however, in which measure takes the form of a quantitative relationship between two qualities, for example, space and time in the equation $T^2=KD^3$. Space and time here are

Hegel has it), are bound up together in one measure-relation. It is at this stage that variable magnitude, in the sense that it was spoken of in the last chapter, first comes into consideration, for we have now gone beyond quantum as such, and are concerned also with the qualitative, in the form of a relation of powers between qualities. The symbols involved in the equations no longer denote quanta as such, but have some physical meaning. They do, however, also denote specific magnitudes, and therefore one is an amount subject to external alteration, while the other is an amount determined by the former, which is a unit relative to it. If one quality is extensive, the other intensive, then the former is the amount, and the latter the unit.

Hegel conceives of the fundamental equations of mechanics as forming a hierarchy based on the extent to which they correspond to the description given above. The expression of velocity in the form of distance covered divided by time taken to cover that distance, is regarded as a direct relation which comes at the bottom of the hierarchy (Hegel calls it a "determination belonging to an abstracting reflection", presumably because it does not state a law of nature, but only gives a mathematical definition of velocity). In this relation, space is taken as numerator, time as denominator, as one would expect from what is said above, given that Hegel thinks space is extensive (man external, real whole") and time intensive ("the ideal, negative factor"). Similarly, in the equations concerning the motion of a falling body, that is, \$16t and $t=\sqrt{d/16}$, time appears as a root (unit) and space as square (amount); but the most perfect example of this measure-relation is again Kepler's Third Law, in which space and time are related as powers, the latter being a square and the former a cube.

Hegel goes on to explain that "the mathematics of nature, if it is to be worthy of the name of science, must be essentially the science of measures - a science for which much has been done empirically, but little as yet from the strictly scientific, that is, philosophical point of view. Mathematical principles of Natural Philosophy - as Newton called his work - , if they are to fulfill this description in a deeper sense than Newton and the whole Baconian species of philosophy and science, must contain something else entirely, in order to bring a light into this still dark region, which is nevertheless most worthy of consideration" What he means by this is, firstly, that an enterprise such as Newton's basically aims at grasping the measures of things, that is, the essential quantitative relationships which pertain to them. But secondly, and more importantly, he is claiming that besides 'proving' that these relationships or laws obtain inductively from experience (Hegel perhaps surprisingly, regards correspondence with empirical fact as a sort of proof), we must also prove them in the philosophical manner. In the case of Kepler's laws, for example, we must show how they are to be expected, given the nature of the concepts of space and time. Hegel is aware that this sort of proof is completely lacking from Newton's work. or that of later scientists. He ridicules the notion that Newton proved Kepler's laws mathematically, on the grounds that those mathematical 'proofs' actually presuppose what they are supposed to prove..What Newton really does is to reduce Kepler's laws to "abstract expressions and convenient formulae". Perhaps when we have got a better idea of what mathematics can accomplish, and what it has accomplished", he says, we will understand this.

What we see in this section of the <u>Science of Logic</u>, and to a much greater extent in the first part of the <u>Encyclopaedia treatment</u> of

the philosophy of nature, is basically Hegel's attempt to furnish the sort of proof which he thinks is necessary for relations like Kepler's laws. It is a very rudimentary attempt, as he himself admits. But then he is engaged in a very new and a very difficult enterprise. Hegel's first attempt at such an enterprise had already caused a great deal of controversy and earned him a great many insults, from professional scientists and mathematicians (such as K.F. Gauss, for example) and laymen alike. it has continued to do so even in recent times. This is only partly the result of ignorance and misunderstanding; the most common objection to Hegel's views was that in advancing them he was overstepping the bounds of his own discipline, and treading on the toes of mathematiciams and empirical scientists. Now because of the distinction of some of the men who disparaged Hegel's work, it is tempting to simply assume that they were in the right; but to do this, I feel, would be to concede far too easily what was once a very lively debate. Rather than simply submitting to authority like this, we ought to examine the pros and cons of the case.

Clearly, I cannot examine everything Hegel says on these matters in detail, since that would take me far outside the scope of this work, which, after all, concerns Hegel's logic rather than his philosophy of nature. The following, however, can be said in defence of his right to criticise Newton. Firstly, it is not so much Newton's mathematics that he wishes to quarrel with, as the claims made for it by himself and others, and the metaphysical structures he attempted to build on it. In the account of his objections to the assertion that Newton found the proofs of Kepler's laws in the Encyclopaedia, Hegel urges the reader to bear in mind that:

...the distinctions and determinations which mathematical an-

alysis brings about, and the course which it has to take in accordance with its method, are wholly distinct from that which is supposed to have a physical reality. The presuppositions, the course, and the results, which analysis requires and provides, remain wholly outside these reminders (Erinnerungen), which concern the physical value and the physical meaning of those determinations, and that procedure. It is to this that attention ought to be directed; what is needed is an awareness of the deluge of physical mechanics by an indescribable metaphysic that - contrary to both experience and the concept - has those mathematical determinations alone as its source.

One important part of this "indescribable metaphysics" was the belief in an empirically unverifiable force of gravity. Newton had introduced this hypothesis to account for the fact that the planets move in ellipses around the sun rather than the straight lines which his first law of motion said bodies undisturbed by forces ought to follow. Einstein, however, later showed that it was possible to revise this law so that the hypothesis could be dispensed with; this can be regarded as a partial vindication of Hegel (though strictly, as I mentioned previously, it is Hegel's work that vindicates Einstein).

Moreover, other philosophical points of Hegel's have had echoes in modern developments in mechanics. I am thinking especially of his remark that "in representational thought, space and time are taken to be quite separate; we have space and also time; philosophy fights against 23 this 'also'." This seems to me to be an anticipation of Minkowski's view that instead of speaking of space and time, we ought rather to speak of a four-dimensional space-time continuum. Einstein described the conceptual changes which Minkowski helped to bring about in the following terms:

In pre-relativity physics, space and time were separate entities...One spoke of points of space, as of instants of time, as if they we were absolute realities. It was not observed that the true element of the space-time specification was the event specified by the four numbers x_1 , x_2 , x_3 , t. The conception of something happening was always that of a four-dimensional continuum; but the recognition of this was obscured by the absolute character of time... It is neither the point in space, nor the instant in time, at which something happens, that has physical reality, but only the event itself. 24

This did not mean that the time-dimension was homogenous with the three

spatial dimensions, however, that rather than having a distinct role of its own, it was interchangeable with them. Einstein clearly states that:

The non-divisibility of the four-dimensional continuum of events does not at all, however, involve the equivalence of the space coordinates with the time co-ordinate.

What is expressed is not equivalence (abstract identity) but inseparability (speculative identity). I think Hegel expresses the same point (plus a little more perhaps) when he says that "the truth of space is time", and that in time, "the point has actuality".

It seems to me that Hegel was able to anticipate Minkowski's view, and many other features of relativity theory, precisely because the main changes brought about by it were changes in approach to the fundamental concepts of mechanics. Minkowski said that his views "sprang from the soil of experimental physics", but while it must be granted that the failure of the old theories to account for the results of important experiments such as the Michelson-Morley experiment was a crucial factor in their eventual overthrow, I cannot accept that the new theories were simply deduced from experience, because they clearly contain more than is present in the empirical facts, namely, their connection, conclusions about the form(s) in which they can be represented, and conclusions about the nature of those fundamental concepts, which, as such, were always capable of being reached a priori, through philosophical inquiry. Einstein saw himself as rescuing the concepts of space and time from the clutches of "the philosophers" who had abused them in one way or another:

The only justification for our concepts and our system of concepts is that they serve to represent the complex of our experiences; beyond this they have no legitimacy. I am convineed that the philosophers have had a harmful effect upon the progress of scientific thinking in removing certain fundamental concepts from the domain of empiricism, where they are under our control, to the intangible heights of the a priori.

For even if it should appear that the universe of ideas cannot be deduced from experience by logical means, but is, in a sense, a creation of the h human mind, without which no science is possible, nevertheless this uni-

verse of ideas is just as little independent of the nature of our experiences as clothes are of the form of the human body. This is particularly true of our concepts of time and space, which physicists have been obliged by the facts to bring down from the Olympus of the <u>a priori</u> in order to adjust them and put them in a serviceable condition. 27

But it is really only Kantianism which he is attacking here, and that from a standpoint of radical empiricism or positivism (Einstein later sings the praises of Mach and Hume). Hegel's views of space and time are in fact very difficult to distinguish from Einstein's. Einstein, for example, writes that:

For the concept of space the following seems essential. We can form new bodies by bringing bodies B, C... up to body A; we say that we continue body A. We can continue body A in such a way that it comes into contact with any other body, X. The ensemble of all continuations of body A we can designate as "the space of body A". Then it is true that all bodies are in the "space of the (arbitrarily chosen) body A". In this sense we cannot speak of space in the abstract, but only of the "space belonging to the body A". The earth's crust plays such a dominant role in our daily life in judging the relative positions of bodies that it has led to an abstract conception of space which cannot be defended.

Hegel's version of this runs as follows:

(Absolute space) is thought to be the truth of space; but relative space is something much higher, for it is the determinate space of some material body. It is rather the truth of space to exist as a material body. 29

Now insofar as this is different from what Einstein says, it goes further in the direction he wished to travel, for Hegel does not merely say that space is always the space of some body, but that space exists as a mater; ial body, i.e. it is the spatiality of bodies rather than the spatial relations between bodies which is fundamental. Hegel therefore goes beyond both Newtonianism and Einstein's neo-Leibnizianism to produce a philosophy of space and time which traces these abstractions back to concrete reality. Matter, he explains,

...has often been made the starting-point, and space and time have then been regarded as forms of it. What is right in this standpoint is that matter is what is real in space and time. But these, being abstract, must present themselves here as the first, and then it must appear that matter is their truth...Matter is the first reality, existent being-for-self; it is not merely the abstract being, but the positive existence

of space. 30

Einstein's conception of space is abstract in comparison.

If we now return to the main thread of the argument, however, we see him making the point that, although, in an equation such as $T^2 = \text{KD}^3$, the quantitative element of both sides is qualitatively determined, so that both are aspects of a single measure-relation, at the same time, these two qualities do not stand to each other in the same relation as the quantitative aspects, that is, it is not the case that they have no signification or existence outside the relationship:

Thus space and time, apart from that specification which their quantitative determinateness contains in the motion of falling, or in absolutely free motion, count as space in general and time in general, space subsisting in its own right outside of and without time as an enduring existence, and time as flowing on its own and independently of space. 31.

I do not think this need be taken as contradicting the above, however; Hegel is still able to say that space and time in the above senses are empty abstractions. His point is simply that space and time as such are not to be equated with d and t, which refer to particular spaces and particular times, such as the distance of any planet from the sun, and the time it takes to complete its orbit. It is these which feature in the formula, which therefore states a quantitative relation between them that does not necessarily apply to other spaces and times.

The law of the descent of a falling body also contains an element that is not determined by the nature of space and time. The unit—side of this equation is merely an empirical quantum varying in an ord—inary arithmetical progression; that is, it is just a number taken up from experience (whereas the number on the amount—side is an amount specified by the other number multiplied by itself, and thus does not vary in a straight arithmetical progression). It is an immediate measure, like the distances and diameters of the planets, and cannot be determined

philosophically. This is because it is not itself determined by the nature of space and time. Philosophy cannot fully account for the law of the descent of falling bodies, therefore, since this contains the above-mentioned empirical element, but it can account for Kepler's Third Law. So Hegel says, anyway; he does not perform this trick in the Logic, and the account in the Encyclopaedia, apart from being ridiculously brief, is completely unconvincing.

Hegel speaks of 'proof' here, but really it is not 'proof' in the mathematical sense we are familiar with, it is not the deduction of a conclusion from previously accepted premises; it is rather a comprehension of the thing, it shows, from the nature of concepts, why one ought to expect certain laws to apply. Now while one might feel that Kepler's laws do not require any further 'proof' in the first sense, and that it is enough that they do not conflict with experience, I think it ought at least to be granted that there is a need to grasp the physical meaning of the mathematics involved here. This may not be necessary for its practical employment (it was not necessary in the case of the calculus), but it is a requirement of knowledge; a requirement which is increasingly being left unsatisfied, since science has become so mathematicised, and so far removed from ordinary thought. Today more than ever before there is a need to make sense of all that mathematics, and thereby convert all that know-how into knowing-why. This is the task of philosophy.

There is a hint of this approach, this method, which Hegel in the <u>Encyclopaedia</u> calls a "comprehending consideration (<u>begreifende</u>

<u>Betrachtung</u>)", in the <u>Philosophical Investigations</u>. Wittgenstein says at one point:

^{...}logical investigation explores the nature of all things. It seeks to see the bottom of things and is not meant to concern itself whether what actually happens is this or that. - It takes its rise, not from an interest in the facts of nature, nor from a need to grasp cau-

sal connections: but from an urge to understand the basis, or essence, of everything empirical. Not, however, as if to this end we had to hunt out new facts; it is rather of the essence of our investigation that we do no not seek to learn anything new by it. We want to understand what is already in plain view (My stress - P.J.). For this is what we seem in some sense not to understand. 32

This seems to me to be fairly similar to what Hegel says about the philosophical as distinguished from the empirical approach to nature in the Encyclopaedia. The philosophical approach does not ignore empirical fact, but rather seeks to show the necessity of things being as they are, that is, to comprehend why they are as they are; and this involves a consideration of our general conceptual framework(s), the nature of our most general concepts. Philosophy investigates what is most familiar, the form of knowledge (though not in Kant's way). The link between a comprehending (begreifende) consoderation and a conceptual investigation is already suggested by the etymological connection between begreifen and Begriff.

(Note, incidentally, Westegenstein's use of the term 'logic' here; it is clearly not formal or symbolic logic he has in mind).

(b) Real Measure (das Reale Mass)

Measure, in its more developed form, is a relation of measures which is constitutive of the quality of distinct things. Hegel says that it is manifested in specific gravity, and further, in chemical properties. Today, these might not seem to be entirely appropriate examples of the sort of things he meant, and one might think of others more appropriate, such as atomic weights or atomic numbers (so long as these are separated from the metaphysical atomism which they are commonly associated with), but it was reasonable for Hegel to see these as examplifications of measure in its developed form given what was thought about them by the scientists of his day. Space and time still enter into the

measures we are concerned with here, but they play only a subordinate role, and their nature does not directly determine the laws to be found in this sphere. They appear in the form of the length and thickness of a vibrating body, and the time in which a number of vibrations occur, both being measures which determine the character of the produced sound.

Firstly, then, Hegel considers the case where something is distinguishable by a number expressing the measure-relation between two of its quantitative characteristics. One of these characteristics, he maintains, will express the innereside of the thing, i.e. that which makes it real or material, such as its weight or material parts, while the other will be its outer side, the ideal, spatial side of the thing, such as its volume. Thus, for example, a thing will be definable by the relation of its weight to its volume, or, more precisely, the relation of its weight to the weight of the same volume of water or air, that is, its specific gravity. The volume of the substances, as the ideal aspect, counts as an intensive magnitude relative to their weight, and is therefore to be taken as unit. The relation between the weight and the volume of the body is a direct relation, rather than a relation of powers, because the bodies here are independent, i.e. they are not part of a system like the planets are.

It is this ideality of the volume of a body which is manifested in the fact that while the weight of a compound body is equal to the sum of the weights of its components, its volume is usually less than the sum of the two volumes. If we only take account of the quantitative side of the combination, we should expect that the volume of the compound will also turn out to be equal to the sum of the two volumes of its components; but here the qualitative side of the matter comes into consideration, in the shape of the nature of the quantities summed. Hegel seems to

be saying here that the fact that there is consequently no simple arithmetical relation between the specific gravities of the elements of the compound and that of the compound itself, indicates that specific gravity, and other similar characteristics presumably, are not quite perfect forms of measure. A more perfect form of measure is measure as a series of measure—relations, that is, as exemplified in chemistry by the combining quantities or equivalents of substances.

If two things are what they are only through a simple quality, writes Hegel, then they will cancel each other out when combined. No trace of hydrogen or oxygen, for example, is to be found in water, although a mixture of the two, whose combined weight is equal to that of the water, is produced by making the latter the vehicle of an electric current. However, if the two things previously mentioned also have a characteristic measure, this will be preserved in combination. Thus the same chemical compound always contains the same elements united in the same proportions (the law of definite proportions); the proportions_in which the elements combine with any arbitrarily chosen element are identical to the proportions in which they combine with each other. (the law of equivalents); and the combining quantity of a compound is always the sum of the equivalents of its components. (the law of the combining numbers of compounds). A compound will also be strictly definable by the proportion of its elements (e.g. water = H20), and an element by its combining number or atomic weight (e.g. gold = the element with the combining number 197), which, although it is always expressed as a whole number. is nevertheless a quantitative ratio.

Hegel does not explicitly mention the chemical laws stated above. He seems at this point to be thinking mainly of the discoveries of Richter and Guiton de Morveau. Richter, who believed that chemistry was to be conceived as a branch of applied mathematics, assumed definite proportions in the compounds he analysed two years before Proust first stated the law of definite proportions. Although he overestimated the extent to which chemical combination could be explained in terms of the combining proportions of substances, he made the important discovery that if two neutral salts which decompose each other are mixed, then the resulting compounds will also be neutral. It follows from this, as Hegel notes, that the quantities of any two bases required to saturate a given accid, or of any two acids required to saturate a given base, form a ratio that is the same no matter what the given acid or base is. Consequently, if an appropriate substance is taken as the standard and assigned an arbitrary number, all other acids and bases can be assigned fixed numbers representing relative quantities that are equivalent in neutralising power.

Richter compiled separate tables for each acid and base; it was left to the Berlin professor E.G. Fischer to collate all Richter's data into a single table, based on the adoption of sulphuric acid as the standard substance. This choice was relatively arbitrary, however, and this is probably why Hegel insists that "truly the self-subsistent (measure) is distinguished by the peculiar series of its exponents which it, taken as unity, forms with other such self-subsistent substances"; the series of exponents differs with the choice of standard body, even if the combining proportions remain the same, and therefore it is reasonable to think that a substance is only properly distinguished by the series of exponents which is formed when it is taken as unit. However, a more obvious way of distinguishing compound substances is by the proportions of their components; consequently, Hegel's point seems to apply more to elemental substances, although he does not intend it to. Indeed, Hegel does not seem to have attached much significance to the distinction between elements

and compounds generally.

Hegel goes on to talk about the concept of elective affinity. but this is not to be taken as an indication that he accepts the theory of the same name. In the following Remark he complains that it is onesided. But elective affinity as he understands it at this point is a much broader notion than that of an attraction between substances based merely on their qualitative aspect. Rather it is the conception of some sort of qualitative affinity based on quantitative relationships; and as such its exemplification is not confined to chemical phenomena. This sort of affinity is also present in music as harmony. Pythagoras discovered long ago that the most pleasant or harmonious combinations of tones are given off by strings, the ratios of the lengths of which are simple whole numbers. If this is expressed in terms of the frequencies of sounds rather than the length of strings, then, for example, the Major Third is a pair of tones whose frequencies are in the ratio of four to five. the fourth a pair whose frequencies are in the ratio three to four, and so on. Hegel explicitly describes such harmonies as 'elective affinities'.

There are other parallels between such harmonies and chemical affinities as he sees them. For example, just as the choice of a standard substance in the construction of a table of equivalents is relatively arbitrary, in the sense that any substance, taken as unit, will generate some sort of a series of exponents; so too is the choice of the key of a composition. The individual note is the key of a system, Hegel says, but then again it is also an individual member in the system of every other key. Similarly, as substances only combine in certain ratios, and remain unaffected by quantitative alteration outside those ratios, so harmonies occur at irregular intervals in the progress along the musical scale. But just as there is a difficulty about Hegel's statement that individual

substances are distinguished by the series of the exponents of the ratios in which other substances combine with it, so there is addifficulty with his statement that 'the individual note first acquires its sense in relation to and in combination with another note, and with the series of others'. If he means by this that alnote only has meaning as part of a piece of music, or that it is distinguished by its place in the musical scale, then this seems fair; but he seems to mean that it is what it is, in some sense, because of the notes it harmonises with, and those it does not, and I do not see why this is essential.

Hegel includes here another extended remark, which McTaggart again regarded as a digression, on the concepts employed in the presuit of the 'numerical relations of the mixtures of the chemical elements (den Verhältniszahlen der Mischungen der chemischen Elemente) (I quote this expression because it seems to contradict my view that Hegel did not recognise elemental substances), and various views of elective affinity. In his preamble he mentions Richter's law of neutrality or equivalent proportions, his attempts to construct tables of equivalents, and Fischer's simplification of his work. But the remark really begins with a brief account of Berthollet's modification of the concept of chemical affinity. (Hegel says elective affinity, but this is wrong: Berthollet modified the concept of chemical affinity, precisely by denying its elective character. This appears to be only a verbal slip however, for in the rest of his account Hegel shows that he is very much aware of what Berthollet did).

Berthollet replaced the traditional concept of affinity by a more complex and relative version which declared that the forces of affinity had to be proportional to the masses of acting substances. Formerly, it had been believed that relations of affinity were fixed be-

these others. Tables of affinities were drawn up on this assumption. But Berthollet pointed out that the degrees of affinity supposedly demonstrated in these tables were in fact more or less determined by the circumstances in which the experiments in which they were 'discovered' were carried out. Factors such as conesion and solubility influenced their outcome. And if these factors were removed, the phenomena which remained would be explicable solely in terms of the action of chemical mass. Now Hegel is not impressed by this argument, and appears to suggest that — these factors are really inseparable from the concrete nature of the substance, so that Berthollet's 'removal' of them is an empty abstraction (Hegel compares Berthollet's argument here with the Newtonian argument, intended to support his first law of motion, that it is friction that causes the motion of a pendulum to decrease, and finally to cease; Hegel himself thought that this was the effect of gravitation).

Berzelius, Hegel continues, adopted Berthollet's views and to make matters worse, dressed them up in 'the peculiar metaphysic of an uncritical reflection', which in this case means a thoroughgoing (physical as well as chemical) atomism. Berzelius's theory went beyond the limits of experience, on the one hand inventing sensuous representations (sinnliche Vorstellungen) which are not themselves given in experience (by which I take Hegel to mean supposedly material things which are nevertheless neither visible nor tangible), and on the other hand, applying categories of thought (Denkbestimmungen), and thus on both these counts, making itself a subject for logical criticism (logischer Krittik - Hegel's phrase, not mine). Hegel therefore goes on to quote a passage from Berzelius's Textbook of Chemistry (Lärbok i kemien), which he criticises in detail. According to this passage, which I quote in trans-

lation from Hegel's text, retaining his stresses:

... one <u>must imagine</u> that in a uniformly mixed liquid, each atom of the dissolved body is <u>surrounded</u> by an <u>equal amount</u> of atoms of of the solvent; and if several substances are dissolved together, then they must <u>share between them</u> the <u>interstices</u> between the atoms of the solvent, so that in a uniform mixture of the liquid there arises a <u>symmetry in the arrangement</u> of the atoms such that all the atoms of the individual bodies are uniformly arranged in relation to the atoms of the, other bodies; one can therefore say that the solution is characterised by the <u>symmetry in the arrangement</u> of the atoms as well as the combination in definite proportions. ³⁶

Berzelius, according to Hegel, followed this passage with an account of the compounds formed when sulphuric acid is added to a solution of copper chloride; but this example, as Hegel insists,

certainly does not show that atoms exist, nor that an amount of atoms of the dissolved body surround the atoms of the liquid, that free atoms of the two acods arrange themselves around the atoms which remain combined (with the copper oxide), nor that the symmetry in their position and arrangement, or the interstices between the atoms, exist, and least of all, that the dissolved substances share among themselves the interstices of the atoms of the solvent. This would mean that the atoms of the dissolved substances take up their positions where the solvent is not .- for the interstices between the atoms of the solvent are spaces empty of it -, and hence that the dissolved substances are hot present in the solvent, but rather 2 whether the solvent surrounds and is arranged around them, or they surround and are arranged around it .- they exist outside it, and are therefore certainly not dissolved by it. One fails therefore to see why one must form such conceptions, which are not comroborated by experience, which are essentially self-contradictory, and which are not otherwise substantiated in other ways. This could only occur through the consideration of these conceptions (Vorstellungen) themselves, i.e. through metaphysics, which is logic; but they are as little confirmed by this as by experience - on the contrary: 2

All that is expressed in the laws of saturation (or combination), says Hegel, concerns only the quantity of units, themselves quantitative, of a body which are necessary to neutralise a unit of another body. They give no grounds for the positing of any non-sensible metaphysical entities such as atoms (i.e. ultimate constituents of matter, perceivable perhaps by beings whose senses are sharper than our own). And I do not think that it is necessary to distinguish between chemical and physical atomism, as Alan Rocke does, for insofar as clemical atomism is still a form of atomism, and still a hypothesis which is meant to explain.

the regularities which the laws of steichiometry describe, it remains susceptible to logical criticism. Rocke seems to suggest that chemical atomism is a distinct hypothesis from physical atomism because it contains fewer metaphysical commitments; but to say less of the same thing is not to say something different, and as Rocke himself admits, the main advocates of chemical atomism were also thoroughgoing physical atomists.

I would stress, however, that one ought not to infer from Hegel's anti-corpuscularianism that he merely shared the dynamism of Kant, Schelling, and the other Naturphilosophen. Hegel considered both mechanism and dynamism as one-sided metaphysical extermes, and he was not alone in this view, as Rocke shows. Many German chemists of the time, including Kastner, who Rocke says was "the most preeminent chemist in Germany" between 1817 and 1830, and whose views Hegel cites with approval in the Encyclopaedia, were highly critical of both views. It is ridiculous to suggest, therefore, as Rocke does, that theirs was a "compromise" position between atomism and dynamism, a "dynamical atomism". It is rather the case that the Germans were aware of the superfluity of both categorial frameworks, which merely raised aspects of chemical phenomena into metaphysical entities, and wished to re-direct the science back on the sure path of observation and experiment (this is certainly what Kastner seems to be saying at any rate).

I am not suggesting that Hegel himself was as positivistic as Kastner or others of his like, but I certainly do think that he shared their view that the above-mentioned hypotheses were foisted on the laws of stoichiometry unnecessarily, and explained nothing. Hence we hear him arguing in the Science of Logic that, contrary to what Berzelius, says, the dynamic view is as little incompatible with the law of definite proportions as the corpuscular theory, although both theories

are inadequate. The one attempts to view the body solely as aneextensive magnitude, that is, as an amount of atoms, and chemical combination as the combination of those atoms, while the other attempts to view it as a merely intensive magnitude, as a degree of force, and chemical combination as the result of the action of that force. But as has already been seen, the magnitude of a thing expresses itself both as an extensive and as an intensive magnitude, so that both views are just abstractions, and neither the one nor the other will do.

There is undoubtedly more to be said about this remark of Hegel's, but I have said all I want to say about it for the moment, so I shall press on to the next section, we saw earlier that a merely quantitative progression can be interrupted by the sudden appearance of a term which displays a certain accord or affinity with an earlier one. Hegel now argues that such affinities form "a nodal line of measures on a scale of more or less (eine Knotenlinie von Massen auf einer Skala des Mehr und Weniger)", and goes on to consider the notion of such a nodal line of measure-relations in more detail. Every measure-relation, he maintains, has a certain range (Weile) within which it is indifferent to quantitative alteration and therefore does not change its quality. However, at a certain point, the boundaries are overstepped, and the quality of the thing is altered, it becomes something else. This is not to say, however, as I pointed out earlier, that there are always precise boundary-lines, but only that, as it were, the line must be drawn somewhere.

Hegel illuminates further here what he has already said about change at the beginning of the section on specific quantity. Underlying qualitative change, he explains, is a continuous quantitative progression, or series of quantitative alterations. Now if we concentrate solely on this series of alterations, then change appears to be gradual (allmäh-

liche); indeed, this sort of change <u>is</u> gradual. But is not true change, not qualitative change, the change of one state of affairs into another; or at least it is only the external side of such change. The previous quantitative relation, which Hegel says, in terms recalling his treatment of the mathematical infinite, is "infinitely near" the following one, "os still another qualitative existence". In other words, this series of quantitative changes never quite adds up to a qualitative change, and therefore never even approximates to one. Qualitative change therefore comes in the form of an interruption of the series of <u>merely</u> quantitative changes, and the transition from one quality to another takes the form of a <u>leap</u>.

Hegel is not short of examples of such nodal lines of measure-relations. There is one present in the system of natural numbers, he contends. This is basically a quantitative progression or regression, each term of which has a straightforward arithmetical relation to the ones before and after it (it is that number plus or minus one); but the terms of this series also have a specific relation to other terms in the series, i.e. they are a multiple of them, or else a power or a root. Similarly, as has already been seen, the progression along the musical scale, which is generally only a gradual increase or decrease in the pitch of the note notes, is interrupted at regular intervals by sudden harmonies with the keynote. Hegel expresses this quite beautifully, by saying that "While successive notes become more and more distant from the keynote...there suddenly occurs a return (Rückkehr), a surprising accord, of which no indication was given by the preceding quality, but which rather appears as an actio in distans, as a relation to something far removed. 44

More important, however, are the examples he draws from chemistry. The pregressive alteration of the mixture proportions of two sub-

stances is interrupted at regular intervals, he explains, by the formation of distinct compounds. The different compounds of nitrogen and oxygen, for example, are formed only when nitrogen and oxygen are mixed together in certain specific proportions, and no compounds are formed by intermediate proportions. Similarly, metal oxides - Hegel specifically mentions the lead oxides, but I think the oxides of manganese illustrate his point much better - are formed at certain points of oxidation, and no true chemical compounds are formed at intermediate points. The only problem with these examples is that, while they illustrate well the interruption of a quantitative progression by qualitative change, they seem to omit another feature which Hegel appears to think belongs to the conception of a nodal line of measure-relations, that is, the reference back to a previous term.

The phenomenon Hegel needed was in fact discovered in the 18-60's, long after his death. I am referring to the periodic law, that is, the principle that the chemical properties of the elements are periodic functions of their atomic weights. The periodic table of elements, which was drawn up on the basis of this law, showed clearly that if all the elements were arranged in order of their atomic weights, beginning with that of hydrogen, then there appeared, at equal intervals, a revival of the same physico-chemical characteristics. However, we must be careful here. Insofar as this table was based on the atomic weights of the elements, it did not form a series of continuous quantitative alterations. Hydrogen, for example, has an atomic weight of 1.00797, while the element with the next nearest atomic weight, helium, has a weight of 4.0026.

Moreover, the modern version, which is based on the number of pretons in the nucleus of an atom of the element (sic), and which does form such a series, destroys the truly periodic character of the table.

This does not pose a problem for Hegel, however, so much as for modern scientists. Part of Hegel's point here is that nature really does make leaps, and this means that the attempt to arrange the species of any natural genus into a series is unlikely to succeed. He makes this point explicitly in his lectures on the philosophy of nature:

To seek to arrange in serial form the planets, the metals, or chemical substances in general, plants and animals, and then to ascertain the law off the series, is a fruitless task, because nature does not arrange its forms in such articulate series: the concept differentiates things in accordance with their own specific qualitative character, and to that extent advances by leaps. The old saying, or so-called law, non datur saltus in natura, is altogether inadequate to the diremption of the concept. 45

We cannot refute this thesis by pointing to the existence of the periodical classification, because Hegel's point is not so much that species cannot be arranged in serial form, but that such an arrangement is entirely artificial. It cuts right across the qualitative differences of the elements, so that, in the modern version, a metal like Germanium, for example, stands side-by-side with a non-metal like Arsenic, and only a few places away from a gas like Krypton. The fact that the periodic table is usually sub-divided into sections based on broad qualitative divisions such as that between metals and non-metals, shows that chemists still feel the need for this more natural classification.

The aspect of the reference back is also missing from Hegel's last and most well-known example, that of the points at which water passes from the liquid into the solid or gaseous states. This example also differs from the previous ones in another way, namely, it concerns a change of state rather than a change of substance. The quality of the thing, in the strict sense, does not change (ice is only frozen water). In fact, this example indicates a shift which is taking place in the discussion. Hegel is about to make the transition from the consideration of quality and quantity as such to that of a substratum which remains identical through changes of

state. This is therefore a transitional example, and still does not ideally suit Hegel's purpose. Nevertheless, it certainly helps to support his opposition to the dictum, natura non facit saltum. It is certainly true that "Water, in cooling, does not gradually harden, so that it is at first porridge-like (breiartig), and gradually attains to the consistency of ice, but rather hardens all at once".

Hegel's following remarks are almost certainly directed at Kant. Kant, in the Critique of Pure Reason, had defined reality as the element of sensation in an empirical intuition, and negation as the absence of sensation, and proceeded to argue that there were infinite degrees of reality, and that therefore the existence of an empty space or time could not be proven empirically. He added that in order for a thing to make the transition from a state a to another state b, it had to pass through an infinite number of intermediate states, thus making explicit his acceptance of the doctrine that nature does not make leaps. Hegel therefore protests here that Kant's doctrine does away with coming-to-be and ceasing-to-be, insofar as it transforms the inwardness (das Ansich, das Innere) or potentiality of a thing into the mere smallness of its outer existence (so that it is already presumed to exist, even if it is not yet observable), and the conceptual difference (between something and its other) into a mere difference of magnitude.

In the last section of the chapter on real measure, Hegel argues that since every quality that arises is also subject to the same sort of progressive quantitative alteration as the one which preceded it, so the series of merely quantitative alterations which it undergoes is similarly liable to be interrupted by qualitative change at some specific point. Consequently, in accordance with our present principles, such nodal lines of measure-relations form an infinite progression in which changes

of quality continually interrupt merely quantitative changes (the new measure-relation being regarded as measureless (ein Masslose) in relation to the preceding one, i.e. as constituting a sphere beyond that measure-relation). But implicit in that infinite progression is the necessity to go beyond the separation of quality and quantity and to recognise an underlying principle of change, a self-subsistent matter or thing (Materie, Sache) which remains the same through whanges of its quality (which now acquires the significance of a state) or quantity.

(a) The Becoming of Essence (das Werden des Wesens)

There is really no need for me to follow Hegel's chapterheadings, but I feel that the material contained in this last chapter of the section on measure needs to be separated from what has gone before, if not for any other reason, then because Hegel omits the whole of it from the Encyclopaedia versions of the logic. This is probably because it just is not important enough to merit inclusion in a more concise account. The point which I think is noteworthy from the first part of this chapter, for example, is that it is here that Hegel thinks it is appropriate to reintroduce the concept of absolute indifference (absolute Indifferenz), which he rejected earlier on as an appropriate concept to begin with. He comments here that the expression Indifferenz has been employed (by Schelling) for the concept which he terms 'being', i.e. the lack of determinateness with which philosophy begins. (Schelling probably used this term because it connoted the indifference-point between two poles); but it is more appropriately used to denote the indifference which is reached throuthe negation of every determinateness in the sphere of being, i.e. the indeterminate substratum which persists through changes of state.

Hegel goes on to consider indifference as an inverse relation of its factors, which is of course how Schelling himself conceived of it. Schelling thought that all opposition was merely quantitative, so that, say, thought and being both had the same content, insofar as each contained an element of thought and an element of being, but in one case, the concept contained more thought than being, in the other, more being than thought; just as protoxide contains more nitrogen than oxygen, while Binoxide contains more oxygen than nitrogen. I would have thought that the main difficulty here was how thought (e.g.) could contain itself and being (or what Schelling could have meant by such an absurd statement), but Hegel does not seem to think so. Instead, he criticises Schelling for insisting on the conceptual inseparability of the two related concepts while at the same time treating them as completely external to one another, like two chemical substances which enter into combination, but are no longer present in their compound.

Hegel applies this argument to the relation between Newton's hypothesised centripetal and centrifugal forces. We know, he says, that the velocity of a planet increases as it approaches that point of its orbit at which it is nearest the sun, and decreases as it appoaches that point at which it is furthest from the sun; this is an empirical fact, which he says has also been reduced to its 'simple law and formula', thus satisfying all the demands which can truly be made of a theory. However, Newton also provides a 'se-called explanation' of the phenomenon in terms of centripetal and centrifugal force, that is, that the centripetal force increases in inverse proportion to the centrifugal force as the planet nears the sun, while the centrifugal force increases in inverse proportion to the centripetal force as the planet sets further away from the sun. Hegel simply replies that if centripetal force (e.g.) really did in-

crease in inverse prepertion to centrifugal force as a planet neared the sun, then the latter would be increasingly unable to prevent the planet reaching the centre it strives after, and it would crash into the sun. Similarly, if centrifugal force increased as the planet moved away from the sun, centripetal force would be unable to prevent it from leaving its or orbit.

The central problem here, according to Hegel, is once again that two things which are mutually exclusive are treated as if they existed separately from one another. In our first example, thought and being were treated as separate existences, which could both exist side-by-side in different quantities, whereas in fact the preponderance of the one over cancels the lesser out, just as the preponderance of a motive force cancels out the immobility of an object. Similarly, in our second example, it is assumed that centrifugal and centripetal forces exist independently of one another, so that they can both act separately on a body; but in fact, as we saw just now, the preponderance of the one has its logical conseces in the destruction of the other, precidely because of their conflicting natures; and to think of them as standing in equilibrium is effectively to deny the existence of both, for the same reason (i.e. they essentially conflict). Hegel also mentions other applications of this compention of indifference as an inverse relation of its factors, mostly drawn from Schelling's First Attempt at a System of the Philosophy of Nature.. But then in these examples, Scheeling was probably only adapting an idea he found implicit in Newtonian metaphysics.

Notes and References

```
1. Kline, p.214
2. Quoted Kline, p.215
3. Enc., section 107
4. Enc., section 106 (Add.)
5. Ibid.
6. Werke 5, p.392-4; Miller, p.331-2
7. Ibid., p.395; ibid., p.334
8. Ibid.
9. Kline, p.501-502
10. Albert Einstein, The Meaning of Relativity (London 1950), p.2.
11. ABC of Relativity (Allen and Unwin 1985), Ch.2
12. See, for example, Enc., section 108 (Add.)
13. Werke 5, p.399; Miller, p.337
14. Werke 5, p.405; Miller, p.342
15. Ibid., p.406; ibid., p.342
16. Ibid.
17. Ibid.; ibid., p.343
18. Ibid., p.407; ibid., p.343
19. Enc., section 270 (Add.)
20. See W. Ley, Watchers of the Skies (Sidgwick and Jackson 1964), p.319
21. Ibid.
22. <u>Enc.</u>, 270 (R)
23. Enc., 257 (Add.)
24. Einstein, p.30
25. Ibid., p.30
26. Enc. section 257 (Add.)
27. Einstein, p.2
28. Ibid., p.3
29. Enc., section 254 (Add.)
30. <u>Enc.</u>, section 261 (Add.)
31. Werke 5, p.408; Miller, p.344
32. Philosophical Investigations, I; section 89
33. Werke 5, p.417; Miller, p.352
34. Ibid., p.425; Miller, p.358
35. Ibid., p.426; ibid., p.359
36. Ibid., p.426-7; ibid., p.359
37. Ibid., p.427-8; ibid., p.360
38. Alan J. Rocke, Chemical Atomism in the Nineteenth Century (Ohio State
University Press 1984); see especially his preface and prologue. I recog-
nise that this distinction is not peculiar to him, but it is only his use
of it I am familiar with.
39. Rocke, p.10
40. Ibid., p.133
41. Ibid., p.127 and p.134
42. Werke 5, p.437; Miller, p.367
43. Ibid., p.438; ibid., p.368
44. Ibid., p.439; ibid., p.369
45. Enc., section 249 (Add.)
46. Werke 5; p.440; Miller, p.370
47. A168/B210
48. A207-9/B253-4
```

Chapter Four: Essence as Reflexion into Itself

The truth of being, says Hegel, is essence, which is to say that being presupposes essence. Being is that which is immediate, which in comparison with essence is mere show (Schein). This is not to say that it has no reality, but only that it is transient, and lacks self-subsistence. and therefore requires a permanent substratum, which is the essence. The standpoint of essence, Hegel explains in his lectures, is the standpoint of reflection (der Reflexion). Now this expression is used, he contends, primarily with reference to the action of a ray of light which, travelling in a straight line, hits a reflecting surface and is thrown back. The ray appears here in two ways; firstly, in its immediacy, and secondly, through the mediation of the surface from which it is deflected. Similarly, when we reflect on something, we do not merely consider it as it immediately presents itself, but rather as mediated through something else. For example, when we reflect that the lightning-flash we have just witnessed is an electrical discharge, we consider it as an expression of a much wider group of phenomena.

It is only when knowing (sic) is recalled from immediate being, Hegel continues, that it finds essence; now it is wise to note the ambiguity of the term which I have rendered by 'recalled' here, and whose infinitive is erinnern. Hegel uses it both in the sense of recollection, and penetration into the heart of phenomena, because he thinks that the two are intimately related. Usually, it is thought that to recall something is to bring it back into immediate experience, but Hegel talks instead of recalling knowing, or eneself, from immediate experience, because it is not there that the essence is to be found; one has to search for it within, that is, either within oneself, as when one results

a general rule which is then to be applied to the case directly before us, or within experience, as when one discovers a rule or law and the first instance. Hegel does not really distinguish between the two; or at least, he chooses to stress the connection rather than the distinction between them. This is not peculiar to him, either; the two are also united in Aristotale's concept of epagoge.

The connection between remembrance and discovery (of the essence) can be traced back further, in fact, to Plate's <u>anamnesis</u> doctrine or even to Socratic <u>maieutic</u>, and is also present in Wittgenstein's later philosophy. In the <u>Philosophical Investigations</u>, Wittgenstein says of Augustine's question, "quid est ergo tempus?" (which is what Popper would call an essentialist question) that as something which Augustine knows when no-one asks him, but cannot give an account of, it is therefore something he needs to <u>remind</u>.himself of. Popper also notes connections here, though he is hestile to all the above theses. Hegel seems to see the connection in the passage beyond the immediate object of experience to the universal, which is the essence. He even notes an etymological connection between the term <u>Wesen</u>, and <u>gewesen</u>, which, as the past participle of the verb <u>sein</u>, signifies the past which is to be recalled (which in this case, however, is "timelessly past", i.e. has never been immediately present, but is always found by looking within).

Usually, when we speak of essence, it is taken to be the product of abstraction from all determonate predicates, that is, what is left over when the latter are thought away. Hegel does not hold this view, however, because he feels that this subjective removal only produces an idea which is relative to the subject, an essence which exists alongside the immediate features of the thing, which, although thought away, are still treated as self-subsistent. This conception is not necessary, but only an

en the other hand, has been seen to emerge logically from the concept of being. The immediate states of a thing have been seen to presuppose a substratum of some kind, not in the sense of another particular which serves as an invisible support, but in the sense of a universal which contains those states within itself, and is the principle of their emergence into existence. It is this revelation of what is within, this shining or reflexion within a thing, which is the true essence.

(a) Show (der Schein)

Hegel begins with a more detailed consideration of the sort of argument outlined above. Essence, taken in the former sense previously mentioned, is opposed to being. This opposition takes the form of an opposition between what is essential and what is inessential, both sides being regarded as having a self-subsistent existence. However, precisely because it has the nature of an opposition, Hegel argues, this distinction is mere merely subjective. A and B are neither essential or inessential in themselves, but only relative to a subject. For example, a student of Hegel might regard the text of his copy of The Science of Logic as what is essential to it, and the cover of the book as inessential; whereas someone else, who merely wanted to use the book to decorate his bookshelf, might think the opposite. What Hegel is after, however, is not this merely subjective distinction, but an objective one. Objectively, however, essence is distinguished from being insofar as the latter, in comparison with it, has no self-subsistence, or is mere show.

The point here, then, is that it is wrong to regard being as though it exists in its own right, and therefore stands on a level with

essence. I think this is Hegel's version of the point which Kant expressed by saying that "appearances are not things in themselves" (a view which Kant himself, admittedly, did not advance consistently). This means, basically, that one ought not to speak of appearances or transitory states as if they are themselves things in their own right. We do this, for example, when we speak of such appearances as signs of some reality; for a sign is a reality too, even though it points beyond itself to another reality; and it is able to do this solely because men treat it as a sign, and ignore whatever it might be in itself, that is, insofar as they regard what belongs to its immediate existence as inessential to it. What it indicates is the essential, but only for those who treat it as a sign. Moreover, it can only fulfil its function as a sign if we are already familiar with the reality it signifies.

Hegel regards both the "phenemenen" (Phänemen) of scepticism and the 'appearance' (Erscheinung) of Kantian Idealism as schein, that is, as 'an immediacy, which is neither a semething mer a thing, nor any indifferent being integeneral, which would still be, apart from its determinateness and relation to a subject. The ancient sceptics refused to say of anything that 'It is', insisting that one eight only to say 'This is how things seem to me', while Kant, for his part, insisted that we can know nothing of things in themselves, but only as they appear to us. However, Hegel argues, if the whole content of the world is declared to be show, then this show is the world; that is, if everything is declared to be mere appearance, then one might just as well say nothing is, for then the contrast between appearance and reality is destroyed. The trouble with ancient scepticism, and with subjective idealism (idealism commonly so-called) is that it does not advance beyond the immediate given, and therefore has no right to speak of a reality distinct from appearance at all.

The truth is that show is only one aspect of essence, essence taken immediately. Far from existing in its own right, and merely pointing to an essence which lies behind it, show is the show of essence, or as it might be put, appearance is the appearance of essence. This must be distinguished from other similar-sounding theses, such as the one that being has only a show of essence, that is, as I understand it, that there is really nothing beyond phenomena, which is the doctrine of phenomenalism; and the doctrine that essence has only a show of being, that is, that it does not show itself in immediate existence. Essence in fact shows itself in two ways, firstly, in the fleeting glimpses we are given of it in immediate experience, and secondly, in the fact that they only present it from a single perspective, and that they pass away. In the sphere of essence, we are witness to a constant movement proceeding from the inner side of a thing outward, and then from the outer appearance back inward; this self-movement whereby essence is revealed is reflection.

The passages on reflection in the Science of Logic are especially obscure, and I have been able to make little of them. However, it may be observed that he distinguishes three forms of reflection, the first of which is positing reflection (die setzende Reflexion), whereby (I think) the universal is merely set down as being such and such; this positing is just as much a presupposing, however, insofar as it presupposes something in immediate experience corresponding to what is posited. If the 'given' of immediate experience is taken as our starting-point, on the other hand, then the reflection in question is an external reflection, which attempts to subsume the immediate experience under a universal (a rule or law). This reflection is external, however, only insofar as the rule is considered as something external to the immediate experience. In sofar as it is considered as the essence of the latter, then the reflect-

ion is an absolute or <u>determining</u> reflection (<u>die bestimmende Reflexion</u>), from whose opposed aspects the previous forms are abstracted.

Reflection, says Hegel, is usually taken in a subjective sense, as "the movement of the faculty of judgement that goes beyond a given immediate presentation and seeks out universal determinations for the same" Kant distinguished between determinative judgement, whereby the universal is given and the particular merely subsumed under it, and reflective judgement, where the particular is given for which the universal is to be found, and this seems to contain the same idea. But in fact, Hegel says, it is only through the relation of the immediate existent to the universal that it is determined as a particular, and the universal to which it is related is its own essence. Reflection in the above sense is therefore only external reflection, although it implies absolute reflection insofar as the universal which it arrives at counts as the essence of the immediate existent which we begin with, so that the action of reflection on that immediate existent does not do violence to it, as it were, but rather only brings that essence to the fore.

The basic point Hegel is making here (and he makes it much more clearly in the <u>Vorbegriff</u> to the <u>Encyclopaedia</u>, sections twenty to twenty-four) is that, whereas philosophers such as Kant and the British Empiricists treat the material of immediate experience as self-subsistent, as fundamental data, so that reflection on it, insofar as it involves the alteration of it, that is, the rearrangement of that material in accordance with the forms of thought, seems to take us further away from the nature of the thing in itself; Hegel, on the other hand, because he recognises the transient and non-self-subsistent nature of immediate experience, i.e. that it is show rather than data, is able to say that reflection, far from taking us further away from the true nature of the thing, in

fact reveals its true nature, which was only partially revealed in the immediate appearance. In Hegel's terminology, this appearance was a negation, and the alteration which reflection made, the negation of that negation, and therefore the restoration of the positive.

The passages on reflection in the Science of Logic are omitted from the Encyclopaedia treatment, although, as I have already pointed out, the above point still features in the Verbegriff. This suggests to me that the point itself was more important than the rest of the material in these passages, and so to have salvaged this much is to have had some success. In the Encyclopaedia, Hegel suggests that the doctrine that the true nature of an object is able to be grasped by reflection, and only by reflection, must be grasped in order to facilitate a preliminary understanding of thought, and through that, of logic. This might surprise those who recall the young Hegel's scathing attacks on 'reflection' and 'reflective philosophy', but this apparent anomaly is explained in the Science of Logic, where Hegel comments that it was external reflection he had in mind, that is, reflection insefar as it is regarded as the mere processing of a material which it gets from outside, and which determines it; this is later termed Iffinite cognition'.

(b) The Determinations of Reflection

Hegel switches, at this point, from talking about a single essence, to talking about essentialities, or determinations of reflection.

This move may well be justified, but I amountable to grasp any such justification. According to Kant, reflection is "the consciousness of the relation of given representations to our different sources of knowledge".

All judgement, and all comparison of representations, presupposes this

That is to say, logical reflection, the mere comparison of representations, presupposes this transcendental reflection. This is because the former presupposes that all the representations are of the same order. Only transcendental reflection decides whether things themselves are identical or different, etc. Thus, if a representation belongs to sense, it is distinguished by its spatio-temporal location; if it represent something purely intellectual, by its specific nature. Identity and difference here, however, are assumed to be numerical. Hegel is to question the wisdom of this assumption in an inquiry into the nature of these concepts.

Hegel mentions in this connection "the universal laws of thou22 ght that are at the base of all thinking". Now there are two things that
need to be noted here. Firstly, these laws are not the laws of logic as
we know them, or rather, not just those laws, for Hegel does mention the
law of identity and the law of excluded middle. The three main laws Hegel
deals with (and they are three because there are three main concepts in
this section, which they express in propositional form) are the Leibnizian principles of non-contradiction, of indiscernibles, and of sufficient
reason. Secondly, Hegel mentions them only to reject them, or at any rate
the expression of the nature of the concepts of reflection in the form of
fundamental propositions. Not only is this form superfluous, he argues,
but the truth about these concepts is actually inexpressible in propositions which do not conflict with one another, and which thereby require
a conceptual inquiry to sort them out. What Hegel means by this will become clearer as we go along.

The movement of reflection has led us to consider essence as that which transcends its immediate determinations. It <u>is</u>, as the negation of them. But this "simple, self-related negativity", according to

Hegel, is identity. It is worth comparing this view with other, more familiar notions of identity. The British Empiricists thought of identity in terms of the continuity and invariability of an object through time. This led Hume to argue that since such continuity and invariability was nowhere to be found, identity was merely "feigned by the imagination", and that all one ever met with in experience was a succession of related objects. This was meant to do away with the assumption of an identical substratum which persisted through variations of the state of a thing. but it effectively did away with identity altogether. Hegel's view, that identity was not to be thought of in terms of the continuity and invariability of a particular, but rather as an abstraction from the immediate states of a thing,, avoided the former assumption while retaining the objectivity of identity.

It is also instructive to relate Hegel's views to Hume's on the more specific issue of personal identity. Hume, as is well known, spoke of the self as a "bundle or sellection of different perceptions". Kant pointed out, however, that such a bundle presupposed a subject in which all the perceptions were united, even if this could not be an object of in intuition, and was thereby unknowable, since otherwise it could not be perceived as a bundle. This view was in some respects an advance on Hume's, in others, not. Insefar as the subject was considered as something unknowable, it was not, for this presupposed that we could not know something about it (namely, that it had these perceptions) without knowing it, which is impossible. Hegel's view here would be that the subject was an abstraction from the representations, and therefore was knowable, but only able to be met with in thought, since it was not a sensuous particular. The fact that the subject could not be located in experience only meant that we were looking for it in the wrong sphere. I became conscious of my-

self through the negation of my representations.

It is important to observe that identity as Hegel understands it here presupposes difference. Identity as Hume understands it is separate from difference. Identity in this sense, Hegel argues, is identity 26 in the sense in which it features in external reflection. In external reflection, one merely compares two objects to see in what respects they resemble one another, and in what respects do not. In this way we arrive at the idea of identity as opposed to difference. But the two ought not to be opposed, because then it becomes a matter of subjective choice whether we treat that which we are presented with as one identical thing or a succession of different things. We could say that the cup presently before me is a different object from the cup which was before me earlier, because it is a different spatio-temporal phenomenon, but considered in its universeality, it is the same object. This is effectively Kant's solution to Hume's problem; it fails as such, however, because it makes both identity and difference subjective.

Hegel goes on, in a remark, to criticise the notion that the law of identity is to be regarded as the fundamental law of thought, or the first principle of all knowledge, a notion held by both Leibniz and 28 Fichte. This proposition, he says, is a mere tautology, a triviality. It says nothing, precisely because it abstracts from all difference. One would expect, he continues, that if A = A was the fundamental law of thought, then "every consciousness would treat it as fundamental in every utterance it made, or that it lies implicitly in every utterance". But this is not the case. The propositions we utter in everyday speech are more likely to be synthetic than analytic or identical propositions. In the former type of proposition, we connect a single term to a complex distinct from it. We could abstract from this distinct element to obtain the

formula A = A, says Hegel, but then we are no longer dealing with the form of a proposition as found in experience, and can no longer base our claim that it is the fundamental law of thought on experience.

It must be said, however, that Hegel would not have thought that the expression A = B, as it appears in the symbolism of modern formal logic, was much of an improvement on A = A. This is because A = B, if true, is logically equivalent to A = A. Hegel seems to show awareness of this fact in the <u>Differenzschrift</u>:

...for the mere intellect, A = B does not say more than the first proposition (i.e. A = A - P.J.) and consequently it conceives A's being posited as B only as a repetition of A. That is to say, the intellect just holds fast to the identity and abstracts from the fact that when A is repeated as B or as posited in B, something else, a non-A, is posited as A, hence, A is posited as non-A.30

Hegel goes on to say that the mearest we can come to expressing the <u>non-A</u> of the synthetic proposition is by saying that A = not-A; in other words, "the highest formal expression of knowledge and truth" is the contradict—ion. To say this is not to praise formal contradiction, but rather to reveal the limitations of this sort of symbolism. Hegel seems to have thought it revealed more than that, i.e., the limitations of logical symbol—ism as such. Hence he did not go on to reform logical symbolism. This appears to have been a mistake. The symbolism of modern predicate logic manages to express the propositional form as Hegel understood it quite adequately with its functions and arguments. Nevertheless, Hegel's criticism of the old symbolism seems valid.

Difference, as Hegel understands it, that is, difference in and for itself rather than the mere Humean idea, is the internal distinction of a thing, that is, not the thing considered in abstraction from its determinations, but as possessing various determinations, the thing considered, not as identical with itself, but as identical with those determinations. This is opposed to both numerical difference, and difference

considered as a difference of external properties. The former sort of difference, for Hegel, is no difference at all, while the other is relative to the subject. This is not to say that differences of this sort are only invented by the subject, but it is to say that a distinction by external properties only helps the subject to distinguish two things, it does not tell us anything about the different natures of the objects in themselves. I may distinguish one man from another by the colour of his hair, but this is not really what distinguishes him from the other; other factors are much more essential.

In his lectures on logic, Hegel stressed both the usefulness and the limitations of this sort of comparison. He thought that the work of the finite (i.e. non-philosophical) sciences consisted to a large extent of such comparison, and cited the successes of Cuvier's comparative anatomy. At the same time, however, he insisted that the comparative method was not appropriate universally, and that it does not satisfy "the ultimate requirements of science". He also pointed out that the logical error of the separation of identity and difference is often carried over into these sciences, where it takes the form of two opposed drives, one which seeks to reduce existing differences to identity, and the other which seeks always to discover new differences. The former is quite a successful technique in mathematics, where we are basically concerned with quantitative rather than qualitative differences, the former being external to the nature of the thing. But it is quite inappropriate to try to reduce, say, organic or chemical phenomena to mechanical phenomena. The continuing search for new species, moreover, does not add anything to scientific knowledge, but only to knowledge of fact.

Hegel makes some remarks here on 'the law of diversity', i.e.

Leibniz's principle of indiscernibles, i.e. that there are no 'two things

precisely alike. Hegel says that this is opposed to the law of identity. Now this is odd, because they seem on the face of things to be quite compatible; there seems to be no reason why things should not be identical with themselves, and with nothing else. But the reader ought here to recall Hegel's view of self-identity as the absence (or more precisely, the abstraction from) all determinations; in contrast to that absence of determination, it is here asserted that things are inherently or internally distinct. That is, difference is no longer posited as something external to them, but rather something internal. Hegel suggests that this was the meaning of Leibniz's principle, and there is good reason to believe that he is right here. In the Monadology, he formulates the principle as follows:

Indeed, every monad must be different from every other. For there are never in nature two beings which are precisely alike, and in which it is not possible to find some difference which is internal, or based on some intrinsic denomination. 34

This seems to be precisely what Hegel has in mind too. Things do not only differ externally (i.e. in terms of quantity or relations of space and time), but must also differ qualitatively.

Hegel seems to think that it is essential to distinguish between the above interpretation of the pronciple of indiscernibles, and that which has it say merely that everything is (numerically) different. The latter is a tautology, or, as Hegel puts it, "a very superfluous proposition", since "things in the plural immediately involve manyness (die Mehrheit) and wholly indeterminate diversity". Leibniz says much more than this; he realises that things are not merely numerically different, but furthermore, they differ in determinate respects, that is, through their properties. Moreover, it must not be thought these properties are only external to the things, or what is the same, that these differences exist only for the comparing subject. If this were the case, Hegel suggests (in

the Encyclopaedia), then the principle of indiscernibles simply could not be said. I take him to mean here that it would no longer be true that everything was different (other than numerically, which goes without saying).

Hegel claims to go beyond Leibniz in at least one respect, however. Leibniz treated the principle of indiscernibles as what Hegel calls an 'immediate' proposition, that is, one which is self-evadently true. But this is a synthetic rather than an identical proposition, he argues, and as such it stands in need of proof. He claims, moreover, to provide this proof, in the form of the derivation of the concept of difference from the concept of identity. Actually, however, Leibniz derived the principle of indiscernibles from the principle of sufficient reason, at least, in his essay on Primary Truths. But Hegel would not have accepted this as adequate proof, of course, since it was only the deduction of a proposition from another proposition which is assumed to be true. The attempt to get rid of the element of presupposition here merely leads to an infinite regression of propositions. Thus he would still insist that his proof, which shows the necessity of determinate difference as a moment of the concept of difference, was the only true one.

It is interesting to compare Hegel's treatment of Leibniz's principle with what Wittgenstein had to say on identity in the <u>Tractatus</u>. The latter writes at <u>Tractatus</u> 5. 5303 that

Roughly speaking, to say of two things that they are identical is nonsense, and to say of one thing that it is identical with itself is to say nothing at all.

Insofar as it is numerical identity that he has in mind here, this goes without saying; if x and y are two different things, then they are not one and the same thing. Numerical identity cannot be a relation, and to this extent, he is correct to dispose of the identity-sign and adopt the prac-

tice of always using the same sign to represent the same thing. But the problem is that Wittgenstein effectively refuses, like Hume, to acknowledge the reality of any difference other than that numerical difference which is the other side to numerical identity. This is because he insists that the properties of an object are all external properties. This is not necessarily to say that he thinks that they exist only for the subject, but certainly that they are no part of the intrinsic being of the object.

Hence Wittgenstein writes:

If two objects have the same logical form, the only distinction between them, apart from their external properties, is that they are different.

Either a thing has properties that nothing else has, in which case we can immediately use a description to distinguish it from the others and refer to it; or, on the other hand, there are several things that have the whole set of their properties in common, in which case it is quite impossible to indicate one of them.

For if there is nothing to distinguish a thing, I cannot distinguish it, since otherwise it would be distinguished after all.38 Here he quite obviously separates the possibility of distinguishing an object by a description, and the reality of its separate existence. (He later rejected this separation, it seems to me, in the Philosophical Investigations, notably in the passages on pain. This whole debate harks back to Leibniz's criticisms of Locke's views of individuality in his New Essays). He implies that two objects with the same logical form (e.g. Socrates and Plato) can have all their properties in common. He therefore goes on, quite consistently, to reject Russell's definition of the identity-sign, precisely because it rules out that possibility; even if it is never correct to say that two objects have all their properties in common, that is, even if it is never actually the case, he says that it still makes sense to say thid. I think he is right here, but what must also be said. and this is the point Hegel makes, is that this numerical difference is not the whole of difference, and that it is determinate difference which really matters (though not, of course, from the point of view of a merely formal, mathematical logic - which may be what Wittgenstein wanted to say).

and that this difference is not external - 'Socrates' and 'Plato', apart

from their properties, are mere abstractions.

There are a whole host of related issues which I could bring in here, but I will restrict myself to one: individuality. Historically, the treatment of identity given by particular philosophers has depended very much on their views on the principle of individuation. Locke, from whom Hume developed his views on identity, had claimed that things were individuated by their spatio-temporal location, while Leibniz, in his New Essays, insisted that there had to be a principle of distinction internal to the things. This was not so much a single property, as the thing's 'point of view' on the universe. In modern times, Russell and Strawson have continued this debate, Russell taking over from Leibniz, Strawson from Locke. What I think we learn from Hegel is that, while spatio-temporal location might play an important part in individuating things, it is not enough. True individuality is more than the possession of a unique number; to give everyone a number is to treat them all as identical, and precisely to deny their individuality.

Difference, however, is implicitly opposition. Here we are basically just repeating the argument from the <u>Differenzschrift</u>. 'A is B' has to be taken as 'A = non-A', or it becomes merely 'A = A'; but 'A = non-A' is, first and foremost, the equation of two opposed terms, 'A' and 'non-A'. This means that the determinations of A are not merely distinct from it, but actually opposed to it, though they are nevertheless united with it. This contradicts Fichte's second principle of human knowledge, that is is, the principle of opposition, 'not-A is not equal to A'. It is from this principle that Fichte derives the opposition of his 'I' and 'non-I'.

Now Hegel accuses Fichte of not getting any further than this opposition,

the opposition of subject and object, and therefore of not grasping the unity or identity of these opposites. Fichte can only reach a synthesis of these opposites, a mere external combination of the two; Hegel, on the other hand, begins with a consideration of identity, and shows how true identity presupposes difference and opposition.

Opposition has two sides, the positive and the negative. Now it is essential that the relation between these two concepts be taken in the correct sense. It is often supposed that the positive is what is objective, and the negative is the mere lack of a positive, and again that this lack exists only for the subject; when we say, to borrow an example from Sartre, that 'Peter is not here', this is conceived as the mere contradictory of the statement that 'Peter is here', the cancellation of that statement rather than a positive assertion in its own right; and Peter's absence is conceived as merely existing for one who expected to find his presence, so that the world as such is wholly positive. But in fact, Hegel argues, if the negative is merely subjective, then it cannot stand in relation to the positive at all; it simply is not. But the two do stand in relation, and are in and for themselves only in relation. Positive and negative as conceived above are only implicit positive and negative, the positive and negative as conceived above are only implicit positive and negative, the positive and negative of external reflection.

It is in this way, however, that the positive and the negative 46 appear in the Tractatus. P and ~P are contradictories. P is a proposition, and ~P is the mere negation of that proposition. Consequently, the two can say the same thing, that is, we can represent a particular situation either by a proposition or its negation. We can describe the situation of Peter's absence by saying either 'It is the case that Peter is not here', or 'It is not the case that Peter is not here', so long as the latter form of words is understood in the sense in which the former is comm-

only understood in modern English; and this, as Wittgenstein himself says, shows that nothing in reality corresponds to the negation-sign. This is true so far as it goes, but the correct conclusion here is not that negation or the negative is something merely formal and/or subjective, but that negation or the negative in the sense it is treated of in the Tractatus is not true or significant negation, but only its formal-logical shadow. True negation is contrary negation.

This argument also affects some more obviously metaphysical issues, for example, that of the opposition between good and evil. Russell, in his Mysticism and Logic, and elsewhere, accused Hegel of denying the rereality of evil. 47Now bearing in mind Hegel's views on opposition, it would be remarkable if he had done this. Opposition is truly polar opposition for him, and so one would expect him to say that there was no good without evil, nor evil without good. And in fact, this is just what he does say, a as the following extract from the Encyclopaedia logic shows:

If we regard evil as something fixed and self-subsistent, that is <u>not</u> the good, this is so far wholly correct, and (merely) the recognition of their opposition; the illusoriness and relativity of this opposition is not to be taken in the sense that good and evil are both one in the absolute, or, asiit has recently been expressed, that something first becomes evil through our considering it so. 48

Hegel does not just leave the matter there, however, and thereby leave him himself open to accusations of Manicheaism, but adds:

It is wrong, however, to regard evil as a fixed <u>positive</u>, since it is the negative, which has no subsistence of its own, but only wishes to be self-subsistent, and is in fact in itself only the absolute show of negativity. 49

In other words, evil does exist, but only in opposition to good. Consequently, it can never triumph completely. This is a matter of logic, not theology. Good and evil here are polar concepts. Hegel also thought there was a higher sense of the word 'good' in which it was not to be contrasted with evil, as we shall see later on.

This sort of argument in fact formed the basis of Hegel's criticism of pre-Kantian metaphysics. The pre-Kantians had taken pairs of opposed concepts and treated them as contradictories, so that, in accordance with the law of excluded middle, a thing ought to have either one or the other as its predicate. Thus, for example, it was assumed that the soul had to be either simple or composite, or that the world had to be either finite or infinite. The job of the philosopher was merely to argue for one or the other conclusion in either case. Hegel, I want to argue, rejected the interpretation of these concepts as contradictories, and therefore also the application of the law of excluded middle to the statements predicating either one or its opposite of the same subject. Thus he insisted that the soul was as much finite as infinite. At the same time, he spoke of this as the assertion of contradiction. In order to understand what he was getting at, we must once again go back to Kant.

Kant argued in the <u>Gritique of Pure Reason</u> that reason, when applied to the objective synthesis of appearances, soon entangles itself in contradictions. This is not merely the result of sophistical reasoning, but rather something quite necessary, a state into which reason "of itself and indeed unavoidably falls", if extended beyond the limits of experience. Pseudo-rational doctrines arise, which can neither be confirmed or refuted empirically, which are or appear to be contradictory, and yet are both supported by equally good grounds. Confronted by such contradictions, reason is inclined to fall into either scepticism or dogmatism, that is, to either rejecting the possibility of knowledge of the truth, or clinging to one doctrine despite the weight of the claims for the other. Kant, however, argues for what he sees as a third way, which effectively consists in arguing that the opposed theses are not mutually contradictory in a strict sense, and that it is therefore possible to reject both of them.

More precisely, Kant distinguished between analytical and dialectical opposition (which is not to be confused with contrary and contradictory opposition, which basically concerns propositions of the four traditional logical forms). The statements 'This body is good-smelling' and 'This body is not good-smelling' are in analytical opposition, because they are mutually contradictory. The statements 'This body has a smell that is good', and 'This body has a smell that is not good', on the other hand, are in dialectical opposition, because a third case is possible, namely, that the body has no smell at all. The fact that the body has a smell is a condition of the correct assertion of either of the two statements. If two judgements are analytically opposed, then, either the one or the other must be true (though this is only really to say that a statement must either be true or not true); but if two judgements are dialectically opposed, both may be false, i.e. if the condition of the assertion of either one does not apply.

It follows from this, according to Kant, that although one of the two statements 'The world is infinite in magnitude' and 'The world is not infinite in magnitude' must be true, and the other false, the statement 'The world is infinite in magnitude' and the statement 'The world is finite in magnitude' can both be false, that is, if the condition of their assertion does not apply; and this, he says, is the case. The assertion of either of the two statements presupposes that the world (i.e. the complete series of appearances) is given as a thing-in-itself, apart from the series of appearances; but it is not so given. One ought to not-ice here, however, that the sense of the phrase 'the condition under which either proposition can be asserted' has changed. In the examples given in the preceding paragraph, this only seemed to refer to the condition which has to obtain if either is to be true. But the fact that the world is not

given in itself does not affect the truth of either proposition.

What Kant seems to want to say is that the absence of the stated condition affects the meaningfulness of the assertion. The fact that the subject is not given in experience prevents the statement from saying anything about the world. Kant is here presupposing a positivistic theory of meaning, whereby the possibility of the empirical verification or refutation of a statement is a precondition of the ability of that statement to actually say anything. On this view, the opposed doctrines of the antinomies would not admit of being stated, and this is his solution to their conflicts. We can only make assertions about possible objects of experience, empirical particulars, and not about the world as a whole; or, more precisely, assertions about the world as a whole are strictly nonsensical, that is, they cannot be said either to be true or false. They are not mere gobbledygook, but from the scientific point of view they are not admissable, because they assert nothing about what is the case in the world.

This view clearly invites comparison with Wittgenstein's basic position in the Tractatus. Wittgenstein too tried to argue that all that could be said were propositions of natural science, and that would-be metaphysical statements included various signs in them which had no meaning attached to them. It was possible, therefore, to state how things were in the world, but not to say anything about the world as such. The attempt to conceive the world as a mystical whole was misguided, although the mystical experience of feeling the world to be a whole and the adoption of the attitude which regarded the world as a whole, were both to be valued. All questions had to have an answer, or they did not make sense; but some questions did not make sense, for example, those which asked something about the world as a whole. Russell and Popper have broadly similar views to Wittgenstein; the only legitimate field of inquiry is that of the natural

(and social) sciences, which aim at knowledge of the particular features of the world, the solution of specific problems.

This solution has its difficulties, however; difficulties which I for one take to be insuperable. The main one seems to me to be that we knowledge of how the world is, or knowledge of the particular determinations of the world, presupposes knowledge of the world, that is, acquaintance with it. We normally say that it is impossible to know <u>fa</u> unless we know <u>a</u>, that is, we cannot know that Theaetetus is handsome, unless we are familiar with Theaetetus. We might believe that this is the case, and be correct, but unless we know him, we cannot know the truth of the statement. In general terms, knowledge of the truth of descriptions always presupposes acquaintance with the thing itself. But statements about what is the case, or propositions of natural science, are descriptioned of the world. Consequently, either we are acquainted with the world as such, or we do not really know the truth or falsity of any descriptions of it. But this effectively means that we are back in a sceptical position.

The way is open, then, for Hegel to produce a genuine critical solution to the antinomies. He takes Kantas effects as his starting-point, agreeing with him about the necessity of reason falling into contradictions, but criticising him for saying that these contradictions do not attach to the world, but only to our reason. What he means is that Kant really ought to have said, not just that we are necessarily led to the assertion of conflicting propositions, but that both assertions are in fact true together; that is, that we must say, for example, that the world both is, and is not, limited in space and time. This conclusion appears startling, but it is of the utmost importance to grasp here that Hegel is not necessarily contradicting himself, even if he speaks of contradiction at this point, and even though the above certainly looks like a contradict-

ion. In order to understand why not, it is necessary to consider the natare of contradiction, that is, what is meant by the term in formal logic.

Strawson argues that contradicting oneself is "like writing something down and then erasing it, or putting a line through it. Contradiction cancels itself and leaves nothing". This is not correct to the extent that one who erases something he has just written does not thereby contradict himself; but it is true that one who contradicts himself or herself effectively cancels out something they have previously said, that is, they now actually deny what they previously meant to assert, though they might not be conscious of this. Now this means that one cannot expelain what contradiction is merely by reference to a sentence or sentences of a certain grammatical form. For I may say that it is the case that both A and not A, e.g. the sun is shining and not shining, without contradicting myself, so long as it is understood that I am not both asserting and denying the same fact, but rather asserting that, say, the sun is shining in Glasgow but not in London, or that it is shining, but that it is behind a cloud.

This is an important point. It is clear that it is contradictory to assert both that P and ~P, but it is not clear what actual statements have this form. The examples of contradictions in formal logic are presupposed to have this form. But we cannot advance from saying that 'P and ~P' is contradictory to saying that any particular sentence of Hegel's has this form. Popper's criticisms of Hegel in Conjectures and Refutations make this error. It is no doubt true that if two contradictory statements are admitted, any statements whatever must be admitted, but Popper has first to show that Hegel admits any contradictions in the formal-logical sense. He does say that we must "grasp and express contradiction", but then Kant says that reason necessarily falls into contradict—

ions, and that philosophy ought to make these conflicts explicit, and neither can possibly be talking about contradiction strictly so-called, since both speak of a resolution of the contradictions. We ought really to speak here of conflicts, or even paradoxes.

This usage of the term 'contradiction' is not peculiar to Kant and Hegel, moreover. Russell's contradictions are not contradictions in the formal-logical sense, although some contain contradictions in their formulation. They are paradoxes to which it is presumed that a solution can be found. The Liar paradox, for example, consists in the fact that it seems impossible to say of the statement 'I am lying', whether it is true or false; if we assume that it is true, then I am lying, and the statement is false; but if we assume that it is false, then I am telling the truth, and therefore I am lying. There is clearly something wrong here, and it is necessary to discover what. This is different from the case where someone merely asserts that, e.g. it is raining and it is not raining at the same spot, at the same time and in the same sense. There is no puzzle here: the person has simply attered a formal contradiction, that is, something quite false. This sort of contradiction does not have to be resolved, but only avoided, and it certainly does not constitute a necessary feature of scientific progress.

The simultaneous assertion of the thesis and antithesis of any of the antinomies is, then, a contradiction in this non-formal sense, not a formal contradiction; and in any case, when it is shown what is meant by this, it cases to count as a contradiction. The contradiction is dissolved by the explanation of the meaning of the statement. Thus Hegel says that the world is limited in space and time, insofar as a limit can always be set up, but unlimited, insofar as this limit can always be gone beyond, and indeed, must be able to be gone beyond, in order to serve as a

limit; we are not limited by a point beyond which there is nothing, but on only insofar as there is something which we cannot reach. The point here is that finitude and infinity are not separable determinations or concepts, not contradictories; this is the resolution of the contradiction, that which shows that there really was no contradiction at all. Finitude and infinity are merely aspects or moments of a single thought or concept.

The single concept here is the ground of the opposed determinations. In the case of the above example, it does not have a mame of its own, but if I had referred to the First Antinomy, I could have said that the continuous and the discrete were just aspects of the concept of quantity. Hegel thinks that the realisation that a pair of concepts, or, more strictly, representations, are moments of a more fundamental concept - the ground - is the positive result that comes from acknowledging that both determinations are equally valid. It is, in other words, the conclusion Kant ought to have reached, given his reasoning in the <u>Critique</u> that reason necessarily falls into contradictions, **Ctually, it is the Understanding that leads us into contradictions, which reason then resolves, by showing that the separation of the presentations concerned is only superficial, and really both presuppose one another. Since **Hegel did not agree with Kant that his antinomies were the only possible ones, the *Logic* is packed with examples of this.

It must be said, however, that Hegel himself rarely presents his arguments in the form of solutions to antinomies. This is because he thought this form superfluous, and even misleading. It made the problem appear to be one of assigning a predicate to an object, and if one sees it in these terms, then one is likely to ascribe the impossibility of assigning a single predicate to a defect in the subject, say, the finite nature of human cognition. Our attention is diverted from the consideration of

the predicates or concepts in question, which is what we really ought to be taking notice of, for it is the nature of these concepts that is preventing us from assigning one of the other to it. This cannot be done precisely because these concepts are inseparable, because they are only moments of a more fundamental concept, the concept proper, or ground. Hegel, consequently, considers the concepts themselves, and is the father of conceptual inquiry. I have not followed him, however, because I think his views are better grasped if presented in this form.

I think it is now possible to make some sense of some of the other strange things that Hegel says about contradiction in the Science of Logic. Contradiction enters into consideration here insofar as Hegel thinks that (polar) opposition contains contradiction, because the positive and the negative sides of it at once include, or contain, or presuppose one another, in the sense that it is only possible to speak of a positive in contrast to a negative, and exclude one another, in the sense that the positive is not the negative, and is in fact determined in opposition to it. Difference itself, Hegel believes, is implicitly contradiction (see page 134), insofar as it is "the unity (of two sides) which only are, insofar as they are not one", i.e. a unity in difference, "- and the separation of (two sides) which are only are only as separated in the same relation". The determination of the positive and the negative is a single act, moreover, insofar as by declaring something to be positive, we are at the same time declaring its opposite to be negative.

The contradiction into which the positive and negative have been brought is resolved, however. The immediate result of their interaction is that if we posit the one we are immediately led to the thought of the other, for example, if we think of complexity, we are immediately led to the thought of the simple elements of the complex; if we think of con-

that it is not possible to posit either in isolation, and to this extent it appears that the result of the contradiction is meraly negative, i.e. the annulling of both the positive and the negative concepts which have been brought into conflict. But in reality, it is only the self-subsistence of the two concepts which is shown to be a mere show, not the concepts themselves. They are simply shown to be aspects of a more fundamental concept, the ground-concept, as we saw previously. Thus the Kantian exercise of bringing them together does have a positive as well as a negative side, and to show this is really Hegel's main contribution to 'logic'.

I think it is also possible now to make some sense of some of the strange things Hegel says in his remarks on contradiction in the Science of Logic, beginning with his remark that "All things are contradictory in themselves" (Alle Dinge sind an sich selbst widersprechend). He me means by this that all things contain opposed determinations within themselves, are concrete unities of opposed concepts; that is, they are at once simple and composite, finite and infinite, discrete and continuous etc. It must be said, however, that he does not appear to want to extend this to what he calls 'sensuous determinations'; that is, he does not assert that a thing can be both black and white at the same time and in the same aspects. The contradictory nature of things also points to the being of the absolute, for Hegel, that is, it provides a proof of the existence of God; one does not infer this existence from the existence of finite things, but rather from the finitude of things, that is, the fact that they are transient, and therefore presuppose a ground.

Hegel also says that contradiction is "the root of all movement 60 and vitality", or "the principle of all self-movement", or "that which mo62 ves the world", and that it is only insofar as something contains contra-

diction within itself that it has <u>drive</u> (Trieb), is a living thing. What he seems to be saying here is that the 'contradiction' or conflict between what a thing actually is, and what it is potentially is the true source of all change in the world. The true cause of change is therefore internal, not external; change is dialectical. The use of the actuality-potentiality distinction here makes Hegel sound very Aristotelian; but then he does have a very prominent Aristotelian streak, and besides this, his remarks in the addition to paragraph 119 of the <u>Encyclopaedia</u> on acids and bases ("...the acid is not that which persists quietly in the opposition, but rather it strives therein to make itself what it is in itself (or implicitly)") invite this interpretation. Moreover, he specifically mentions Aristotle's treatment of life when dealing with the development and drives of the organism in the remark to paragraph 204 of the <u>Encyclopaedia</u>.

Perhaps the most puzzling of Hegel's remarks here, however, is that:

existence. Something moves, not because it is here in this Now and there

External, sensuous motion is itself (contradiction's) immediate

in another Now, but rather because it is, in one and the same Now, both here and not here, because in this Here, it at once is and is not. One must grant the ancient dialecticians they contradictions they pointed out in motion, but it does not follow that therefore there is no motion, but on the contrary, that motion is itself existent contradiction. This ought not by now to seem so shocking, even though Hegel leaves this remark as it is in the Science of Logic instead of providing the explanation necessary to remove the paradox. Hegel is effectively arguing against the Russellian view that "motion is a series of rests", or "nothing more than a correspondence between points and instants of time, the points and instants each forming an infinite set". Russell gave this view the rather paradoxical name of the 'static' theory of change, on the grounds that it basically denied the existence of a 'state' of motion or change. This idea was unacceptable, for him, precisely because it involved the acceptance

of the proposition that a body could be both present and not present at a single spot at a single instant, a proposition which Russell thought transgressed the law of non-contradiction. It has already been argued, however, that the mere form of words in a proposition is not enough to make it contradictory, so that the latter view is not necessarily inadmissable.

In fact, I think that Hegel is the defender of both the orthodox and the correct view here, Russell wrongly aligning himself, not surprisingly, with the forces of scepticism and radical empiricism (among which is included Ueberweg, who was such a great influence on the so-called English Hegelians). What Russell does is merely to reduce one concept to the other, but this will not do. It is true that at every moment of its flight, Zeno's arrow occupies some definite position; and that each successive position it occupies is different from the last: but this is not all we mean by its being in motion. If it is truly one identical thing in motion (and not just a succession of momentary existences in different positions), then it must also be moving at every instant (indeed, if it was not, this would make nonsense of the claims of the calculus to give 'speed at an instant'); that is, it must be actually in position A, but potentially in position B. And this. I think, is what Hegel wants to say.

Interestingly, the concept of a state of change or motion was defended in 1968 by G.H. von Wright, in his Eddington Memorial Lecture, 66 published under the title Time, Change and Contradiction. Von Wright observed that if a change is continuous, it will pass through a phase when the world is in both of two mutually contradictory states. He opposes this to Kant's view that time is a precondition of change, because no other concept can render comprehensible the possibility of the combination of two contradictorily opposed predicates in a single object. Von

Wright even goes so far as to call this phase or state a 'real contradiction', or a 'contradiction in nature', though he is careful to deny that he wants in his paper to assert that there are contradictions in nature; and he seems to think that his paper establishes a link between what he calls 'the great tradition' in logic - 'from Aristotle to Frege and Russ-lell and modern mathematical and symbolic logic' - and 'Hegelian logic', though again he is careful to stress that nevertheless he regards the latter as being of little value, 'qua logic'.

It seems to me, however, that von Wright is a poor ally for Hegel as well as a reluctant one. He really seems prepared to allow formal contradictions to enter into modal logic as truths. This is quite preposterous. The admission of contradictions in any formal logic can only be destructive of that logic. Curiously, Hegel's views on motion and contradiction have been interpreted in the same way as von Wright's were meant, namely, by Ueberweg in his System of Logic. The latter declares that Hegel asserts that "every moment of passing over from the one circumstance into the other (e.g. the beginning of day) unites in itself predicates which are opposed as contradictories to one another", and that "these contradictory judgements are both true in reference to the same moment", and counters this suggestion by arguing in the Russellian manner that "The semblance of contradiction results from the indefiniteness of sense, and disappears as soon as every individual expression is referred to distinct notions".

Hegel's treatment of contradiction has been regarded (by Mill and Popper, for example) as evidence of the illogical nature of his thought; on the contrary, however, I believe it reveals its maturity and rationality. It is the immature, narrow-minded and dogmatic person who insists on a simple 'yes' or a 'no' to every question, and looks on anything

else as prevarication; anyone who has ever seriously reflected on an issue knows that thought refuses to travel along such straight lines. The two alternatives are often both inadequate by themselves; they are too abstract, and leave too much unsaid. A philosopher, if he is worth his salt, will always try to give both sides of the argument their due; and this is never more true than in the case of Hegel, whose philosophy is distinguishable bainly by the impossibility of fitting it into conventional philesophical categories, and is therefore supremely critical. Indeed, his philosophy might be summed up in a single phrase from the Encyclopaedia, namely, that "There is in fact nowhere, neither in heaven nor on earth, neither in the world of spirit nor the world of nature, such an abstract either-or as the understanding maintains". Indeed, this might be the maxim of the philosopher and the man of the world alike.

(c) Ground (das Grund)

Essence, therefore, now has the form of the ground of the opposed determinations just mentioned. Every concrete thing, every subject, every concept is such a ground, which supports opposed determinations. As such, it is that which transcends all determination, or is the transcending of every particular determination (and is therefore true identity). Insofar as the ground only reveals itself through the transcending of a particular immediate determination, it may be said to be conditioned by that determination; it is, at the same time, however, the condition of that determination, and therefore not merely conditioned by it, but raself-determining and ultimately unconditioned, as a negating activity. Ground is real mediation as opposed to the pure mediation of reflection; that is, in the ground-relation there are actually two distinct determin-

ations rather than just the abstraction of relation as such. Ground also goes beyond the mere reflection of essence, by negating it and thus establishing itself as such.

As one might expect, Hegel includes a remark at this point on the expression of the concept of ground in the form of a proposition, that is, in the form of the principle of sufficient reason. Hegel takes this principle, which he formulates as "Everything has its sufficient ground (Alles hat seinen zureichenden Grund)", to mean that what is, is not to be taken merely as an immediate existent, but rather as something posited (als Gesetztes), that is, as a result, as something which has proceeded from a ground. This reflection reveals the essence of a thing, the thing in and for itself. The qualification that the ground or reason is 'sufficient' is, he insists, superfluous, because if it was not sufficient, it could not account for the thing, and therefore could not be its ground. Thus the instinct of self-preservation must be regarded as sufficient grounds for a soldier's desertion from the ranks, insofar as it actually explains that desertion, although it is not a sufficient ground in the sense of a justification of the action.

Leibniz, Hegel argues, understood the principle of sufficient reason in a much more profound sense than is usually done, since he contrasted sufficient grounds with causes 'in the strict sense', by which Hegel means mechanical causes. Since mechanical operations are strictly external to the nature of things, the objects connected by such operations are only externally and contingently connected. Or rather, the determinations of the parts of a thing are conceived through their causes, but 'their relation is not (see my chapter on teleology). This relation, the unity of the determinations, lies in the concept or end of the thing. It cannot be comprehended by mechanical causation because this only concerns

external combination and not true unity. Leibniz's sufficient ground was this concept or end, or final cause. But here we are merely concerned with the bare notion of ground, as expressed in the proposition that everything has a ground, mechanical or otherwise.

Ground is first of all conceived of as an absolute ground. This has two sides to it, namely, the ground as such, and the grounded, the indeterminate essence which is not the result, and the immediate which is re result. The passages on absolute ground basically run through three (Aristotelian) ways of conceiving of the relation between the two. Firstly, Hegel conceives of them as essence and form. Essence is here considered as a substratum (Substrat) which has a form and various determinations of that form. Every determination of form is, as something posited or determined, distinct from that of which it is the form-determination; but form is nonetheless not to be considered as something entirely separate from essence, for then it would only be an external, inessential form rather than the form of essence. External reflection in fact conceives of the relation between form and essence in just this way, but the truth is that the two are only moments of the same relation, that is, the form-relation.

Insofar as essence is regarded as something indeterminate or formless, however, it is, more precisely, matter. Matter in this sense is sheer abstraction. It is not present to the senses, for it is only the unity of matter and form that is present to the senses. Form presupposes matter, but this is not to be taken as if matter pre-exists form, that it can subsist independently of it. Matter must be formed, and form must materialise itself. Of course, one could speak of the block of stone that a sculptor begins with as 'formless' in a relative sense, i.e. in the sense that he has yet to form it into the shape he wants, but even this relatively formless matter has to have some form, that is, it has to be mar-

ble, sandstone, or some other kind of atone. Hegel is, of course, returning here to the Aristotelian coneeption of the distinction between form and matter, for Aristotle argued in his <u>Metaphysics</u> that only the compound of form and matter comes into being (that is, the unity of form and matter is no mere compound, since the two never exist independently).

Formed matter, however, which is indifferent to form and matter in the above senses, is content. Content is indifferent to form and matter insofar as these are only external to it. It does not affect the content of a book, for example, whether it is handwritten or printed, bound in paper or in leather. There is another sense of the term 'cone tent', however, in which form, far from being external to content, is ide entical with it. In art, for example, the content of a work like the Iliad may be said to be the story it tells about the Trojan war; in which case its poetic form is external to it. But in truth, it is just this form we are interested in, this is what makes it the Iliad, this is its true content. Indeed, it is only to the extent that the true content of a work of art is its form, that it counts as a true work of art. If the form appears as something quite independent of the content, as would be the case if, say, a parliamentary speech was delivered in rhyme, this would be no work of art.

It is important to grasp what Hegel says about form and content, because it is essential to an understanding of his conception of logic, as indicated earlier. Previous conceptions of logic, as he explains in his introduction to the Science of Logic, have rested on the separation of the content of knowledge and its form. It is assumed that logic abstracts from all content, and provides only the formal conditions of true cognition, which derives its material from experience. This is how Kant sees it in the Critique of Pure Reason. This assumption, Hegel argues, has

sceptical consequences, at least insofar as experience is distinguished from reality. It means that all certain knowledge is trivial, and all non-trivial knowledge, uncertain. Fortunately, we do not have to make this assumption. It depends on the equation of the term 'content' with the material of sense-experience, and this is not an equation it is necessary to make, as was seen above. The content of knowledge need not be equated with the data of experience.

This point is as important today as it was when Hegel first . made it; perhaps more so. It is a fundamental criticism of the basic assumption, not only of the logical positivists, but also of Russell and Wittgenstein of the Tractatus, and indeed, practically everyone who has been involved in philosophy in the twentieth century, that logic (or philosophy) concerns only the form and not the content of knowledge (or language, or the world; it seems to me that, for Wittgenstein at least, these all add up to the same thing). In contrast to this view, Hegel claims that it concerns (pure) thoughts or universals, and that these constitute not only the form, but also the true content of knowledge, the latter being essentially self-knowledge, or knowledge of the form(s) of thought and scientific method as such. This ought not to be confused with Russell's view, expressed in his book The Problems of Philosophy, that all a priori knowledge consists of relations between universals. Russell's universals was only an abstract idea (although he does come close to the Hegelian conception at some points, as indicated earlier).

I do not pretend to know how Hegel makes the transition from this section to the subsequent section on Determinate Ground, but I think it is easy enough to figure out what he has to say in this section. Basically, he is talking about the assignment of grounds in general; and he disdistinguishes three sorts of ground, or ways of assigning a ground: formal

grounds, real grounds, and complete grounds. These would appear to be expressible respectively in analytic, synthetic, and analytico-synthetic propositions. The first, formal ground, involves the consideration of the same determinate content from two different sides, that is, first as growing, and then as grounded. There is nothing in the ground that is not in the grounded, and therefore the ground is in this event formally sufficient; whatsoever follows from it, follows from it purely in accordance with the rules of deductive logic. The mediation here is therefore purely formal; it just gives the same content in two different ways.

Although the assignment of a ground which is formally sufficient is in itself a triviality, Hegel insists that the science of his day often expressed such tautologies in a disguised form. Newtonian physics in particular was full of texplanations' like this. It was said, for example, that the planets moved around the sun because of the attractive force of the sun. In terms of content, however, Hegel argues, "this expresses no more than what is contained in the phenomenon, namely, the relation of the these bodies to one another in their movement, only in the form of a determination reflected into itself, of force; if it is then asked what sort of a force the attractive force is, the answer is that it is the force which makes the planets go round the sun". Similarly, a crystalline form is said to be shaped thus because of the arrangement of its molecules; but equally, it is only said that the molecules are so arranged because of the shape of the crystalline form.

Hegel's point here is not that scientific terms like 'force' and 'molecule' are vacuous and ought to be eliminated from scientific discourse, but only that explanations in terms of forces and molecular structures are phoney explanations, and are really no more than descriptions or general expressions of phenomena, such being all that science really pro-

vides. Hegel's first example here is a good one, because (as we saw in the last chapter) Einstein has shown that it is possible to reformulate the laws of planetary motion in such a way that force as an occult quality is eliminated. Einstein's own account, in terms of the geodesics of spacetime, is more obviously a description or generalisation from phenomena, as was Kepler's original account, which Hegel preferred and championed in opposition to the Newtonian one. Interestingly, Hegel's criticism's of Newton were condemned by Whewell as "ignorant, presumptuous, and illogicated, to an extent to which no injustice is done by calling them childish".

Hegel goes on to describe the interaction between what he calls reflective determinations such as force, and phenomena. On the one hand, the former are regarded as the ground of the phenomena; on the other hand, these forces, etc., are abstracted from the phenomena. The ground is therefore just as much a result (that is, there is an identity of form here as well as an identity of content). It cannot be said, however, that knowledge as such advances one step through this interaction (die Erkenntnis ist hierdurch nicht vom Fleck gekommen), and the principles and primary concepts which one accepts as fundamental when one begins science are only presuppositions rather than absolute certainties. Moreover, uncertainty is increased if the method is not applied consistently, and phenomena which the principles cannot account for are recognised as anomalies rather than merely being dismissed as illusory. This honesty, although Hegel does not say so here, is the stuff scientific revolutions are made of.

Confusion reigns still further if the reflective determinate ions, scientific constructs or models, are not carefully distinguished from the determinations of the phenomenon itself, but are treated as material existences. It is easy to get the impression, Hegel argues, that such abstractions and hypothetical entities as "molecules, empty intersti-

ces, centrifugal force, the ether, the single, separate ray of light, electrical and magnetic matter, and a host of other such things which are spoken of as if they had an immediate existence, are things or relations actually present in perception. That, in fact, was quite prepared to assert the material existence of such things, despite the fact that they could not be perceived. He reasoned that their existence could be deduced in accordance with the general laws of experience, by which I suppose he meant the principle that every physical event must, at least in principle, be able to be assigned a material cause. These entities, whose existence could be deduced from this principle, were distinguished from things-in-themselves insofar as the former could be perceived, if only our sense-organs were more "refined", while the latter denoted beings insofar as they were not (and presumably never could be) objects of perception.

The most powerful microscopes, however, have as yet failed to confirm the existence of any of these entities. Nevertheless, this Kantian line persists. Kline, for example, despite recognizing that the physical accounts of electro-magnetic phenomena are really no more than hypotheses - he goes so far as to say that "The weirdest ghosts ever conceived are no less realisable and no less tangible than the physical accounts concocted for electro-magnetic phenomena" still appears to believe in an undetected physical agent existing behind-the-scenes. This way of thinking, moreover, has been given a new philosophical justification this century by Russell, who argued in On Denoting that it is possible to know that a thing exists, and that it has certain properties, without being acquainted with the thing itself. In that paper he only applies this idea to material particles and other minds, but in the ABC of Relativity he extends it to light-waves, and there is no reason why it should not apply to any of the examples mentioned above.

It is important, then, to note Hegel's statement that the view that, despite the important role concepts like force play in scientific 'explanation', we do not know the essence of these forces themselves, "amounts to a confession that this assigning of grounds is completely inade—

go quate; that something quite different from such grounds is required". It implies that what is required is that the content of the ground be some—

thing different from the content of the phenomenon whose ground it is.

This is an important point because it is often thought that a ground which is not formally sufficient is somehow deficient as a ground. It is thought that in our grounding we strive toward sufficiency; but in fact, if we actually attain this, what we say is quite trivial and of no explanatory value. The statement of the grounded is already involved in the statement of the ground. Consequently, sufficiency is not a goal which we ought to pursue in our explanations. Every ground is already sufficient in the most important sense, as was seen above.

It is true, however, that with this diversity of content comes the contingency of the connection between ground and grounded. On the one hand, that which is considered as ground might also be the ground of other consequences; for example, gravity is the ground of a house standing, but also of a stone falling. On the other hand, the same consequence might proceed from different grounds; for example, my presence in London might be due to a desire to visit my mother, or to attend a philosophy conference, or simply to see the sights. The connection between ground and grounded is only established in the particular case, it is not a necessary connection (Hegel is putting forward a typically Humean point of view at this point). In fact, there can be no end to the assigning of grounds, since every phenomenon presents innumerable aspects, each of which can be regarded as the ground. Consequently, while we try to comprehend an object

in this manner, our comprehension will always be incomplete. This is not a weakness due to the finite nature of our minds, but rather a shortcoming of this method of comprehension.

Both formal and real ground prove themselves to be inadequate therefore. This, Hegel seems to think, is because they are only abstractions from the complete ground, or concept. This contains the completeness of formal ground along with the diversity of content present in real ground. It is the grasping of the phenomenon, not as proceeding from another phenomenon, but as dependent on the whole, of which it is just one aspect. The whole is the ground of these phenomena, insofar as they are implicit in it, and it is realised in them. The whole is a simple concept, but it has within itself this diverse content, which it externalises. This universal aspect is therefore the true foundation of the phenomena and our knowledge of the phenomena. It is actually something we are acquainted with prior to knowing the phenomena. It must be stressed, however, that this acquaintance is not fully articulable knowledge, but rather only a a vague pre-cognitive intuition of the whole. This becames articulated more and more precisely in the course of inquiry.

The final part of the section on the concept of ground concerns the notion of condition. It has already been seen that something is only the ground of something else in certain conditions. Hegel goes on to argue here that these conditions are not entirely separate from the thing but in fact go to constitute it. It is a condition of my being able to shoot Jones that I have a gun, that it is loaded, that I know how to use it, etc.; but these things are therefore not external to the fact, but altogether part of it. They are, Recel says, "the whole content of the fact"; "When all the conditions of a fact are present, it enters into existence", he continues. This is a conceptual truth, of course, insofar as

he has already identified the totality of the conditions of the fact (or thing) with the existence of that fact. Nevertheless, it does not appear here as a triviality, for this truth does not appear to have been universally recognised. I would argue that Hume, for one, refuses to acknowledge it, rigidly separating the conditions of a fact and the fact itself.

The usual approach to the notion of condition is to pick out several conditions of a thing, and say that, although they obtain, the fact still might not enter into existence. And it is indeed true that we cannot say beforenand that we have all the conditions of a thing, and that therefore it must come to pass. Nevertheless, the fact emerges from the complete set of its conditions, and it is possible to say on reflection that it followed necessarily, given all of those conditions. Of course, we can say that things might have been different, that, for example, it was not a foregone conclusion that I was going to go out today; for I could have decided to stay at home. But given that I did decide to go out, and nothing happened to stop me from doing so or change my mind, it was necessary that I went out. If we want to deny the necessity of a fact prior to its occurence, this is easy, because for all weeknow one of its conditions might be absent; but once it has happened, to say that it might not have happened is only to abstract from the conditions which necessitated it.

Notes and References

```
1. Werke 6, p.13; Miller, p.389
2. Ibid.; ibid.
3. Enc. section 112 (Add.)
4. Werke 6, p.13; Miller, p.389
5. See Prior Analytics, 67a 22f; Posterior Analytics, 7la 7
6. Meno 81f.
7. The 'art of midwifery' mentioned in the Theaetetus (149-151e) and all-
uded to by Aristotle in the Metaphysics (1078b, 17-33), when he says that
Secrates is the founder of the method of induction (epagoge).
3. Philosophical Investigations, sec. 89
9: Conjectures and Refutations, Introduction, sections VII-VIII. Popper
in fact gives a far better account of the connection; between remembrance
and discovery in various philosophies than I could possibly hope too here;
his essay also traces other connections which I am unable to explore in
my thesis, but which the reader will find excellent background for an un-
derstanding of Hegel, especially if taken with chapter Il of his Open So-
ciety.
10. Werke 6, p.13; Miller, p.389
11. Ibid., p.14; ibid., p.389-390
12. Ibid., p.16; ibid., p.391
13. Ibid., p.18; ibid., p.394
14. Critique of Pure Reason
15. Werke 6, p.20; Miller, p.396
16. Ibid.; ibid.
17. Ibid.; ibid.
18. Ibid., p.30; ibid., p.404
19. Ibid., p.499-500; ibid., p.784-785
20. Ibid., p.35; ibid., p.409
21. Critique of Pure Reason, A260/B316
22. Werke 6, p.36; Miller, p.409
23. Ibid., p.40; ibid., p.412
24. A Treatise of Human Nature. (ED. Selby-Bigge; Oxford 1968), Bk.I; Pt.IV,
section VI; p.254
25. Ibid., p.252
26. Werke 6, p.39; Miller, p.412
27. Critique of Pure Reason, A263-264/B319-320
28. Werke 6, p.41; Miller, p.413
29. Ibid., p.43; ibid., p.414
30. The Difference between Fichte's and Schelling's System of Philosophy,
tmansl. H. S. Harris and Walter Cerf (State University of New York Press;
Albany 1977), referred to from hereon as the Differenzschrift; p.105
31. Ibid., p.108
32. Enc. section 117 (Add.)
33. Ibid.
34. Philosophical Writings, p.180
35. Werke 6, p.53; Miller, p.422
36. Enc. section 117 (Add.)
37. Philosophical Writings, p.88
38. <u>Tractatus</u>, 2.0233-2.02331
39. New Essays on Human Understanding, transl. Remnant and Bennett (Cam-
bridge University Press 1981), p.230f.
40. Tractatus, 5.5302
41. Essat, Bk.II. Ch.XXVII, sec.3.
```

```
42. New Essays, p.230f
 43. Science of Knowledge, p.102 (I, 101)
 44. Being and Nothingness, transl. Barnes (Methuen 1976), p.9-11
 45. Werke 6, p.71; Miller, p.436
 46. Tractatus, 4.0621-4.0623
 47. Mysticism and Logic (Allen and Unwin 1959), p.10-11
 48. Enc. section 35 (Add.)
 49. Ibid.
 50. Critique of Pure Reason, A407/B433
 51. Ibid., A407/B434
 52. Ibid., A502-508/B530-536
 53. Tractatus, 6.53
 54. P. F. Strawson, Introduction to Logical Theory (Methuen 1964), p.3
 55. Conjectures and Hefutations, p.316-322
 56. Werke 6, p.78; Miller, p.441
 57. Critique of Pure Reason, A152/B191
 58. Werke 6, p.65; Miller, p.431
 59. Ibid., p.74; ibid., p.439
 60. Ibid., p.75; ibid.
 61. Ibid., p.76; ibid., p.440
 62. Enc. 119 (Add.)
 63. Werke 6, p.76; Miller, p.440
64. As Kline puts it (p.453).
 65. Tibid.
 66. Von Wright, Time, Change and Contradiction (Cambridge University Press
 1969), p.30
 67. Ibid.,
 68. Ueberweg, System of Logic, transl. T. M. Lindsay, (Longmans 1871).
 69. Ibid., p.242
 70. Enc. section 119 (Add.)
 71. Metaphysics, Bk.Z, Ch.VIII.
 72. Problems of Philosophy, p.59
 73. Werke 6, p.98; Miller, p. 458
 74. Quoted by I. Todhunter in his book William Whewell D.D., An Account of
 his Writings (Vol. I); (Macmillan 1876)
 75. Werke 6, p.101; Miller, p.460
 76. Critique of Pure Reason, A226/B273-274
 77. Kline, p.359
 78. Logoc and Knowledge, p.56
 79. ABC of Relativity, p.136
 80. Werke 6, p.102; Miller, p.461
 81. Ibid., p.119; ibid., p.475
```

82. Ibid., p.122; Miller, p.477

Chapter Five: Appearance

One doctrine of Hegel's that especially sets him apart from his modern predecessors is the doctrine that essence must appear. Descartes inherited a bastardised form of Platonic-cum-Aristotelean essentialism from the Schobastics, which separated the sensuous appearances of the thing from its essence, which was only perceivable by intellectual intuition. This separation was retained by the British Empiricists, to the extent that, altocke argued that the Cartesian essence was only a nominal essence, he also posited a real essence of things, which was, however, unknowable; and this way of thinking reached its logical conclusion in Kant's distinction between the world of phenomena (which we can know) and the world of noumena (which we cannot know). There are not really two worlds here, of course; only one world, which is known insofar as it appears, and unknown insofar as of does not; but there is nevertheless a rigid distinction between appearance and essence which Hegel, tries in this section of the Logic especially to break down.

The doctrine that essence appears is not to be confused with so-called Aristotelean essentialism, as described and criticised by Popper, which is precisely the doctrine inherited by Descartes (though not from Aristotle) and criticised by Locke. Hegel did not think that the essences of things were known through intellectual intuition; like Locke, he thought that Cartesian essences were just abstract ideas or nominal essences, while the real essence of a thing was its 'inner constitution', though unlike Locke, he thought this was discoverable, precisely because essence appears, that is, because the real essence of a thing is manifested in immediate experience; not in the sense that the whole essence of the thing is given in a single experience of it, and every experience of it,

but at least in the sense that every appearance revealed the essence from one point of view, and that no aspect of it could remain hidden. Of course, we could never say that we have witnessed all the appearances of the thing, but neither could we say a priori that any of the essence could not be known.

Kant's most refined version of his distinction between phenomena and noumena. In the <u>Critique of Pure Reason</u>, Kant insists that the noumenon is a limitative concept, describing a thing insofar as it is not an object of sensuous intuition, rather than an object of a non-sensible intuition. This sounds like Hegel's view, insofar as Kant is saying that we really do experience the thing itself, but there is still an important distinction to be made here. For Kant is still committed to saying that some part of the object does not appear, and is unknowable, whereas in Hegel's view, the emtirety of the thing appears, and is knowable. It is therefore impossible for Hegel to speak, as Kant often does, of men only being able to know the world as it appears to them, as if they are therefore restricted in some way. For Hegel, there is nothing which does not appear, and therefore no a priori limitations on knowledge, no intellectual curtain behind which we cannot take a peek.

(a) Existence (<u>Die Existenz</u>)

Essence, insofar as smerges into the realm of immediate experience, is firstly existence. The existent is that which has emerged from its ground and conditions into immediate experience; yet as much as it has proceeded from its ground, and now exists, it becomes the ground or condition of emether existent. The existent is what is normally called a thing

(ein Ding). The thing as it is in itself, or as such, is to be distinguished from the external existence of the thing. The various features which the thing possesses when brought into relation with the subject, its colour, smell etc., constitute its external existence. Each of these features is a property of the thing. The thing has the property of effecting another thing in a certain way; but only a specific sort of thing affects another; in a certain way, and so the properties of a thing are not wholly extrinsic to it, they are not just the perceptions of the subject. They are determinations of the thing as such, through which it enters into relation with other things.

There are two points to notice here: firstly, Hegel does the opposite of what Russell often accuses him of doing, i.e. arguing that relations are really intrinsic properties. Hegel says here that the intrinsic properties of a thing are relations, dispositions to affect certain other things in certain other ways, and under certain conditions. This means that even if Russell is correct in saying that the acceptance of the 'axiom of internal relations' leads to monism, Hegel does not have to be a monist (indeed, with his views on the one and the many, he could not be). Once again, therefore, Hegel sets himself apart from the English Hegelians, from Bradley and Joachim, and turns out to be much closer to Russell himself than the latter suspected; though he is not in full agreement with Russell here either, since Russell thought relations were wholly external; this would effectively mean that there is a thing-in-itself which exists apart from all relation to other things, and such a thing, for Hegel, is nothing but an empty abstraction.

Secondly, the thing-in-itself, insofar as it is separated from its properties, is something merely abstract and indeterminate. It is true that we can know nothing of it, as Kant says, but only because it is such

an empty abstraction. The thing-in-itself is therefore not to be separated from its properties, and therefore from its relations to other things (c.f. being-in-self and being-for-another); it is the ground of its properties, and realises itself in them. The thing is, in other words, only in its properties. Those who are still not convinced that Hegel is not an idealist in the usual sense should take notice of his remarks on the thing-in-itself, where he argues that the various ways in which I perceive the world cannot be due solely to the subject, because the subject recognises that it is free, and those determinations are external to it and belong only to things; that is, if something appears green to me when it is in fact black, and the difference is due to my state, rather than, say, my objective standpoint, then I am being determined by the external world, whereas, if I see it as other observers see it, or as the camera would record it, I am not determined (or at least, not restricted).

This is a point which Russell himself makes in the discussion of the importance of the observer in relativity physics; he argues that relativity physics, far from making the observer very significant, in fact does away with all relativity to a subject, and is a triumph of objectivity (c.f. my chapter eight, p.261). There is nothing wrong with two observers at different standpoints who perceive the order of two events differently; though there is something wrong with a subject who does not per-y ceive what others would perceive at the same standpoint. There is something wrong physiologically or psychologically, and if this is the case, then he or she is at the mercy of what Hegel would regard as mechanico-chemical influences (he interprets both terms very widely). Subjective idealism, then, deals only with the subject which is objectively determined in the strongest sense. Omly if the subject perceives properties as they really are in the object is it self-determined.

Things are distinguished, then, through their properties, that is to say, through their reciprocal relations with other things. It is interesting to note Hegel's precise words here:

If, therefore, one is speaking of a thing or things in general, without any determinate property, then their difference is merely indifferent, quantitative. What is considered as one thing can just as well be made into many things, or considered as many things. It is an external separation or combination. — A book is a thing, and each of its leaves is also a thing, and equally each bit of its leaves, and so on to infinity. The determinateness through which a thing is only this thing, lies solely in its properties.

This oight to be familiar; it is remarkably close to the passage I quuted from the <u>Tractatus</u> in my previous chapter, which I will repeat for the sake of clarity:

If two objects have the same logical form, the only distinction between them, apart from their external properties, is that they are different (i.e. numerically different - P.J.).

Either a thing has properties that nothing else has, in which case we can immediately use a description to distinguish it from the others and refer to it; or, on the other hand, there are several things that have the whole set of their properties in common, in which case it is quite impossible to indicate one of them.

For if there is nothing to distinguish a thing, I cannot distinguish it, since otherwise it would be distinguished after all. 7

Hegel adds to this the reason why numerical difference is no difference at all, i.e. because what is one is also many, so that when we say 'There are two things in this room', we might just as easily say 'There are a million things in this room'; it all depends what counts as a thing. This is why Wittgenstein insisted that we cannot say how many things there are in the world. 'Thing' is what Wittgenstein called a 'formal concept', i.e. one which belongs solely, to the form of representation rather than its content. It is therefore signified by the propositional variable 'x'; I take this to be the same as saying that the thing-in-itself is an 'empty, indeterminate ground'.

Since it is by their properties that things are distinguished and related, and since the thing, apart from its properties, is a mere abstract ground, it is the properties of things which really count as the

self-subsistent element here, moreover, things being mere moments of the relations into which they enter. Far from properties being merely external determinations of things, then, things are rather external forms of properties (says Hegel). Properties considered as self-subsistent are what the chemists and physicists of Hegel's day called 'matters'. There was luminous matter (Lichtstoff), colouring matter (Färbestoff), odorific matter (Riechstoff), heat matter or caloric (Wärmestoff), electrical and magnetic matter. Things were supposed to consist of such matters, but Hegel is at pains to point out (not here, admittedly, but elsewhere, particularly in his lectures) that the dissolution of the thing does not produce them as separate material entities, and consequently, they are not to be regarded as such; they are only abstractions from the properties of material things. This view separates Hegel from Kant (see previous chapter, p.161) and the majority of the natural scientists of the day, all of whom credited these matters with a distinct material existence.

thing out of matters, nowever, and goes on to say that the thing is an external combination of such, and that the difference of one thing from another can therefore be said to depend on the quantitative relation of the various matters present in it. I really do not think he is entitled to say this, bearing in mind what he says about these matters elsewhere; it is hard to see how mere abstractions can be present in a thing in a certain number, though perhaps it is possible to cash this statement in other terms, for example, by saying that talk of the number of matters in a thing is only another way of representing the degree of heat or light, say, which is present in it. This account does not work so well for colouring matter, or odorific matter, however, since it is not the degree of colour so much as its quality that abstractions or hypothetical entities such as

colouring matter are meant to explain. The odd thing is that Hegel seems aware of these problems, elsewhere, but not here.

Hegel is aware, however, of one conflict or contradiction here. That is, that "where one of the matters is, the other also is, in one and the same point; the thing does not have its colour in one place, its odor-ific matter in another, its heat matter in a third, and so on, but in the point in which it is warm, it is also coloured, sour, electric, and so on. This paradox cannot be resolved by assuming that the matters have tiny pores in which the parts of the other matters exist, this merely puts the problem out of mind. Moreover, this theory contains a contradiction in itself, since it attributes a material (and therefore a sensible) existence to bits of matter which are supposed to be so small as to be imperceptible. The existence of two different matters in the same place at the same time is illustrated even more sharply by the fact that two gases will not exclude one another, but diffuse themselves in such a way that the one is as good as a vacuum for the other; this is contradictory, says Hegel — but the thing is this contradiction, and therefore is really appearance.

The idea of the soul as a thing consisting of several forces or faculties (Seelenkräfte, Seelenvermögen), each acting independently of one another, is, according to Hegel, the equivalent in the realm of the mind to the idea of the constitution of the thing out of matters. Forces, and especially psychological forces, are of course different from matters, but they are equally separable, and therefore, for the purposes of the argument here, equivalent. However, Hegel argues, the soul is not a thing, and does not consist of independent forces or faculties, and therefore unlike the thing, it is not contradictory, and cannot be regarded as appearance. The soul is spirit, which is a higher conception than thinghood, and its various activities are its particular aspects, not separate pow-

ers; remembrance presupposes sense and imagination, reason presupposes remembrance, etc. Note that, as Russell once noted, Hegel does not go in for the psychological myth which Ryle christened "the Official Doctrine"; this separates him further from the Cartesian tradition.

(b) Appearance

Appearance is not immediate existence, but <u>reflected</u> or essential existence; this seems to mean that it is not what lies immediately before us as such, but that shown to be no more than an aspect or passing-stage. The self-subsistence of the existent is itself only a moment of it, a stage of its existence which is transcended. Each existent is in fact as little self-subsistent as the next, since each presupposes another as its ground. It is in this sense - that is, in the sense that the existent is only relatively self-subsistent - that it can be said that it is only appearance. Appearance is nevertheless the appearance of essence, however, and so appearance is this sense cannot be compared with immediate existence so that the former is declared to be 'only appearance'; it is not the same as <u>illusion</u>. It is possible, however, to distinguish between essential and inessential appearance, and also to bring these two sides into relation with one another, so that the espential element in the flux of appearance takes the form of the law of the appearances.

Law is the essential element in the realm of appearance in the sensenthat it is what is permanent in appearance. The content of law is the same as the essential content of appearance, but appearance as such contains much more besides, i.e. the unessential content which falls outside the law and belongs only to immediate existence, the element of contingency which Hegel thinks must be acknowledged as really present and un-

unable to be eliminated. The essential content, or law, is the foundation (Grundlage) of the appearances, and as such it is not something which lies beyond them, but rather something which is present in them. It is the stable image (ruhiges Abbild) of the phenomenal world, and lacks only its restlessness. However, because of this, the correction of the 'content-determinations' present in a law (e.g., in the law of descent of a falling body, spatial and temporal magnitudes) is only generalised from experience, and still needs to be proven, that is, deduced in the course of the philosophical system.

The distinction between law and appearance is not merely a distinction, however, but implicitly an opposition between a realm of laws and a world of appearance. The indefinite number of laws of appearance come together to form a totality which constitutes a world which is in and for itself (eine an und für sich seiende Welt) over and above the world of appearance. This world which is in and for itself contains appearance as a moment of itself, so that it is only within itself that the contrast between it and appearance can really be made, that is, only from the point of view of law-governed experience can a distinction be made between that and contingency; the element of contingency does not appear as lawless except in contrast to that which is governed by law. This world can also be called the supersensuous world, in contrast to the world considered in abstraction from its system of laws, which can be called the sensuous world, or the totality of sensuous particulars. Things as things, forces, laws etc., are supersensible.

What must be noticed here is that for degel there are not really two worlds, so much as one world, which appears in two different forms; firstly, in its essential form, as a world in and for itself, and secondly, in its inessential form, as a world of appearance. Nevertheless, the world

as it appears is still apposed to the world as it is in and for itself, and therefore - says degel - the cos is simply the inversion of the other, so that what is positive in the one is negative in the other. For example, the North pole of a magnet is really or in and for itself the South pole, positive electricity is really negative, a misfortune really a bit of good luck. Now clearly what Hegel is trying to say here is related in some way to what he says in the Phenomenology about such an inverted world. However, this does not really nelp a great deal, since the passages in that work are just as obscure as the passages in the Science of Logic. I am not even sure if he is talking about the same 'inverted world' in both cases; the 'inverted world' in the Phenomenology is not contrasted with a world of appearance, it is a second supersensible world. 15

In the <u>Fhenomenology</u> Hegel seemed to me to be saying that if we distinguish in one way between a sensuous and a supersensuous world, then the former appears to contain the principle of change, while the latter has none. A more satisfying way of looking at the matter is to say that appearances and realities are inseparable, so that what is sensuous or what appears is in-itself its opposite, or potentially its opposite. If this is what "egel wants to say in the <u>Science of Logic</u>, it is certainly not clearly stated but it might well be. It fits in with his notion of the thing-in-itself, which is not so much something which exists beyond our ken, as the potentiality of a thing, and with his notion that change is dialectical. The point here seems to be that Kant, with his separation of appearances and things-in-themselves, seems to forget that the two are opposed, and as such, are implicitly their opposites. The two are not fixed in separation, but really just moments of a single process, the process by which essence appears.

The precise relation between appearance and reality, or the

thing in and for itself, however, has yet to be determined. It seems to me that the next section is meant to determine this. What Hegel is looking for is the essential relation, i.e. the relation in which essence and appearance stand to one another, or if you like, the infinite and the finite, the absolute and the non-absolute. The immediate characterisation is that of the whole to its parts; secondly, Hegel considers the relation of force to its expression; and thirdly, he considers the relation of inner and outer. Hegel does not say very much about these relations that we can profit from in the Science of Logic, for some reason; but since he says much that is of value about them elsewhere, I will introduce this alien material in order to overcome this shortcoming; Hegel does make the sort of points he makes in that material in the Logic, but unless we relate them to the consideration of the concepts as such, it will appear that they have no ground In the general course of the Logic.

(c) The Essential Relation (Das wesentliche Verhältnis)

The essential relation is basically to be understood as the relation in which essence and appearance stand to one another, and the object of this section is to arrive at the true characterisation of this relation. The immediate characterisation of this relation is that it is the relation of two sides which merely reciprocally condition or presuppose one another; this is the relation of whole and parts. The whole corresponds to the world in and for itself, the parts to the world of appearance. Both can be considered as existents; but when the whole is considered as what is, then the parts are only its moments, and when the parts are considered as existents, the whole is taken only to be an external relation of the parts. Thus although the two presuppose one another they also

exclude one another. This is regarded by megel as a contradiction (or paradox - see previous chapter); indeed, the relation itself is, he says, an 'immediate contradiction'. This means that he has to go beyond it to a higher determination. However, before considering that, let us first consider this determination in more detail, and take a look at the applications of what Hegel says about it.

The whole <u>consists</u> of parts, says Hegel; that means that am a whole it must be divisible onto parts. However, if it is actually divided, then it ceases to be a whole. The whole is therefore distinct from the parts. It is true that the whole is equal to the parts, and conversely, that the parts are equal to the whole, but on the other hand, the whole is not equal to the parts <u>as</u> parts, that is, taken separately, but only to the parts taken all together, which, however, is the same as the whole; and the parts are not equal to the whole as a whole, but only to the whole taken as divided into parts, that is, to themselves. It is worth noting here that Hegel does not give primacy to either the whole or the parts as such, and therefore, while he certainly would not agree with any philosophy which denied the wholeness of the universe, neither can he be placed alongside those English Hegelians such as Bradley and Joachim who insist that only the whole is real, and that the parts of the universe must ultimately be regarded as illusory.

Hegel refers back here to the problem of the infinite divisibility of matter, which was discussed in my earlier treatment of his work on the concept of quantity. The contradiction which is present in the relation of whole and parts is the same one which presented itself in the Kantian antinomy of the infinite divisibility or indivisibility of time, space and matter. The resolution of this contradiction, according to Hegel, consists in the realisation that the relation of whole and parts essential—

the whole, while the presence of the one excludes the presence of the other. The thing is determined as a whole, and therefore something composite, something having parts; the parts are therefore what is subsistent here, while the whole is merely the external relation (sum) of parts. If we now take up one of those parts, then we see that, insofar as it is a part, it must be taken as something simple, something of which the whole is composed. However, the part is only a part in relation to a particular whole, and therefore something simple only in relation to a particular composite. In itself, it is a whole; but as such it is composite, and so on, ad infinitum. This infinite progression is the expression of the aforesaid contradiction. It is, nowever, merely the repetition of the alternation of the two determinations, neither of which is the truth. The truth is simply that neither of them are the truth.

The determination of the whole as something composite, and its part as simple in relation to it, means that we must follow our natural intuition and reject, after all, Russell's thesis that the whole is similar to the part, that is, that the two contain the same number of terms. For the part, as a part, is something simple, and therefore does not contain any terms. If it is taken as a whole, it has terms (or parts), but if it is taken as a whole, then clearly it is not a part, and we can only conclude the similarity of the whole with itself. Here we have an example of a proposition which is really a tautology, i.e. the proposition that the whole is greater than the part, nevertheless being denied in the course of philosophical inquiry. Philosophy and science are full of such contradictions, which unlike contradictions in the Kantian or Hegelian sense are not necessary, but arise from errors in reasoning. It is this kind of contradiction which Hegel would like to see eliminated; not merely none bey-

ond.

If, instead of whole and part, we speak of simple and composite, then another important conclusion can be drawn from the account of this relation given by tegel, namely, that it is false that there are absolutely simple elements of knowledge or the world which cannot be described, and that only complexes can be described; for every simple has been shown to be only relatively simple, and in itself something complex. Hegel does not make this application of his point in the section on wholes and parts, but flato made it in the Theaetetus, and we know that Hegel agreed with his general conclusions, because he repeats them inter on in the Science of Logic. This criticism gets its importance for us because the thesis closely resembles the central thesis of logical atomism, a philosophy which was predominant for a large part of this century, until attacked by one of its previous exponents (i.e. Wittgenstein) some forty years ago. Wittgenstein in fact employs the very criticism made above in his Philosophical Investigations.

The relation of wholes and parts is regarded by Hegel as the mechanical relation; the mechanical object is a mere aggregate, or a whole consisting of parts. The relation of force and its expression (Das Verhältnis der Kraft und ihrer Musserung) is here considered a more adequate relation in which the unity of the diverse phenomena is no longer considered as a mere external relation of them. This is surprising, since elsewhere Hegel seems not to separate force from the mechanistic outlook. Indeed, he seemed to be saying in his section on quantum that it was all the same whether we speak in terms of forces or atoms (simple parts) (see chapter two, p.61). This is a general problem here which I cannot resolve, but it does not prevent Hegel from saying some interesting things about the concept of a force. It may be that what is a difference in the nature of

the relation, i.e. the fact that force and its expression are not independent, but rather pass over into each other, does not make a difference to the effect comprehended through it, i.e. a body displaces an equal amount of weight, whether this is conceived as the effect of force or of the number of its material parts.

Forces are said to be conditioned in that they require a vehicle in order to operate; iron, for example, acts as a vehicle for magnetic forces. There appears to be no reason however why iron rather than anyother metal should have this property; consequently, force appears as something external to its vehicle. It is for this reason that the different forces can also be represented as matters (see p.173). However, it is less appropriate to say that a thing has a force, than that the force contains the moment of immediate existence; for the force is, only insofar as it expresses itself. This is an important point, which unfortunately is not made nearly so clearly in the <u>Science of Logic</u> as it is in the <u>Encyclopaedia</u>. All Hegel says in the <u>Science of Logic</u> in anticipation of the latter material is that force is 'a positing of the externality which appears as existence, and the "unity of reflected and immediate subsistence" think it is worth referring here to the <u>Encyclopaedia</u> to obtain a clearer picture of Hegel's point.

It is often said, remarks flegel, that the nature of force it26
self is unknown, and that only its expression can be known. Kant, for examp
ple, held this view, and it is still advanced by scientists and philosophers alike (see previous chapter, p.162). However, the entire content (Inhaltsbestimmung) of the force is the same as that of its expression. It is
only in respect of form that they differ; the same content is conceived
firstly in the form of an immediate existence, then in a reflected or generalised form. This is why 'explanations' of phenomena in terms of the

action of forces are said by Hegel to be tautological; they express the same thing as the phenomenon itself, but in a different form. Forces are often conceived as separate existences, of course, and the view which says that their nature is unknowable conceives of them as having a material existence, which is however, unable to be perceived. Hegel is saying here that our inability to perceive it is rather due to the fact that it is not an object for perception, but only for thought.

Forces do not bring themselves into existence, but rather they have to be solicited by other forces. Thus the motive force of one body solicits the motive force of another. It is not just that the same force is transferred from the one to the other; the action of the one solicits a reaction from the other. Moreover, there is nothing in either of the two forces themselves to determine which of them solicits and which is solicited. In fact, both solicit and are solicited. The force which is considered to be solicited has to be of a certain type in order to be solicited by a force of another type; a motive force cannot solicit a magnetic force. In this sense, the force is active even when it is simply being solicited. And, of course, once solicited it is active in its own self-expression. Consequently, although forces are finite insofar as they presuppose solicitation from outside (and therefore lack the element of self-determination necessary to account for the relation of essence and appearance, or the eternal and the transient), they are infinite insofar as they are considered as actively expressing themselves and overcoming external things.

negel makes this point more clearly in the lecture-material; it is all very well to grasp phenomena in terms of forces, he explains, but it is a mistake to try to reduce all the different forces to a single all-embracing force, which would just be an abstraction. The concept of force is only helpful in understanding particular phenomena, not phenomena

ena as a whole. Either a force is solicited by another force, in which case it is not the general foundation of all the particular forces, or it is considered as an empty abstraction, and merely a terminus for explanation, a 'something-I-know-not-what' which supports the rest. The concepts of God and fate have been conceived of in a similar way, as Wittgenstein points out in the <u>Tractatus</u>. ²⁷ It is true that the infinite regress of explanations needs to be brought to an end, but the employment of an arbitrary terminus still leaves a lot unexplained. What is needed is a principle of self-determination; but this demands a higher relation than either of the two considered so far,

The most adequate relation in the sphere of appearance is the relation of inner and outer. What is inner does not have to be solicited in order to become active like forces do, it has the principle of movement within itself. Inner and outer are clearly not to be understood here in a spatial sense, but rather in the sense in which we speak of, say, the 'inner' and the 'outer' man. The two are usually conceived of as opposed, so that what is 'imner' is essentially private and unmanifested, while what is 'outer' is public and manifested. Hegel argues, however, that the 'inner' which is taken to be purely 'inner' in this way is really only something 'outer' in the sense that it is extrinsic to the essential nature of the thing, which is universal, public, and manifested, and the 'outer' which is taken to be merely 'outer', that is, merely superficial, is really only something 'inner', that is, something which is hidden to us or unknowable. The true 'inner', on the other hand, expresses itself outwardly, and the true 'outer' has its own inner significance.

If we apply this line of thought to the relation of essence and appearance, we get the proposition we began this chapter with essence appears. Essence is taken here as the inner of the two determinations,

but it is an inner which is completely manifested; similarly, appearance is taken as the outer, but there is nothing in this outer which does not belong to the essence. The content of essence and appearance is the same. The essence that does not appear is only a very superficially conceived essence, while the appearance that is separated from the essence is meaningless and incomprehensible. It must be noted here that Hegel does not merely say that essence may appear, but that it must appear, and completely; this is important. Other philosophers have argued that the essence of a thing appears partially (Kant, for example), but nevertheless still insisted that some aspects of it remain hidden. Another view would be that a thing might appear completely, or it might appear partially. Hegel, however, insists on the necessity of complete denouement.

The point that what is inner must externalise itself has obvious applications to the way we conceive of mental states and dispositions, which megel touches on briefly in his remark to paragraph 140 of the <a href="https://example.com/margraph.com/margr

This view is important insofar as it contradicts the Cartesian

belief in the privacy of the self, and anticipates modern arguments such as 28 those of Ryle and Wittgenstein for the publicity of mental states and dispositions. It is necessary to be very careful here what we attribute to Hegel, however. On the first glance, it appears that his thesis is mere extreme than that of either Ryle or Wittgenstein. They seem only to deny that mental states and dispositions are essentially private, where as Hegel seem seems to assert that they are essentially public. This would make Hegel a behaviourist of some sort. Hegel, however, does not deny the existence or even the ability to be known of private states, even essentially private ones; what he says is that what is merely inner is of little consequence in the consideration of the intrinsic or essential nature of the person. Thus degel could accept that, say, dreams are essentially private states, as Russell argues in his criticism of Ryle, but he would also point out that a person's dreams, providing they do not affect his actions, are irrelevant to the knowledge of a person's character.

This is an important point in itself, of course, and possibly one which Wittgenstein was groping for in his criticisms of psychology. It is a point which affects both behaviourism and Freudianism. For it is also Hegel's point that what is merely outer is of little consequence, or rather, its_significance is hiddent to us, because it is a mere contingency. It is not every aspect of a person's behaviour that indicates his inner self; the way ne fixes his hat on his head, his habit of sitting with his arms folded, the sort of socks he wears, in fact tell us little or nothing about the inner man, though oddly enough it is just these trivial sorts of things which are often pointed out as indications of our true nature. It is this rather superficial approach to psychology which Hegel attacks when he attacks psychology in general. It is true that ingeneral, "man is nothing but the segies of his actions", but not every

thing a man does is significant and worthy of consideration in an assessment of his essential character.

Finally, Hegel's treatment of the concepts of inner and outer also affects the traditional distinction between mind and matter, or the inner world of the self, and the external world. Insofar as the world of the self is merely inner, says Hegel, it is of little consequence. Really, the world of the self must be externalised to count as truly inner, i.e. essential. On the other hand, insofar as the external world is merely an external world, that is, insofar as it is given up to contingency and totally alien to the self, it is hidden to us; but since it is only the superficial outside of the world that is hidden in this way, this does not really matter. Nothing essential is hidden to us. It all conforms to law, and is therefore knowable. Indeed, if it did not conform to law, it would not be essential. The true inner world, and the true outer world, therefore, have the same content. The world in which this identity is resent, however, is no longer the world of appearance, but the world of actuality; and thus we pass over into the sphere of actuality.

Notes and References

roach to the study of man.

```
1. Open Society, Vol.II; Ch.11
2. See my chapter nine, p.
3. Critique of Pure Reason, B307
4. My Philosophical Development, p.42-48
5. Abc of Relativity,
6. Werke 6, p.137; Miller, p.490-491
7. Tractatus 2.02331
8. Ibid., 4.126-4.1272
9. See especially Enc. sec. 126, also the remark and the addition (in the
Suhrkamp edition and the Wallace translation); Enc. sec. 304, also the reme
ark and the addition, where he calls 'sound-matter' and 'heat-matter'
"merely physical fictions of the Understanding"; also Enc. sec.305 (R),
and Werke 6, p.101-102; Miller, p.460-461
10. As above.
11. Werke 6, p.144-145; Miller, p.496
12, My Philosophical Development, p.180
13. G.! Ryle, The Concept of Mind (Penguin 1978), p.13f.
14. The Phenomenology of Spirit, p.96f
15. Ibid., p.96
16. Werke 6, p.166; Miller, p.514
17. Ibid.
18. Compare Leibniz's demonstration of the tautologous nature of this prop-
osition, Philosophical Writings, p.87
19. Pheaetetus 202-206
20. Werke 6, p.521-523; Miller, p.801-803
21. Philosophical Investigations I, sections 46-48 (also 59-60)
22. Werke 6, p.172; Miller, p.518; Enc. sec.136 (R)
23. Enc. sec. 136 and remark, 137
24. Werke 6, p.174; Miller p.120
25. Ibid.
26. Compare Werke 6, p.102; Miller, p.461
27. Tractatus 6.372
28. Ryle, Concept of Mind, passim.
29. Wittgenstein, Philosophical Investigations, passim.
30. I have berrowed this expression from Russell, who sets out its meaning
in his criticism of Ryle (My Philosophical Development, p.182).
31. My Philosophical Development, p.182
32. I am thinking partly of Freud here, and partly of the 'Naked Ape' app
```

Chapter Six: Actuality

Actuality (Die Wirklichkeit) is the unity of essence and existence, or of inner and outer. The german term 'wirklichkeit' is most commonly translated by the english term 'reality', and it is worth bearing in mind that wherever Hegel refers to the common usage of the term, this is its natural translation. Neverthelese, it is generally wiser to translate it by the term 'actuality', firstly because 'reality' is the obvious translation of the term 'Realitat', which megel gives a distinct meaning to in the section on <u>Dasein</u>, and secondly, because it brings out the connections between Hegel's <u>Wirklichkeit</u> and Aristotle's <u>Energeia</u>. The actual is the inner which has externalised itself, the potency which has actualised itself, the essence which exists, or has appeare ed. It is not therefore to be confused with mere external existence or what is commonly called reality. If this is borne in mind, the notorious megelian dictum "What is rational is actual, and what is actual is rational" does not look half so disturbing.

The common interpretation of this dictum is that whatever exists outside us is rational, so that there is no room for change or reform; indeed, Wallace has Hegel call 'reformers' 'muddle-headed and purblind', clearly mistranslating while blinded by the conventional wisdom. But Hegel's actuality is not merely external existence, 'trivial, external and transitory objects, arrangements, conditions etc.,', which he thinks may well be irrational; but existence that conforms with its essence, fullyedeveloped potentiality. If we may anticipate the next sphere, then it is existence which conforms with its concept.or archetype. This is obviously going to be rational, for Hegel, since he is later to describe rationality and truth as the correspondence of concept and external reality.

Hegel is not, then, some kind of cosmic conservative, but merely equates the rational with that which accords with its essence, rather than the essence or existence itself. It is rather the concept and the reality which do not correspond that he regards as irrational.

(a) The Absolute

Actuality, however, is initially determined as the absolute as such, in which every determinateness of essence and existence has dissolved. It is impossible to say what this absolute is, precisely because all the previous determinatenesses have been resolved into this one, we that it appears as the negation of all predicates, but on the other hand, it is also the locus of all previous predicates, and is therefore self-contradictory. The negating and the predicating here, according to Hegel, belong to external reflection rather than speculative cognition, however, which takes up these predicates, but then just as easily shows them to be impossible. It should be obvious from this that the absolute in question here is the traditional absolute of pre-Kantian (or even Kantian) metaphysics, or, if you like, the God of the metaphysicians. He or It probably enters into consideration here because He or It was supposed to be a necessary being, i.e. a thing whose essence involved existence, and therefore a unity of essence and existence, or inner and outer.

It is an absolute unity, according to Hegel, and the grounddof the essential relation. The other categories which have been transcended to the progress of the logic collapse into this one as their ground too, though here they have not been shown to do so through an external reflection, that is, by being shown to be impossible because they conflicted with other determinations, as in the work of the pre-Kantian metaphysic-

ians, or by Kant himself, but by the inner necessity of the logical process (or so says Hegel). This trænscending of categories is in fact the true exposition (Auslegung) of the Absolute, and is (again, according to Hegel, and I do not know in what sense he means this) the Absolute's own activity. Insofar as the exposition concentrates, not on the transcending of the category, but its relation to the Absolute, however, and the Absolute is conceived as an absolute identity, then it is only the absolute of external reflection, the Absolute in the determination of absolute identity, and as determinate, an attribute.

The attribute is the merely relative absolute. Apart from this statement, however, I understand nothing Hegel says about it (though admittedly he does not say that much about it), except that it has two sides to it, i.e. it is the absolute as self-identity, and the absolute as negation, and that somehow its consideration leads Hegel to the consideration of the absolute as mode, that is, the self-externality of the absolute. I really do not understand what Hegel says about this, either, except that this completes the moments of the concept of the absolute, and that the exposition does not take up the modes of the absolute as thoughts discovered outside it, and proceed analytically until it reaches the point of abstract identity (which would anyway be the concept of being), but rather begins with the absolute. The mode is consequently only the determining of that absolute in which it develops its full potential, and the form and content of the absolute are therefore the same, i.e. the content is simply this exposition. This point is dealt with more fully by Hegel when he comes to discuss the Absolute Idea, whose content, he says, is the course of the logic itself.

This account is obscure, but degel makes it clearer in a re-4 mark which deals firstly with Spinoza's conception of substance, which he says corresponds with the concept of the absolute here set forward. It is the absolute of an external reflection or analysis, a single substance in which everything determinate is dissolved. Determinateness is negation, for Spinoza, and Megel agrees, but he also adds that every determinateness and therefore every negation (taken as quality) must itself be negated, so that the absolute comes on the scene as the negating of the finite or determinate rather than an indeterminate positive being (which as indeterminate nevertheless has that particular determinateness). Spinoza does not grasp this point, but sticks at the point that determinateness is negation, and therefore his substance is only the afore-mentioned abstract identity. Bradley's Absolute is of the same nature, and consequently, Russell assumed that the Hegelian Absolute Idea was a similar sort of thing. This, however, was not substance but subject.

Although the Spinozistic Absolute is the product of analysis, Spinoza presents his system as a synthetic or deductive system which begins with a definition of the absolute itself, that is, the concept of substance. This is still an external reflection, nowever, and constitutes a defect in Spinoza's account. It is permissable to begin with definitions in mathematics, says negel, but in philosophy, we cannot begin in this way, the concept of the absolute has to appear as the result of the philosophical system. Spinoza also defines the terms 'attribute' and 'mode', whereas negel argues that the thoughts they designate ought really to be deduced in the course of the philosophy. The two attributes, thought and extension, are, moreover, only adopted from experience, and are only for the intellect which reflects on the absolute. Really, they ought to be deduced too, and thought shown to be, not so much an attribute of the absolute, or the reflection of one of its modes, but of the very essence of the absolute itself.

(b) Actuality

The Absolute has been determined as a mode, that is, as the 'form and manner' (Art und Weise) in which it reveals itself. It has no content save being that which reveals itself, and is therefore the Absolute Form which is identical with its content. Since it is such a form, its moments or aspects are also, initially, formal, that is, they are only moments of the form of our knowledge of the Absolute, the so-called modal concepts, actuality, possibility and necessity. It was Kant who first described these concepts as modal concepts, that is, concepts having the peculiar characteristic that "in determining an object, they do not in the least enlarge the concept to which they are attached as predicates", but only express the relation of that predicate to the faculty of knowledge, so that one can know everything about an object without knowing whether it is necessary, actual, or merely possible. Hegel is to argue, however, that in their development these concepts do not remain merely formal or modal, but come to express the content of knowledge.

Hegel treats of three forms of actuality, along with which go three forms of possibility and necessity. The first is actuality as contingency or accidental immediate existence. This is actuality in the formal sense, and along with it go formal possibility and formal or logical necessity. Something is formally possible so long as it is not self-contradictory, formally necessary if its non-existence is self-contradictory. These are the only forms of actuality, possibility and necessity recognised by Bavid Hume and also the only forms recognised by Wittgenstein in the Tractatus. Both philosophers conceive of reality as comprised of discrete events, and this means that there can be no internal connextion between one state of affairs and another which could constitute its relative poss-

ibility or necessity. Hume expressed this by saying that the idea of a necessary connection between events in fact represents no more than the psychological propensity to expect the existence of one object following upon that of another, given prior experience of their constant conjunction.

Wittgenstein was more radical in tone. It is impossible, he says, to make an inference from the existence of one situation to the existence of another, completely different situation, because there is no causal connection to justify such an inference. The belief in such a connection is nothing but a superstition. We often expect one thing to follow upon another because up until now it has always done so, but there is no necessity for it always to do so. The only necessity that exists, according to Wittgenstein, is logical necessity; and he might have added here that the only possibility is logical possibility, and the only actuality, logical actuality. He does say, after all, that in itself a proposition is neither probable nor improbable, and that either an event occurs or it does not, that is, that ultimately, all reality is accidental, and everything is possible. What is impossible is self-contradictory and therefore inconceivable. This is the most uncompromising statement of the standpoint of form-lactuality, to be found anywhere.

This standpoint is inadequate according to Hegel, however.

For according to it, everything is possible that is not self-contradictory, but in fact, everything is not possible, because even if certain states are not contradictory in themselves, their existence nevertheless excludes the existence of other states. For example, the fact that I am in London excludes the possibility of the fact that I am not in London. If we abstract from this fact, then of course it becomes possible that I am not in London, but precisely because this abstraction is necessary, the fact is not really possible, i.e. not given all the prevailing conditions. The

fault with the standpoint of formal actuality is that it abstracts from all the facts, the conditions which pertain and the conditions which would have to pertain for something to be really possible. It abstracts, indeed, from the content of the fact, which in reality would have multiple connections with other facts. If I may employ an example from the Phenomenology, there is nothing self-contradictory about the non-existence of private property, but given many of the important institutions connected with it in fact, it could be said that it is not really possible to abolish it.

If one does not abstract from the content of the fact, but considers the "determinations, circumstances and conditions" of its existence, then one considers its real possibility. The thing in its determinations, circumstances and conditions, that is, considered through its relations with other things, is real actuality. Real actuality is immediate existence too, but not merely that, since it is considered as "pregnant with content" (inhaltsvolle). It is not purely accidental existence, but existence which is bound up with or necessitated by other facts. This is not evident if we merely consider a state of affairs in the abstract; or two concrete states of affairs which are only remotely connected. However, if we consider a concrete state of affairs such as the French Revolution, we see immediately that it is bound up with many others which it has no formal relation to; the extravagance of the Sun King, the weaknesses of his successors, the rise of a strong middle class in France, etc. Take away any of these factors and history might have been different.

It is important to notice that Hegel is not merely <u>assuming</u> the existence of the necessary connection between two separate states of affairs which Hume and Wittgenstein argue is not objectively present. He is saying that, indeed, there can be no necessary connection between two such states, but on the other hand, we only arrive at this idea of reality

as being broken up into discrete units by a process of intellectual abstraction. Concrete situations really have multiple interconnections with other aspects of reality, and we only arrive at simple facts by picking them out of the network of relations which constitutes the existent world. The connectedness of things is, if you like, the primary fact, and their separation the work of the seases and the intellect. Mind and nature alike conform to law, but this is often hidden by the distortions of our senseorgans, and our own subjective predjudices. The laws that we expect them to conform to are very often inadequate formulations of the laws they actually do conform to, and this gives rise to scepticism.

Empirical science nevertheless strives after these laws or relationships by trying to elicit them from experience. Since the conditions which accompany any event are infinite, this striving is endless; we can never attain to such a knowledge of the conditions of an event that we are able to say in absolute certainty that it must follow, although we can always become more and more certain that it will. However, it is possible to grasp the conditions of an event as a totality without knowing each and every one individually; one only has to grasp the essential determination from which all the others follow. This is not easy, and we can still never be absolutely certain that we have grasped the correct determination, but this method at least has the advantage that it is possible that we have done so. For example, if we try to state all the conditions for the Labour Party winning the next election, we will find this an impossible task; but if we embrace them all in the general condition that they must acquire sufficient votes, then this is trivial, but at least certain.

The real possibility of a thing is also its real or relative necessity. If all the conditions of a thing are present, it <u>must</u> be actu-

al. This is because <u>all</u> the conditions actually constitute the existence of the thing. This real or relative necessity of things is more interesting than their formal necessity, precisely because the existence of something which is only relatively necessary, i.e. actual only given certain conditions, is not a foregone conclusion, i.e. is not something which must apply whatever the state of the world is generally. We want to know how it is possible to being about different states of affairs, and what follows given certain courses of action, in order that we can control our own destinies to some extent; and of course, by bringing about certain conditions we open new possibilities and make new states of affairs relatively necessary, so that the world is constantly changing, and what is possible, and what is becessary, is changing with it. Yet the whole thing is happening in a law-like manner.

There is a higher form of actuality or reality than the reality of things considered in their relations with other things, however, which degel calls absolute actuality. Absolute actuality is reality which, far from being accidental, or only brought into existence through the existence of another thing, has realised, or realises itself. This is a teleological notion of actuality, the actual as that which is its own end, and which is considered as striving to realise itself. It is not that which has to be; it might not have realised itself in a particular place at a particular time, its development might be stunted, or it might become deformed in some way, like a plant might become stunted or deformed, or not even grow, in a particular place. But it is that to which external existence aspires, or less poetically, that which constitutes the principle of the development of external existence. It does not exist alongside real actuality, but rather transcends it, exploits certain conditions for its own ends, though external conditions can also bring about its destruction.

Hegel calls absolute actuality the unity of necessity and con-18 tingency, saying that it is, simply because it is, that is, it is not produced by another thing, and yet, it is, because it is, that is, it is its own mediation, it realises itself. On the one hand, it is necessary, since it brings itself into being; but on the other hand, it is supremely contingent, since it might not bring itself into being. Absolute actuality is again regarded as inseparable from absolute necessity and contingency. These are the true forms of necessity and contingency for Hegel, and it must be noticed how different they are from what mermally go by these names; when Hegel says that necessity in its truth, is freedom, this is no mere paradox or song of praise to determinism. He means that in its highest form, necessity coincides with self-determination. This explains a lot. It shows us that when he speaks of the necessity of the logic, he does not merely mean that one concept follows logically from another, but rather that the whole forms an end-directed process of development; and it shows us that when he speaks of the necessary features of society in his social philosophy, he does not mean that these are features that cannot cease to exist, but only that they form part of the development of a state to its highest end, each sphere being subordinated to the one beyond it.

This also gives us a new way in which to understand the metion of God as a necessary being, whose essence is to exist. This does not mean that God must exist, i.e because existence is one of his essential properties, which would indeed be subject to Kant's criticism that existence is not a real predicate, and is anyway silly because the mere assertion that it is the essence of something to exist does not mean that it actually does exist; but that God realises himself, and that it is of his essence to realise himself, which is to say that if He exists, he develops

or attempts to develop his full potentiality in external existence. Presumably, in order to be absolute actuality, He must have actually done this in some parts of the world by Hegel's time, in Hegel's opinion, probably dentral Europe. The pure development of God in His essence is of course meant to be the content of the Logic itself, which essentially, so Hegel would have us believe, unfolds itself, and does so completely, leaving nothing hidden from view.

The development of the Absolute appears, megel says, as the blind destruction of immediate existence, but this is only to the superficial view. The negation of these finite elements is a necessary feature of the production or revelation of the Absolute. This applies equally to the finite things of the external world and to the finite determinations of the Logic: without the featuration of the former, God cannot manifest mimself in the social sphere, and without the destruction of the latter, he cannot manifest mimself in the sphere of Logic. If we cling to relative necessity, as Kant does, we will always say that necessity is blind, and that we are determined on all sides; but if we advance to the standpoint of absolute necessity, we see that the destruction of finite things realises the Absolute. This reflection seems to be one that Megel thought helped to reconcile us with the frustrations of our world activity, and liberate us from our own selfish desires. We may not realise our personal aims, but then we are only here to realise unconsciously the Will of God.

(c) The Absolute Relation

The Absolute, then, which was initially considered insofar as it was described or expounded by external reflection, that is, in accordance with the methods of analysis and synthesis, now expounds itself or

reveals itself. It brings itself into existence, or actualises itself, through this revelation, and is, Hegel says, nothing but this act of self-revelation or actualisation. It is like light, he continues, which is neither a something (Etwas) nor a thing (ein Ding), but only a showing or shining (Scheinen). However, light does not manifest itself, as Hegel says the Absolute does, but only other things; and if something manifests itself, then surely it must have some content distinct from its manifesting, which is manifested. It seems to me, then, that Hegel ought not really to say that the Absolute is nothing but its manifesting of itself. It would be quite permissable for him to say that it had no other content apart from what is manifested, of course, but then this would not be a new point, but only a repetition of the old point that essence must appear.

Absolute actuality, or absolute necessity, is absolute relation insofar as it is being which is mediated by itself, being that is because it is, a notion that Spinoza tried to express in equally contradictory terms by calling his substance causa sui. And indeed, Hegel calls this being 'substance' (der Substanz). This substance, he says, is neither that which immediately is, nor something abstract which exists 'behind-thescenes', but the unity of both. These two conceptions of substance are merely abstractions from the true relation. Far from substances being a mere support or substratum for (its) accidents, something about which nothing can be said except that it is itself and not another thing, and therefore something entirely separate from those accidents, for Hegel, substance "embraces accidentality within itself". 21It is a power or potency which is at once creative and destructive, insofar as it is constantly overcoming one set of accidents and producing another set. It is not present in external existence as such, but it manifests itself as a power over the external world.

This conception of substance resembles Aristotle's more closely than it resembles any of those modern conceptions which sprung from the criticism of the Scholastic version of the Aristotelean concept by the philosophers of the Enlightenment. One who reads Hegel's misleading statement in the Encyclopaedia that "Substance is herewith the totality of (its) accidents". might be led to think that this is Hegel's version of Hume's thesis that our idea of substance is the idea of a collection of qualities. This is not the case, however, for in the first place, Hegel is talking about substance itself, not our idea of substance, and in the second place, Hegel's substance is the unitary principle of its alterations of quality rather than a mere collection. The latter is only externally put together, whereas the former is that which develops or unfolds itself. Hegel's view has the advantage over Hume's that it avoids the consequence that a substance cannot strictly be said to change its qualities, i.e. because a different collection of qualities is a different substance.

Substance, then, is <u>power</u>, which sets down and distinguishes from itself determinations which nevertheless belong to it, and can be considered as transcended substantiality. ²⁴This means, however, that substance is to be regarded as cause, and its accidents as effects. This is what Hegel calls 'formal causality'. The cause, he says, is original (<u>Ursprungliches</u>) in relation to its effect, while the latter is what is set down or posited, something <u>derived</u>. ²⁵The cause is a cause, however, only insofar as it has an effect, just as the effect is only an effect insofar as it has a cause. ²⁶Consequently, it is necessary for a cause to have an effect. Thus, both are in themselves something posited, and the concept of cause contains nothing that is not in the concept of the effect. ²⁷This is the principle of the speculative identity or inseparability of the concepts of cause and effect. This identity becomes, at the level of deter-

minate causality, an identity of content between particular causes and their particular effects.

The reader will recall that the difficulties the philosophers of the Enlightenment had with the concept of causality stemmed from the fact that the necessity of the connection between two sense-impressions, the force or power which one object of sense-exercised on another, was not itself an object of sense-perception. This led to the general conclusion that such a force was unknowable, which was only overturned by Hume's criticism that if this were so, then the terms 'force', 'necessity' etc., would have no clear meaning, and his view that, in fact, they denoted a subjective inclination to conceive one thing following upon another with which it has previously been observed to have been constantly conjoined. Hegel agreed that force was knowable, but thought that it was identical with its expression (see chapter five, p.181). This struck at the roots of the original problem, for it meant that, far from there being any question of the connection of two objects, there was in fact only a single fact or content, which the Understanding analyses into its constituent moments.

ments are strictly analytic propositions. Now it must be said that the first example which Hegel analyses in order to give some support to this thesis, i.e. 'The rain wets', 'Is not a good one, although it seems to have a particular favourite of his (he also uses it in the Encyclopaedia and the Jena Logic). The is certainly analytic, but it does not appear typical enough to help his case. The other examples he uses are much better, however. They have the same form as those propositions already discussed in his remark on what he calls the formal method of explanation by tautological grounds. These sorts of proposition feature what he calls 'reflective determinations' such as force or matter. Thus, one example says that

Kraft). This is a much better example of a typical early nineteenth-century causal statement, and Hegel argues that it is analytic, because there is nothing in the force that is not expressed in the phenomenon.

Another of Hegel's examples is the proposition that a thing has a certain colour because of a colouring agent or pigment which is present in it. 24 This, again, is a fairly typical causal statement for his time, and he argues that it is analytic because the pigment in question is effectively the same thing or content as the colour. This content is merely considered in two forms, once in its 'reflective'. form, as agent or cause, and once in its immediacy as effect. The fourth example he considers raises difficulties, however. The cause of a deed is said to be the inner disposition of the agent, 33 he says, but the content of this disposition is the same as the content of the deed; indeed, the agent's disposition can only be considered as cause insofar as it is expressed in the deed. The problem here is that Hegel seems to be saying that the 'inner disposition' of the agent is nothing more than its outward expression, and therefore simply force, when we saw in the last chapter that he thought this determination was subordinate to that of the 'inner'. It may be that he means that the agent's disposition, insofar as it is considered as cause or force, is nothing but its expression.

Hegel seems to think that he has already established the analytic nature of statements like the above, but he realises that it might still be objected that, firstly, statements giving the remote rather than the proximate cause of an event do not appear to be analytic. This, he argues, is because the identity of the content of the cause and effect is concealed by the distribution of that content into a multiplicity of intermediate causes or factors of causation, so that it is only when the

latter are taken a totality that the identity of the content of cause and effect is revealed.

Thus, for example, if a man developed his talent in circumstances arising from the loss of his father, who was hit by a bullet in a battle, then this shot (or still further back, the war, or a cause of the war, and so on to infinity) can be taken as the cause of the man's skill. But it is clear that, for example, that shot is not by itself this cause, but rather only the connection of it with other effective determinations. Or rather it is not the cause overall, but only a single moment that belonged to the dircumstances of the possibility. 34

Thus we return to the old point that the content of the fact is identical with the totality of its conditions. The difficulty here, however, is that there seems to be an infinity of conditions for any one fact. It was this which made Leibniz call such propositions contingent, although he thought they were implicitly analytic and necessary. Their analysis could not be performed, but God could grasp the principle of the series.

Leibniz²Said that he derived this idea from the mathematical consideration of the mature of the infinite, and what he says comes very close to one of the points Hegel made in one of his remarks in the section on quantum (see chapter two, p.76-78). Leibniz introduces an analogy between necessary and contingent truths and fractions that can, and fractions that cannot, be expressed by whole numbers. A necessary truth, he says, is like a fraction such as 64/8, which can be perfectly expressed in terms of the whole number eight, while a contingent truth is like a fraction such as 2/7, which cannot be expressed as a whole number, but only as a number with an infinite series of terms after the decimal point. Nevertheless, says Leibniz, mathematics has mastered such fractions and can even operate with the infinite series, so there is no reason why the contingent truth cannot equally be mastered. Hegel, as we saw previously, went further than Leibniz, and argued that the fractional expression of the number 2/7 was actually more perfect than its expression as an infinite series, so that, by analogy, not only can the infinite conditions of a fact be grasped as a totality, but they must be so grasped; and there is no reason why God should be the only one able to grasp them as such.

Hegel also notes that it is inadmissable to apply the notion of causality to relations involving the mind or the living organism. ⁵⁹This is because that which acts on the living organism (e.g.) is assimilated by that organism (see chapter nine, p.290-295), that is, altered by it so that it becomes organic itself, and only then does it really become active for the organism. Otherwise, it merely occurs as an external stimulus, which presupposes a corresponding internal stimulus or instinctive urge or drive, before it can operate. This is explained further in Hegel's chapter on Life, as well as in the Encyclopaedia (especially sections 357-366). The same sort of argument applies to relations involving the mind or its products, according to Hegel, so that, for example, it is not legitimate to call the mild Ionic climate the cause of Homer's works. 40 although no doubt he took inspiration from it, so that it was an external stimulus for him. The point is, it was up to the bard to respond to this stimulus in whatever way he was willing or able. The climate did not inspire everyone to compose an Iliad or an Odyssey.

The problem here is that Hegel only produces arguments why the material world cannot act causally on the organism or mind, he does not give reasons why organisms cannot act causally on other organisms, or minds on minds, nor why minds or organisms cannot act causally on the external world. It might be that he thinks all these things are possible, of course, — he seemed to think earlier that the mind could act as cause 41 but in this case, he should not really have said above that the application of the relation of causality to relations of physico-organic and spiritual life as such were inadmissable, but only that the material world cannot act causally on physical or mental life. I am tempted to suppose that this is what

he meant, but I am prevented from doing so by one of his examples, i.e. that it is not permissable to say that Caesar's ambition was the <u>cause</u> of the downfall of the Republican constitution of Rome. ⁴²This clearly is not an example of the afore-mentioned thesis, and it remains unclear why it is not permissable to say this.

This proposition, I feel, would serve Hegel better as an example of the other thesis he advances here, namely, that it is wrong to consider relatively minor events in history as the <u>causes</u> of great ones. Such events, he says, are only factors of causation, or supply only the external stimulus or occasion for the great one. A case in point here is the assassination of the Archduke Ferdinand of Austria, which is sometimes regarded as the immediate <u>cause</u> of the First World War. Hegel would argue that, strictly speaking, it was not the cause of the war, but only an external stimulus which spirit, in the form of the Austrian nation, converted into the 'final straw' which led it to declare war on Serbia. This point could also be applied to those who like to speak of 'great inventions' such as the printing press or the steam engine 'revolutionising' society. History shows, on the contrary, that society has to be ready for such inventions before they can have any influence, or else they are treated as mere novelties.

There is one more thing Hegel wants us to notice about determinate causality, and that is that the causality of a thing is extrinsic to it. 44 That is, the object has an immediate existence which has no direct relation to the fact that it enters into certain causal relations. The fact that a stone, for example, is this particular stone, that it is so round, so smooth, does not tell us anything about the causal relations it will enter into. These are determined by events outside of it, for example, the fact that it is picked up by a schoolboy and hurled at a win-

dow. These events, however, also involve immediate existences acting as causes, and these immediate existences also require external causes of their operations, and so on to infinity. Thus the assignation of causes has its logical conclusion in an infinite regression; ⁴⁵there is also a simiprogression of effects. Both express the fact that the identity of cause and effect only manifests itself in the finite realm in the fact that something is cause in one respect and effect in another (see also chapter eleven, p.353).

This infinite regression or progression is transcended in the relation of action and reaction. ⁴⁴This presupposes two finite substances, of which one is immediately characterised as active, and the other passive. The immediately passive substance, however, once it has been acted on, reacts, and not simply by determining a third substance, but by acting against the first, and altering it. Thus it acts as cause, or active substance, therefore, and the process begins again. Thus, where previously we were led into an infinite regression, now we are led into an infinite reciprocal action. ⁴⁷The concepts of causality and action and reaction, says Hegel, belong strictly to the sphere of mechanism, ⁴⁸but the determination of reciprocity transcends that sphere. This is because causality and action and reaction are external to substances, whereas in reciprocity, things are what they are only in accordance with the relations they enter into; they are completely determined by other things, while at the same time, they determine other things.

Hegel therefore considers reciprocity to be a far more adequate determination than causality, but still not adequate enough. He illustrates this in his lectures by saying that if it is asked whether the customs of a particular historical nation caused its political system, or vice-versa, then it might be correct to point out that neither is strictly the cause,

but that both reciprocally condition one another. This, however, according to Hegel, does not help us to grasp either the customs or the political system of that nation. What is needed here is for us to be able to grasp both as aspects of a greater unity which they generate. The same point is perhaps illustrated more clearly by the consideration of the study of the physical organs; but is one thing to say that the heart causes blood to circulate in the body, and another to point out that the circulation of the blood is also a necessary condition of the beating of the heart; but if we really want to comprehend either, it is necessary to conceive of them as functioning elements of a living organism.

In both of these examples, reciprocity is considered to be subordinate to another determination, the concept of the unity which is in one
sense presupposed, and in another sense generated, by the reciprocal
causality of the diverse elements it contains. In the first example, this
greater unity might be described as the <u>Volksgeist</u>, the spirit of a people
or nation; in the other, it is the organism, the embodied soul, or, to use
a Kantian expression which will become more significant later, the 'physical end', a physical being whose parts produce one another in such a way as
to form a whole which appears to be constructed in accordance with a predetermined concept. The concepts of 'spirit' and the living organism both
belong, however, to the next sphere of logic, which contains the development of the concept of this unity which is the principle of its moments,
which at the same time generate it. This is the sphere of the concept or
subjectivity, which is dealt with by Hegel in the second part of the <u>Sci</u>ence of Logic, the <u>Subjective Logic</u>.

Notes and References

1. Enc., section 6 (R)
2. Enc., section 142 (Add.), Wallace translation. Wallace has Hegel say that "actuality is not so bad and irrational as purblind and wrong-headed and muddle-brained would-be reformers imagine". This is misleading. The original German reads: "die Wirklichkeit (ist) night so schlecht and unvernunftig, wie gedankenlose oder mit dem Denken zerfallene und heruntergekommene Praktiker sich einbilden". I would have thought that a more accurate translation would be something like "actuality is not so bad or irrational as empty-headed or mentally-decaying and run-down practical men imagine". Hegel is not attacking reformers here, who anyway are only occupied with that external existence which is only the superficial outside of actuality (Enc., section 6 (R)), but those 'practical men' who despise thought and theory. This remark ought to be compared with the following one from Russell (Problems of Philosophy, p.89):

But further, if we are not to fail in our endeavour to determine the value of philosophy, we must first free our minds from the predjudices of what are wrongly called 'practical' men. The 'practical' man, as this word is often used, is one who recognises only material needs, who realises that men must have food for the body, but is oblivious to the necessity of providing food for the mind. If all men were well off, if poverty and disease had been reduced to their lowest possible point, there would still remain much to be done to produce a valuable society; and even in the existing world the goods of the mind are at least as important as the goods of the body. It is exclusively among the goods of the mind that the value of philosophy is to be found; and only those who are not indifferent to these goods can be persuaded that the study of philosophy is not a waste of time.

```
3. Enc., section 6 (R)
4. Werke 6, p.195f.; Miller, p.526
5. Critique of Pure Reason, A219/B266
6. Werke 6, p.203; Miller, p.543
7. Treatise, Part I, bk.III, section xiv
8. Tractatus 5.135-5.136
9. Ibid., 5.1361
10. Ibid., 6.37
11. Ibid., 5.153
12. Werke 6, p.208; Miller, p.547
13. Phenomenology, p.258
14. Werke 6, p.208; Miller, p.547
15. Ibid.
16. Ibid., p.210; ibid., p.548
17. Werke 6, p. 213; Miller, p. 550
18. Ibid., p.215; ibid., p.552
20. Ibid., p.217; ibid., p.553
21. Ibid., p.218; ibid., p.554
22. Ibid., p. 220; ibid., p. 556
23. Enc., section 150
24. Werke 6, p.222; Miller, p.558
25. Ibid., p.223; ibid.
26. Ibid., p.224; ibid., p.559
```

```
27. Ibid.
28. Ibid., p.226; ibid., p.560
29. Enc., section 153
30. Jena Logic, p.51-52
31. Werke 6, p.226; Miller, p.560-561
32. Ibid; ibid, p.561
33. Ibid.
34. Ibid., p.227; ibid., p.561-562
35. Philosophical Writings, p.107
36. Ibid., p.110
37. Ibid., p.110-111
38. See my chapter two, p.
39. Werke 6, p.227-228; Miller, p.562
40. Ibid., p.228; ibid.
41. See p.
42. Werke 6, p.228; Miller, p.562
43. Ibid.
44. Ibid., p.229; ibid., p.563
45. Ibid., p.231-232; ibid.. p.564-565
46. Ibid., p.233; ibid., p.566
47. Ibid., p.237; ibid., p.569
48. Ibid.
```

49. Enc., section 156 (Add.)

50. Ibid.

Chapter Seven: Subjectivity

The Subjective Logic was originally published four years after the Objective Logic, in a separate volume aimed at professional logicians since it dealt in part with the material of logic commonly so-called. Hegel complained in his foreword that he faced the opposite problem here to the one he had faced in the previous volume, that is, whereas previously he had been working in an intellectual vacuum, this time there existed an abundance of "completely ready-made and fixed, one might even say ossified" material, into which he had to breathe new life. One ought to note here that, although Hegel shares the attitude of boredom and impatience with the traditional Aristotelean logic, and, more especially, its medieval treatment, typical of his age, he does not propose to abandon it, and to establish a new, rival logic. He compares the traditional logic to "an ancient city, solidly built, and maintained in continuous possession and occupation", and sees it as his task to give that city a new 'layout' (Anlage); a task, however, which necessitates the putting-aside of a lot of material which has previously been thought highly of (mainly the mediaeval additions).

One major difference between Hegel's view of logic and more common views is that Hegel thought that the aim and object of logical science was "truth itself", though this turns out on closer inspection not to be such a major difference after all, since truth is later identified with the self-knowledge of reason or the understanding, which is more like the usual conceptions of logic as the art of science of reasoning in the pursuit of truth, though still not quite the same, and certainly very different from the conception of logic as the study of the formal consistency of sets of beliefs. The difficulty here, Hegel reckens, is that the poss-

ibility of such a science has long been called into question. He asks the reader to recall the sense in which Pilate put the question, "What is truth?". Pilate posed the question rhetorically, and, Hegel explains, what he meant by it was that the goal of truth had long since been declared unattainable, and its pursuit abandoned. Hegel seems to think that Pilate's attitude was also the attitude of his own age.

I think Hegel is having a sly dig at Kant here. Kant, the reader will recall, discussed the question, "What is truth?" in a section of the Critique of Pure Reason from which Hegel is shortly to quote. Kant argued that this question is not a request for the nominal definition of truth, i.e. that it is the agreement of knowledge with its object, but for the general criterion of the truth of any cognition. It is an absurd request, however, since such a general criterion could not take account of the relation of the particular cognition to this specific object, in which truth, on the above definition, is supposed to consist. Hence, there can be no such criterion. Hegel agrees with this conclusion, although he does not think Kant's argument is sound (see below, F.218); but he objects to Kant's restriction of the term 'truth' to the agreement of particular cognitions with their objects. This is simply what he calls in the Encyclopaedia 'correctness' (Richtigkeit), something which is to be distinguished from truth in the metaphysical sense he uses it.

Truth in Hegel's sense is not the agreement of particular cognitions and their objects, but the agreement or unity of concept and object, of subjectivity and objectivity in general, or of philosophical method and its object. Kant, in restricting the sense of the term 'truth' to what Hegel terms 'correctness', restricts knowledge to what Hegel is to call 'finite cognition', and its objects to the objects of the finite or empirical sciences. Hegel, as we shall see, regards these sciences as very

uncertain, since they rest on presuppositions which only philosophy can justify, and consequently sees Kant as, at bottom, some sort of sceptic. or pragmatist, but anyway, no friend of truth. By associating him with Pilate, he also taints him with Faganism, and/or atheism, while at the same time implying that Christianity, through the questioning of the value of finite things which is implicit in its nature, serves as a preparation for for, and therefore has its true issue in, a philosophy which once more takes truth (or Truth) as its aim, i.e. his own speculative philosophy.

Hegel prefaces the Subjective Logic with some preliminary remarks on the nature of the concept. It is sometimes thought that the concept of a concept is axiomatic, i.e. that it cannot be deduced, but Hegel insists that it can only appear as an absolute foundation insofar as it has made itself such a foundation by showing itself to be presupposed by the other concepts. The immediate presupposition of the concept is substance, as has just been seen; what is implicit in the concept of substance is explicit in the concept of the concept. Hegel briefly recapitulates here on the genesis of the concept as expounded in the Objective Logic, that is, how we pass through the relations of necessity, the relation of substantiality, the causality-relation, and the relation of reciprocity, to the concept which is implicit in them, i.e. the concept of the self-actualising principle, the concept or subject. Hegel's system goes beyond Spinoza's, he says, precisely because it goes beyond the concept of substance, and has as its principle the concept of subjectivity.

This is not what is normally understood by the term 'concept', Hegel admits. Now this does not matter insofar as the philosophical understanding of a term does not have to correspond exactly to its common usage. Nevertheless, he feels that the philosophical concept ought at least to be recognizable in our ordinary ideas. Hence he adds some remarks which

are supposed to help to render the concept more familiar. "The concept", he says, "insofar as it has developed into an existence (Existenz) which is itself free, is none other than the <u>I</u>, or pure self-consciousness. Normally, we say that <u>I</u> have various concepts; but this <u>I</u>, for Hegel, is the pure concept that has entered into being. If we speak about the series of concepts the <u>I</u> has, then we are talking about something familiar, which may even be called the empirical self. But if we abstract from these particular ideas, we arrive at the pure concept (something like a Kantian transcendental subject). Insofar as it is abstracted from these ideas, it is universal(ity); but linsofar it is exclusive of what is other than itself, it is the individual personality. Only when it is grasped that these two aspects together constitute the nature of the <u>I</u>, or concept, is the nature of <u>I</u> grasped also.

It was Kant, for Hegel, who first advanced beyond the common idea of the self as the substratum of a series of conceptions which were related to it as external properties. Kant wrote in the Critique of Pure Reason of the original synthetic unity of consciousness. This was an objective unity, as opposed to the merely subjective unity of our perceptions, i.e. their temporal succession in a given subject. Hume had not recognised the existence of any objective order, and therefore regarded the term "self" as denoting a mere "bundle of perceptions"; for Kant, however, this objective order was a precondition of the analysis of our perceptions into separate representations which could then occur in any temporal order in any stream of thought. One has to have the concepts of red flags, tunics and pillarboxes etc., before one can abstract from them the idea of the colour red; which idea, however, can subsequently be united with any other representation, even one which it is not objectively connected with. This objective unity is the universal aspect of the self, in the sense

it shares it with all other selves; anything which did not belong to this order was a mere peculiarity of the individual self, a mere subjective representation.

This objective order was not truly objective in Kant's philosophy, however; that is to say, it did not represent the true order of things, but only the order of the way human beings in general experience the world. Objectivity, for Kant, was still only really intersubjectivity .- he says in the Prolegomena that "Objective validity and necessary universality (for everyone) are therefore identical concepts" - rather than truth. The equation of objectivity with intersubjectivity is a common ruse of subjective idealism or radical empiricism to reintroduce the much-needed distinction between subjective and objective, while at the same time maintaining that we can only know things as they appear to us. Hegel's point of view here is that if we can really make thid distinction, then we must also be able to know things as they really are. In fact, the object, according to Kant, is only that in the concept of which the manifold elements of a given intuition are united, so that it is the concept which is the objective element here. The object as it really is is given only to thought.

The Kantian account made two other claims which Hegel thought were relevant to his treatment of the concept. Firstly, that the intellect must be considered a stage after intuition in the process of cognition, and therefore that intuitions must always precede concepts, if they are to have any cognitive content. Hegel remarked with regard to this point that what was to be regarded as prior to the intellect was determined in accordance with the standpoint from which from which it was being considered. From the point of view of psychology, it was true that the intellect presupposed feeling and intuition, as well as representation on general; but from the point of view of phenomenology, which was what Hegel believed

from the viewpoint of a phenomenological treatment, which is what Hegel 12 thought Kant was engaged in providing, the intellect presupposed sensuous consciousness and perception, aspects of our consciousness of the world rather than elements in the development of the mind. Moreover, neither the psychological nor the phenomenological view had any relevance to the logical treatment of the concept. The logical form of the concept was quite independent of the forms in which it appeared in the sciences of nature or spirit.

The second claim was that the concept was a mere subjective form or arrangement of the sensible matter of cognition. This sensible matter was supposed to exist independently of the form given to it by the understanding, which in turn was considered an abstraction from it. Hegel, however, argued that there was no reason why this sensible element ought to be considered as real, and the concept as merely abstract, that is, in the sense that it lacked sensuous material; for abstraction here means the selection of a single feature of a thing to serve as its mark, while its other properties are simply put to one side, and is only necessary because of the inability of the inteèlect to cope with the wealth of empirical material. In fact, the sensible material is only appearance, and the concept is what is real. True abstraction does not consist the isolation of a single feature of a thing to serve as its mark, but the transcending of the empirical material and its reduction to its essential features, which are manifested only in the concept of the thing.

Hegel is basically saying here that we must not confound that which is first in the historical sense with that which is first in the logical sense, i.e. that which is truly fundamental. A great deal of the philosophy of the Enlightenment, most notably that of the British Empiricists, Locke and Hume, had been concerned basically with what Hegel called

the 'natural history' of thought, that is, with the question of the origin of our ideas and the description of the workings of the human mind. Hegel, however, was concerned more with the relative certainty of the different stages in the development of thought, that is, with the question of the foundations of knowledge, which he took to be a separate question.from that of its origins. It was of course true that all our knowledge begins with experience, in the sense that this comes first in time, and is then transformed into thought, but this was not to say therefore that all our knowledge was grounded on experience, as if thought actually led us away from the path of certainty.

Hegel thinks that Kant anticipated the true view in his insistence that there were synthetic judgements a priori, although he is critical of the expression 'synthesis', which he says connotes the idea of an external unity of things that are really separate, whereas he sees judgement as the original differentiation of the content of a concept, and of Kant's (for him) contrary assertion that concepts are dependent on experience for their content, i.e. that 'concepts without intuitions are empty". The concept ought rather to be considered the ground of the various things we can say about the object; it is because x is taken to be a cow that we can say it ought to have udders. Even if we have never seen a cowthe concept is not therefore empty; it retains its content, it is just that there appears to be nothing in experience corresponding to it. The point here is that it is not that our thoughts have to be grounded in experience, so much as that the concept provides the foundation for the comprehension of experience.

The tension between the views which Hegel considers to be implicit in the Kantian philosophy, and those which Kant explicitly puts forward, is carried over into his views on the nature of logic generally,

and its relation to truth. Although, as Hegel has already shown, the objectivity of thought is implied in Kant's notion that an object is only a unity through the unity of self-consciousness, and the common belief that the essential nature of an object is abtained only by reflection, Kant nevertheless maintains that we cannot know things as they are in themselves and that truth is inaccessible to reason (sic). Hegel thinks that this is an absurdity, and argues that the logical consequences of Kant's views must not be shrunk from. It is true that the concept is initially abstract, but this is not because it lacks the material of sense, but only because its own content is still undeveloped; in what is to come the concept will be seen to have itself for object, and therefore to be truth, in the sense of the identity of concept and object.

There is a sense, Hegel argues, in which logic (or pure philosophy) is a formal science merely, that is, on contrast to the philosophy of nature and philosophy of spirit, the concrete philosophical sciences; since he does not think their concreteness is due to their closer relation to the empirical sciences, however, it is hard to see how he can even allow this. Logic, moreover, is the science of absolute form, which has its own determinations for its content. This is clearly something very different from what is usually called 'legical form'; since its content is adequate to its form, it is itself truth (in Hegel's sense). But what about this apparently strange Hegelian view of truth? Hegel in fact says it is only really the familiar view that truth is the agreement of cognition with its object. Kant, when, in the Critique of Pure Reason, he deals with the question "What is truth?", presents this as something which goes without saying, but really it is a highly speculative definition; takem in the right sense, it implies that the reason which is incapable of apprehending things-in-themselves, and the things-in-themselves which

it is incapable of apprehending, are untrue (or inadequate) ideas.

Kant goes on to explain that the question "What is truth?" is not to be taken as a request for the above definition, however, but for a universal criterion of the truth of any belief, a request which Kant argues is absurd, since such a criterion could not take account of the peculiar content of the cognition, on which its truth depends. Thus it is concluded that logic provides formal rules for the understanding, necessary but not sufficient conditions of truth. Hegel is critical of this argument, however, on the grounds that it brings in the notion of the truth of the content of cognition, that is, it says that truth depends on the content of the cognition, whereas the aforementioned definition says that truth is the agreement of the content with the concept. A content which does not agree with the concept, i.e. is not adequate to it, is mere opinion. Moreover, if we allow that logic is only formal, then it is a one-sided cognition, a cognition without an object, and therefore not the agreement of the two which is requisite for truth.

I am not impressed with these criticisms, for a number of reasons. Firstly, I think Hegel is merely exploiting Kant's clumsiness and am biguity of expression here; the terms 'truth' and 'content' are given diverse and incompatible meanings in their different occurences in Kant's passage. If truth is the agreement of cognition and object, we cannot also speak of the truth of the content of cognition; but Kant does not do so to help his argument, he does not need this phrase. Secondly, Hegel treats the term 'content' as if it were synonymous with the term 'object', but Kant seems to understand by it the relation of the cognition to its object (see the bracketed expression at the beginning of A59), and though, as I have said, he does not stick to this meaning, this seems to be the sense he needs. Finally, Hegel says that the nominal definition of truth says

that truth is the agreement of the content with the concept; it does not. It says that it is the agreement of concept and object, which is not the same thing in Kant's terminology, as far as I can see.

It seems to me, then, that Hegel is simply employing a different conception of truth to Kant, or at least, a different interpretation of the common definition of truth. It has its advantages, however, and it is therefore one worthy of being retained. It is a proper definition, for one thing; the definition as commonly interpreted only gives conditions for the verification of statements or beliefs. Moreover, with this definition of truth comes a new conception of logic, logic as a formal science (pure philosophy) which must nevertheless have a content adequate to its form, in order to be true (that is, in order to be the pure Truth). This is surely a logic more worthy of the name than the old logic, which contained nothing more a handful of tautologies, some rules for the conversion of judgements, and the traditional forms of the syllogism, all of which are taken up merely historically, that is, as I see it, descriptively rather than critically; for Hegel's logic, on the other hand, is quintessentially, a critical logic.

What we have in this chapter, then is basically an attempt to to criticise, that is, to question the value of the various forms of judge ment and of argument; not an a wholesale basis, but taking each on its own merits, and estimating how closely it approximates to the ideal of the agreement of form and content, or concept and object. Kant certainly did not engage in this sort of enterprise, although he did distinguish between judgements of perception and judgements of experience, and also between analytic and synthetic judgements, and Hegel criticises him especially for uncritically adopting the ordinary logical forms of judgement (though T.K. Swing has recently argued that he did not do thid) and basing his categor-

schema on them. Logic must be thus critical, says Hegel. This is not to say that logic hitherto, which was merely a description of the phenomena of thinking, is valueless, and indeed, Aristotle is to admired for being the first to attempt such a description; but we need to go further and grasp the "systematic connection" and the "worth" of the logical forms.

(a) The Concept (der Begriff)

The account of the nature of the concept which was discussed previously was strictly introductory, and therefore external to the main course of the logic. We now take up that course again from where we left off, and consider the proper logical development of the concept of the concept. The concept is first of all in the form of universality.

Now it is imperative that we distinguish universality as Hegel understands it from what he calls abstract universality, that is, universality as it is more commonly understood. Universality as Hegel understands it is "the most simple determination", but its simplicity is such that, as opposed to being, it contains difference within itself. The abstract universal, on the other hand, is merely a single property of a thing considered in isolation, or at best a property or properties which a number of things have in common. The omission of the other properties appears here as a limitation (see p. 215), whereas in the true universal, all the properties of the thing are contained in principle.

It seems reasonable to say that Hegel's abstract universal is a Lockean abstract idea, or at least that the latter is one example of the sort of thing Hegel had in mind. Hegel even appears to make silent allusions to some of the remarks contained in Book Three, Chapter Three of Locke's Essay, entitled Of General Terms, especially the part where Locke

describes how people form more and more general ideas, by continually taking a pair of complex ideas and omitting the features peculiar to each, while retaining those which they have in common. Thus, if we leave out of the idea of an animal "sense and spontaneous motion", then "the remaining complex idea, made up of the remaining simple ones of body, life, and nourishment, becomes a more general one, under the more comprehensive term, 22 vivens". In the same manner we proceed finally through concepts like body and substance to the ultimate abstraction, being. Locke concludes two things from this; firstly, as is well-known, that "this whole mystery of genera and species...is nothing else but abstract ideas, more or less comprehensive, with names annexed to them"; but secondly, also that those contained under it... 24

The terms or concepts, in other words, become progressively more abstract, in the sense that there is less and less to them, their content diminishes. Now Hegel's point, and I think he is absolutely right here, is that an increase in generality properly so-called does not bring with it a dimunition in content. The most general or universal concepts in fact contain the most within them. Hegel mentions concepts such as life, ego, and spirit (geist), which he says are "mot universals merely in the sense of higher genera", and do not have species for their content, but rather other, similar universals. What these universals are can be discovered simply by looking them up in his Encyclopaedia (or at least, what he thinks they are can be discovered in this way). They are, presumably, the moments or aspects of those other concepts. The concept is, he says, "the soul of the concrete in which it dwells", and not merely the "inner identity of things" but a "shaper" and a "creator", through which things are what they are.

One might not yet be tempted to agree with these last comments of Hegel's (I am not even sure I understand them), but I think the Hegelian concept of generality is certainly worth preserving; indeed, I think its adoption could revolutionise philosophy. It is certainly strange that so little has been said about such a fundamental concept, that it has been treated so uncritically, though not that "egel should be the one to criticise it. If I can just suggest a few ways in which this distinction between abstract universality (which one might just call 'universality') and true universality (or 'generality') might be significant: firstly, it could help to show that objections to objective scientific or ethical true ths do not really strike home. It is often argued that because it is possible to adduce situations in which would-be ethical rules do not apply, then those rules do not hold good. But if we take these rules as universal in our second sense rather than our first, they do not have to be applicable in each and every case, but only - and it is significant that we can say this - generally.

Hegel mentioned in his lectures Rousseau's distinction between the volonte de tous and the volonte generale, expressing the wish that he had kept to it. Hegel did, and consequently his political philosophy avoids some of the pitfalls and contradictions of Locke's over-individualistic liberalism. This is another example of the use of the same distinction between abstract universality and the universality of the concept. The latter conception also allows us to say some very simple things, such as that it is the case that tigers have four legs, without any fear of contradiction from inconveniently intrusive three-legged tigers. It enables us to say there must be something wrong with such a beast, whereas Locke would merely say it was different. Some of us might not find these advantages attractive, of course, but I certainly do, and I will continue to employ this concept in other spheres of philosophy. It will constantly

appear at the bottom of much that follows too, as well as being recognizable, on hindsight, in what has gone before.

I am not quite so impressed with Hegel's account of the nature of particularity, however. He begins by referring us back to the concept of determinateness, and explaining that particularity is the determinateness of the concept. The concept "internally differentiates itself" into "fixed, isolated differences", which take the form of separate universals. The universal and the particular are by no means opposed to one another. but rather the universal constitutes the substance of the particular. The genus is unaltered in its species; that is, for example, dogs and cats are both animals: they differ from each other, but not from the genus. The universal is a sphere in which the particular is exhausted. I am not sure what this means, but it is probably connected with the equally opaque statement that "Species are complete simply because there are no more of them", by which Hegel seems to mean that there are no principles which govern the number of species of a given genus. If this is what he means, then the previous statement probably says that despite this, all kinds of things must come under the umbrella of some genus.

So far, so good. But Hegel's concepts are not abstract ideas, and therefore the particularity of the concept cannot be satisfactorily explained in terms of the particularisation of a genus into its species. And this is where my doubts start to creep in; because Hegel goes on to speak of particularity in terms of the division of a concept into its moments or aspects, and to insist that this takes the form of an opposition. (at least, this is what I take him to be saying). Moreover, he also seems to be saying that the concepts (in the ordinary sense) considered in the logic, e.g. being, determinate being, whole and parts, cause and effect, are not concepts considered by themselves, but only when they are grasped

in unity with their "other" or opposite determination; otherwise they are merely "thought-determinations" (Gedankenbestimmungen). Cause and effect are not two different concepts, for example, but in fact both aspects of a single concept, which one might call simply 'causality'. We saw as much in the last chapter, of course.

The determinations of thought <u>are</u> merely abstract ideas. It is these people have in mind, Hegel says, when they speak of determinate concepts. The understanding is the faculty of such concepts. It is the power of abstraction. Now the concepts reached through abstraction are not altogether 'empty' as Kant says they are, insofar as they must have some determinate feature for their content, even if it is only indeterminateness (like the concept of being); but they are insofar as they do not contain all the particular features of a thing, but only some. Thus, for example, 'man' is an empty concept insofar as he is merely conceived as, say say, a featherless biped; his determinateness ought rather to be the principle of his particular features. The understanding separates off the particular features of a thing, and therefore gets further and further away from grasping it as a unity, that is, grasping the principle of those features; reason has to grasp it, therefore, from the wealth of abstract ideas the understanding has created.

It is because the understanding treats these determinations as essentially fixed and separate, says Hegel, that it has been held in such low esteem. Now he is not referring to his own criticisms of it, but rather, I think, those of the empiricists (especially Hume) and Kant. Hegel, in fact, insists that we must acknowledge the important role it plays in splitting the concrete of sense into abstractions. For the concrete of sense is of a very inferior kind, which lacks any unity of its own, and only acquires it by being determined by concepts. Through the abstraction

of the understanding, this sensuous intuition is at least transformed into a universal, a determination of thought. And the fixity it gives to the determinations is itself of value, insofar as it supplies the element of precision to thought. However, it must be recognised that this distinctness is not the final goal of reason, and reason must come on the scene to demonstrate the finite nature of these determinations, and their ultimate unity.

Universality and particularity are not merely separate and self -subsistent determinations either, of course, but rather moments of individuality. Now it is often thought that individuality is precisely what one has to leave out of account to attain to the universal; but the universal thus attained is only the abstract universal, and the individuality which is opposed to it is not true individuality. This is a mere peculiarity of features, whereas the individuality Hegel has in mind is the individuality of the self-subsistent totality. Life, spirit and God are his examples of such individuals. It is because we see God as an abstract universal, the Supreme Being, and individuality as the individuality which is opposed to universality, Hegel seems to suggest, that we find the notion of His individuality or personality hard to grasp. In fact, it is only insofar as He is taken as individual, that He can also be attributed universality and particularity. The same goes for spirit (Geist), which cannot be regarded as either a mere abstraction, or a mere particular or set of particulars.

The upshot of all this is that these three moments of the concept are seen to be inseparable. Only "mere representational thought", says Hegel, which considers the abstractions of the understanding, is capable of holding them apart as three. In truth, all of them are united in individuality, and only exist in their true form in combination. Hegel

goes on in a remark to make this point the central feature in a criticism of the attempts of Euler, Lambert and others, to produce a notation (Bezeichnung) for the determinations of universality, particularity, and individuality, using lines and figures etc., with the aim of elevating (or, as Hegel puts it, degrading) ogic to the form of a calculus. The futility of such an exercise, Hegel argued ought to obvious from a moment's reflection on the nature of the signs which would be employed in such a calculus, and that of the determinations they are supposed to signify. These signs, which might be algebraic letters, say, or geometrical shapes, have fixed characters, and are capable only of standing in external relation to one another, while universality etc., are inseparable ideas; they simply cannot be held apart and still remain in their true forms.

The point is that the usefulness of such signs for conveying ideas is very limited, and certainly does not stretch to thoughts of this level of sophistication. The projects of Euler, Lambert and the rest depended on the assumption that these ideas were very elementary, that is, that each could be adequately expressed merely in terms of a certain quantitative relation it had to the others, its greater or lesser extension. Hegel, however, thought there was more to these ideas than this, and this seems a fair point. Universality is usually interpreted in terms of 'allness,', and we have already heard a number of good reasons why this interpretation might be considered inadequate. Particularity is also very questionably expressed by the term 'some', which itself has had to be defined as meaning 'at least one' (it has other interpretations, as will be seen presently); and as for individuality, even if it is correctly interpreted in terms of the unit, which is debateable (see p.139), this unit does not appear to have much of a role in logic.

Insofar as modern mathematical and symbolic logic prefesses to

express determinations such as universality or generality, particularity and individuality in purely formal terms, Hegel's criticisms here must also be taken as applying to it. Insofar as it is made clear that the ideas it expresses are merely those of 'allness' etc., they must not. There is no objection to the symbolical expression of essentially quantitative determinations. Hegel also makes the more general point here, however, which must apply to symbolic logic as such, that the symbols of mathematics and the mechanism of a calculus could at best only hint at internal logical relations; they are, he says, only echoes of higher determinations; that could only be grasped as long as one put aside the sensuous aspect of the symbol; and that therefore it was language and not symbolism which was the most appropriate medium for logical (or philosophical) discourse and inquiry. Formal logic, then, is just that, purely formal, and mathematical logic belongs to mathematics (compare here the later Wittgenstein).

Hegel also includes in this Remark some interesting comments on the various ways philosophers have tried to classify concepts (in the ordinary sense. He considers, firstly, Descartes' classification of ideas as either clear and distinct, or unclear and indistinct. This classification, he says, is psychological rather than logical; whether my idea is clear or vague has relevance only to the question of the efficacy of my powers of representation, not to the question of truth; and the possession of a distinct idea is simply the knowledge of a feature of the idea by which it may be distinguished. Spinoza's distinction between adequate and inadequate ideas is more important, for him, because he thinks it anticipates (at least by implication) his own notion of the Idea, the agreement of concept and object. Actually, I think he exaggerates the connection here; Spinoza's adequate idea is still basically what Hegel would have called a Vorstellung rather than an Idee; one can have an adequate

idea of the distance of the moon from the earth, but I do not think this would count as an Rdee.

Hegel's remarks on the classification of concepts or ideas as either simple or compound (complex) is particularly interesting. Hegel contends, contrary to Descartes, Locke etc., that there are no complex concepts; that is, that insofar as something is conceived, it is conceived as simple. This is not to deny that the concept has an internal complexity, i.e. that it has a diverse content which can be elaborated, but only that that content, once actually articulated, loses the unity of the concept, and becomes a mere string of ideas. It is this point which I feel is behind Hegel's rejection, in the Encyclopaedia, of Leibniz's plan for a universal language of what Hegel called a 'hieroglyphic' nature. Basically, this involved the assumption of complex ideas which could be resolved into their simple constituents, those constituents then being assigned fixed symbols. The meaning of any complex would then be apparent purely from the symbols which made it up, and this would put an end to disputes about words or ideas.

Hegel argues against this thesis, firstly, bethat all ideas are simple in the mind, and secondly, that therefore they are only appropriately represented by simple, non-connotative signs or names, and not complexes of so-called fundamental ideas. He went on to say that a language such as that which Leibniz wanted to construct, even if it was possible, would be impracticable, since the progress of thought and the continual development of logic (or philosophy) would lead to changes in the views of the internal relations of the different ideas, and thus also of their natures, which would necessitate continual revolutions in our notation. He pointed out that this was already happening in sciences like chemistry, which employed this 'hieroglyphic' notation in its names for chemical substances; muriatis acid had already undergone several changes of name be-

cause of fresh discoveries about its nature. The problem was not so acute with regard to empirical entities, since their constitutions were anyway relatively stable; but if it was to keep pace with changes in the realm of ideas, such a language would require a civilisation as stationary as that of the China of the Emperors.

The characterisation of the signs of ideas as names might disturb many modern philosophers, who consider the belief that words are names as the source of a great number of errors in philosophy, but I would question the basis of their discomfort; for it is precisely that view of language which is usually thought to have its ground in the belief that words are names which Hegel is questioning here; except that he is saying that it has its original rather in the assumption that there exist complex ideas which are constructed out of absolute simples. This is very much a Cartesian view, though adopted by empiricists and rationalists alike prior to Hegel, and by many since, including Mill, and through him, Russell, whose version of the doctrine was criticised by the later Wittgenstein. An earlier exception to this tradition was Frege, whose own views are, I believe, much closer to Hegel's. Frege, the reader will recall, went so far as to treat entire sentences as proper names, thus apparently seeing the necessity of the simplicity of thought.

and contradictory concepts, which, he maintains, are based on what he has already said on diversity and opposition. Hegel here appears to equate contrariety with difference, and contradiction with opposition. I do not know why he does this; and the knowledge that he does it does not help me to understand his comment here that what is contrary must also be determined as contradictory, for things that are different are not necessarily also opposed to one another. I must admit that I really cannot fathom this

remark. Hegel makes it sound as though he is saying something which is obviously true, but this is far from being the case. All that I can say here is that, whatever he is saying here, it does not seem to be a proper criticism of the distinction between contrary and contradictory concepts, or terms, as it is commonly used. Concepts in Hegel's sense may contain difference and opposition within themselves, but concepts in the common sense can differ without being opposed.

(b) Judgement (Das Urteil)

Hegel says that judgement is "the determinateness of the concept set down by the concept itself". Now it might seem that the determinateness of the concept has already been dealt with in the section on particularity, but Hegel explains here that the treatment it was given before was only a 'subjective reflection', i.e. presumably, a digression from the main course of the logic. Be that as it may, what is important is judgement is conceived as the determination or particularisation (and Hegel even calls it a 'realisation', though he interprets this term in such a way that to call it such is really to add no more to what has already been said) of the concept by the concept. This means that judgement is effectively defined as being something objectively valid, rather than a mere attempt of the subject to say something about something external to them. This is clearly going to be a very different treatment of the idea of judgement from what is customary, and not simply because of its obscurity, but also because of this significant change of perspective,

Hegel's introduction of the terms 'subject' and 'predicate' might cause the reader to think he is entering more familiar ground, and even to presume that all that is to follow is going to be no more than old subject-predicate logic dressed up in fancy language. However, this

is not the case. Here we have a subject and a predicate whose nature is as yet indeterminate; all we can say about them is that they are related to each other as the less general term or idea to the more general. Hegel in fact regards these terms as simply convenient names for the determinations of the judgement, which in fact differ with the different forms of judgement; in one form, for example, the determinations might be the individual and the particular, in another, the individual and the universal. Generally, however, the subject will express that which immediately is, the predicate, the universal, the essence or concept. The subject is therefore generally to be regarded as merely naming something, while the predicate tells us what the thing is.

erse the way we would normally look at a judgement. Usually, we would regard a judgement such as 'Aristotle was born in Stagira' as a mere assertion. One might respond to it by saying, "How do you know that Aristotle was born in Stagira?", or "No, he was'nt". Hegel, however, wants us to look on it as mere of an explication of what Aristotle is, or what the term 'Aristotle' is being used to denote. The two responses to the statement given above in that case presuppose the knowledge which it first provides, i.e. they presuppose that the person responding understands what the person who makes the statement discussing the term 'Aristotle' to depoin note, when in fact he has only just started to tell us in this statement. In fact, we will see later that a statement like the above is a poor example of a judgement. What he is actually doing here is setting up a paradigm of judgement which enables him to say precisely this, i.e. that mere assertions are poor examples of judgements.

Hegel, then, is effectively changing the paradigm of judgement employed by all his immediate predecessors, and his successors too. This was the assertion or statement of fact, which usually predicated a uni-

ment appear to be independent of one another, so that the subject would exist even if it did not possess the predicate, and the predicate would also exist apart from the subject. Consequently, if this is our judgement-paradigm, then judgement appears to consist in the reflection "whether this or that predicate, which is in the head, can and should be attached to the object which exists in its own right outside of it". Judgement, in other words, appears as an external synthesis or combination of essentially separate ideas. The fact that this is not the true nature of judgement, however, is suggested, Hegel contends, by the fact the connection posited in a judgement is supposed to reflect an objective connection; 'Gold is a metal' asserts a connection between gold and metalleity independent of our subjective connection of the ideas.

Actually, says Hegel, judgement is the original division or partition of an original unity, that is, the division of what was originally united in the concept. This is reflected in the German term for the judgement, das Urteil (Ur, original; Teil, a part), as Hegel was very fond of pointing out. It is properly only the grammatical subject and predicate of a statement which can be said to be externally combined in it, and this because they were only terms, and not concepts or ideas. It might surprise the reader to hear of Hegel distinguishing between subject and predicate in the grammatical sense, and subject and predicate in the logical (sic) sense, but he does, and he goes on to add that the fact that a sentence has a grammatical subject and predicate is not sufficient to make it a judgement. A sentence only counts as a judgement for him if its subject and predicate are related to one another as one concept-determination to another, that is, as individual or particular to universal. The question here, however, is what this means and what it eliminates.

Hegel argues that this eliminates, for example, propositions which merely state something individual about a particular subject, and he gives the example of the proposition that 'Aristotle died at the age of 73, in the fourth year of the 115th Olympiad'. This would only count as a judgement, he says, if doubt had been thrown on any of the details of the predicate, and they were now being asserted on the strength of some reason or other. Similarly, he says, the statement that 'N. is dead' would only count as a judgement if there were a question whether he was really dead. This sounds reasonable, because the term 'judgement' is generally used in English to denote a statement which expresses the conclusion of some deliberation. But Hegel is not merely talking about the way the word is commonly used; he says that these statements do not count as judgements because they predicate something individual of a subject, and that they would be judgements if asserted on the strength of a reason, because somehow then the predicate would express something universal.

Now I must confess that I cannot see why the predicates in the statements above must be seen as expressing something individual, or how their assertion on the strength of a reason converts them into something universal. Nor can I see any difference between these statements and the ones Hegel later adduces as examples of positive judgements, e.g. 'The sun is round', 'It is day now', 'Cicero was a great orator'; consequently, I am inclined to reject this argument, although I would like to retain the distinction between statements of undisputed fact and judgements proper which are genuinely illuminating. This seems to fit in with the idea that Hegel is concerned with changing the judgement-paradigm; in fact, he has already criticised the philosophical position which takes the first sort of judgement as paradigmatic, and even regards such propositions as constituting the foundations of knowledge, in the Phenomenology. He calls

it 'degmatism'; G.E. Moore would be the paradigm of a dogmatic philosopher. though most are dogmatists to some extent.

There is a temptation, Hegel notes, to regard the subject; since it is what is individual in a judgement, as the real element in any judgement (or at least the element of <u>Basein</u>, of determinate being), and the predicate, since it is what is universal, as a mere abstraction, even where the subject is only an abstract idea such as courage or justice.

And it is certainly true that while no-one has ever concluded that something must have an ontological status because it features as the predicate of some judgement, this has often been concluded from the fact that it appears as subject. However, Hegel maintains, the subject without a predicate is, like the thing without qualities or the thing-in-itself, no more than an "empty, indeterminate ground", and to this extent, it is the predicate which introduces the element of determinate being. Kripke's Aristo
43

11e, for example, considered in abstraction from all his (or perhaps her or its) predicates, is itself an empty abstraction in need of determination rather than a concrete individual.

the substantial element in the judgement, the predicate could not be considered to be external to it or independent of it. On the contrary, it inhered in it, as one of the many properties it had as a concrete thing. Similarly, insofar as the predicate is considered the substantial element, the subject could not be thought of as external to, or independent of, it, but rather only as subsumed under it, as one of many things possessing that particular attribute. Consequently, both are bound up together, and what is really substantial here is the determinate content of the judgement itself, in which they were both identical. One might compare this with Frege's refusal to recognise any distinction of subject and pre-

ment which was relevant to the formal language he was creating. Hegel retains the distinction, and the development of the judgement-form that follows is a development toward a form of judgement in which the identity-in difference of subject and predicate is explicitly expressed.

The first main form of judgement, or judgement in its immediacy, is the judgement of existence (Dasein) or the qualitative judgement. This itself has three forms, of which the first is the positive judgement. This had as its subject an abstract individual, and as its predicate an immediate determinateness or property of the subject, an abstract universal. It says therefore that the individual is the universal. However, as has just been seen, the subject, considered as that in which the predicate inheres, is a thing of many properties, and to that extent, a universal; while the predicate, on the other hand, as a mere abstract universal, only one aspect of the totality of the aspects of the subject, is just as much something individual. Consequently, it is just as true to say that the positive judgement expresses the fact that the universal is the individual. Indeed, Hegel says that this proposition constitutes the content of the positive judgement, while the proposition that the individual is the universal merely constitutes the form which it immediately expresses.

The immediate individual is <u>not</u> the abstract universal, however, and the universal is <u>not</u> the abstract individual. Consequently, both propositions must be denied, and the positive judgement declared to be negative. Thus we obtain the judgement that the individual is not the universal (Hegel does not say anything about the judgement that the universal is not the individual), or that the individual is the not-universal. He argues that the two here amount to the same thing, but he is not very convincing. He is even less convincing when he says that the positive expres-

sion of this (negative) judgement is 'The individual is the particular'; though he also justifies this by saying that the individual must be a particular universal. What is negated in this negative judgement, however, is not universality as such, or the universal sphere of the predicate, but only the abstract or particular universal; the statement that 'The rose is not red' does not deny that the rose has colour, but only that it has this particular colour. Hence it does not go far enough.

The true negation of the positive judgement is the infinite judgement, which itself has two forms; the positive form, which asserts simply that the individual is the individual (or the universal is the universal), and therefore contains the unity of the judgement without its difference (this is exemplified by tautologies such as 'A lion is a lion' etc.); and the negative form, which denies a predicate of a subject which does not even have the attribute that constitutes the universal sphere of that predicate, and therefore contains the difference of the judgement without its unity. This is exemplified by nonsensical (widersinniges) judgements (as Hegel calls them) such as 'The mind is not red', or 'The rose is not an elephant'. Actually, they are not nonsensical, of course, because, as Hegel admits, they are in fact true (or at least richtiger) statements, which are nevertheless trivial, because the predicate they deny of the subject is anyway singularly inappropriate. The judgement of existence therefore has its truth in a triviality of one kind or another.

The judgement of existence is transcended in the judgement of reflection, in which the subject is 'an_individual as such' (which tells us nothing), and the predicate is a universal which has been produced by the bringing-together of many different sorts of phenomena, that is, by reflection. The sort of predicates in question will therefore tend to be dispositionals, such as mortality, mutability, usefulness or elasticity;

Hegel also includes hardness, but I think this is more of an immediate property. These are in a sense essential determinations, says Hegel, but they still do not have the universality of the concept, that is, these dispositions still have to be manifested in immediate experience. Something can only truly be said to be harmful if has actually caused harmen whereas, in the judgement of existence, the predicate is considered to inhere in the subject, in the judgement of reflection, the subject is considered as subsumed under the predicate. 'This drug is harmful' (and of course we must add here: in these conditions) is the statement of a rule.

The judgement of reflection is, in its first form, the singular judgement, and asserts that 'This is an essential universal' (e.g. 'Gaius is mortal'?). However, the 'this' here is still not identical in scope with the universal (there is more to mortality than just Gaius's mortality). Hence, Hegel advances to the consideration of the particular judgement, which asserts that 'These individuals are an essential universal'. or 'Some individuals are (etc.)'. This is at once a positive and a negative judgement, he says (though surely not in his sense), since the fact that some A are B implies that some A are not B; but of course, it does not, not unless we stipulate that 'some' is to mean 'some but not all'. It is true, though, as he also says, that in the particular judgement we are forced to bring in a general idea such as man or animal, so that we say, for example, 'Some men (etc.)' or 'These animals(etc.)'. If we merely list the individuals by name all we have is a set of singular judgements; though of course this raises the question whether the particular judgement is not simply reducible to such a set.

Hegel distinguishes the two, I think, on the basis that the 'some' of the particular judgement is indeterminate, and there certainly does seem a difference between told that 'Some A are B' and that 'x, y,

and z are B' (for example, that <u>some</u> of the passengers aboard a crashed airliner are dead, and that among the dead are Jones, Smith etc.). However, he does not make this point clear, and generally seems to equate 'some A' and 'these A', or 'a particular number of A'. Nevertheless, he bases the transition to the universal judgement on the indeterminacy of the 'some' here. If only <u>some</u> A are B, and some are not B, then the conection between subject and predicate is only contingent; it is only if <u>all</u> A are B that there is the possibility of a necessary connection. The universality mentioned here is clearly not the true universality mentioned earlier, but rather universality in the sense of 'allness' (Allheit), the fact of being common to each and every one of a collection of individuals. This is the sense in which the term 'universality' is commonly understood.

Hegel says some interesting things here about this idea of universality as 'allness'. When universality is conceived in this way, he says, it is conceived as a goal; a goal, however, which it is impossible to attain, or at least to know that we have attained, because there might always be individuals which we do not know about. Thus, when we assert an empirically universal proposition, such as 'All tigers are carniverous' what we mean by 'all tigers' is simply 'All tigers hitherto experienced!. But this is only a subjective 'allness' or 'universality'. This would be the only 'allness' we could attain to, however, if we did not presuppose acquaintance with the true universal, or genus; it is in virtue of knowing the genus that we can be certain that all the individuals share a property in common (insofar as they are good specimens). 'All A are B' as such is either a contradiction, therefore, or only true of all the A one has experienced; unless it says that the property in question belongs to the individuals in virtue of their genus.

There is a good point here somewhere, but Hegel surrounds it

with a lot of very dubious material. In the first place, I think he is wrong to regard the idea of 'all individuals of a certain kind' as a spurious infinite. Even if we can never know that we have experienced all the individuals of a certain kind, there is no contradiction in the idea of a totality of such individuals. What is really wrong with the universal judgement is that 'All A are B' may still only express a contingent connection between subject and predicate; 'All the men in this room are happy' might be a true statement, but this does not mean that there is a necessary connection between being happy and being a man in this room. This is effectively a denial of Hegel's statement that "what belongs to all the individuals of a genus belongs to the genus by its nature". This strikes me as patently false, and I cannot think why Hegel says it, because in the majority of this passage, as well as in many others, he seems basic—ally concerned with denying this.

The form of judgement which is most adequate for the expression of the necessary connection between subject and predicate is the judgement of necessity. In its immediate form as the categorical judgement, the judgement of necessity has a species for its subject, and the genus of that species for its predicate. Hegel is adament that a predicate of this kind ought not to be classed together with the sort of predicates which feature in judgements of the previous two forms; to put judgements like 'The rose is a plant' and 'This ring is gold' in the same class as judgements like 'The rose is red' and 'This ring is yellow', and therefore "to regard such an external property as the colour of a flower on the same level as its vegetable nature is", he says, "to overlook a difference which must strike the meanest understanding (Auffassen)". In the latter judgements, a "single contingent content", which is immediately apparent, is predicated of the subject; in the former, its universal nature. The copula here, there-

fore, has the signification of a necessary connection.

The categorical judgement, however, is still not the true form of judgement, because subject and predicate are still not odentical in it. The predicate is extended beyond the subject; gold (e.g.) is a metal, but so are silver, iron, copper etc. What we want to know here are the conditions of a certain metal being called gold, rather than silver, iron or copper etc., and this necessitates a hypothetical judgement. The hypothetical judgement states that 'If A is, then B is', and is taken by Hegel to mean that if all the conditions of B obtain, then B itself must obtain. This is not how it is commonly understood, but this interpretation is justified by what he has said about the notions of condition, ground and causality earlier; nothing has a single cause, but everything results from a totality of conditions. Now since the totality of conditions is the fact, subject and predicate are implicitly identical. They are not explicitly so in this form of judgement, however, but only in the following form, which is the disjunctive judgement.

It is important to note that this judgement is not what Hegel calls an empirical disjunctive judgement. The latter, he says, contains no necessity. It says that, for example, metal is either gold, silver, or iron etc., the list extending to all the different species of metal so far discovered; but of course, other species may be discovered, so the list, or disjunction, is never known to be complete. The disjunctive judgement which Hegel mentions does not have the form 'A is either B or C or D etc.', however, but the form 'A is either B or C'; its disjunction is complete in two terms, each of which excludes the other. If A is not B, it must be C. What is considered here is what Hegel has previously called the essential difference of the concept, that is, its distinction into its mom-

ents. This does not seem to have any obvious relevance to the common treatment of the judgement, or to scientific or philosophical procedure in general. Hegel seems to think it does, arguing that the disjunction of a genus into its species ought to take this form; instead of saying that colour is either violet, indigo, blue, green, yellow, orange or red, we ought, he says, to grasp it as the concrete unity of light and dark.

I do not want to say much about this, but I feel a few comments must be made. Firstly, while the above remark might be quite correct, insofar as it presses the merits of the philosophical comprehension of the nature of colour as presented by Aristotle and defended by Goethe and Hegel, as against the definition of colour in terms of the species of cole ours which constitute the spectrum, it has precious little to do with the disjunctive judgement. I would doubt that the grasping of colour as the unity of light and dark can even be expressed in a judgement of the form 'A is either B or C'. Hegel has anyway spent the greater part of the text protesting against this 'either-or', and against concept-determinations such as discrete and continuous etc., being taken as different species; yet now he seems to want to equate the judgement that colour is the concrete unity of light and dark with the judgement that it is either light or dark, as if the unity of the two were not what is required by Goethe's theory!

Hegel's treatment off the judgement ought to end here, with the judgement of necessity, since as far as I can see, the identity of subject and predicate has been 'explicitly posited'. However, Hegel decides to stick on another form of judgement, the judgement of the concept. I choose my words advisedly here, since he does just 'stick it on' making even less of an attempt to deduce it than usual. Nevertheless, it does seem to be important, and it does seem to belong in a consideration of the forms of

judgement. The judgement of the concept is distinguished by the fact that it is the judgement of an object in relation to its concept; that is, the concept is set up as an ideal to which the object ought to conform, and the judgement says whether it does or not. It is therefore a value-judgement, having as its predicate a term such as good, bad, true, beautiful, or even correct (so that the judgement of the truth of a statement in the ordinary sense is itself a judgement of the concept, though the statement itself is not). It contains the same sub-forms as Kant's judgement of modality, but is otherwise totally different to it, since those judgements only concerned the value of the copula in relation to thought, whereas Hegel's judgement of the concept concerned the value of the object. It is anyway difficult to confuse the two, since Hegel's sub-forms do not even include the modal notions.

What is important here is that Hegel is making the value-judgement the paradigm of judgement. Most philosophers have considered the paradigm of judgement to be the statement of fact, and gone on to try to explain the existence of other sorts of judgement. This has led some of them to consider statements such as those containing the fundamental principles of natural science, value-judgements, and even the propositions of philosophy, to be of a very odd sort. Hence they have tended to be pushed over into the realm of the subjective, in one way or another, where they are given either a very low or a very high rating; low, I would say, by Hume and the logical positivists, but high, by Kant and Wittgenstein, who respectively placed them in the transcendental self and the province of the mystical. All this, despite the fact that the main contexts in which we speak of judgement are scientific, aesthetic and moral criticism (especially the last two). Hegel brings such judgement out of the realm of the subjective, and this is a very radical thing to do.

This is not to deny, however, that the judgement of the concept is, in its first form, immediate and assertoric. It is merely the assertion that a particular concrete individual does or does not conform to its concept, e.g. 'This house is bad', 'This action is good'. However, this is what is wrong with it. Someone else might assert that the house is good, or the action bad. Consequently, the judgement becomes problematic. One of the assertions needs to be justified. We need to say that, say, the house is bad because it is constituted in such-and-such a way, or: the house constituted in this way is bad, which is an example of what Hegel calls an apodeictic judgement. The point is, we are here giving objective criteria; for judging the house, which can, be challenged by others. The judgement is given on the strength of a reason, and is therefore open to criticism. whereas 'The rose is red' is not. Hence, Hegel regards it as 'truly objective', and 'the truth of judgement in general'. True judgement only occurs in the context of the process of reasoning.

This all explains why Hegel insisted earlier on that a statement such as 'N. is dead' only counted as a judgement if its correctness was in doubt, and it was asserted on the strength of some reason or other. The reason for this was the obvious one that a judgement is essentially the conclusion of a process of reasoning. I think the reason Hegel thought the assertionoof a predicate on the strength of a reason made the predicate universal, was because it treated it as a concept necessarily connected with another concept rather than an immediate impression. The whole development of the forms of judgement consists, in principle, of the putting aside of the immediate element. The development itself is largely a failure, because Hegel tries to arrange it around Kant's forms of judgement, despite having already criticised Kant for taking them up empirically from the logical table of judgements; and ends up saying some very silly.

things; but it does contain some interesting material, and the general idea of changing the judgement-paradigm is very interesting.

(c) The Syllogism (Der Schluss)

The term 'syllogism' here does not merely refer to the formal syllogism of Aristotelian syllogistic logic, but the process of reasoning, or even the form of rationality itself. The syllogism is what is rational, says flegel, and moreover, everything rational is a syllogism (though obviously not a whole consisting of three judgements). The form and the content of rationality are generally separated, he continues, so that on the one hand we have a merely formal process of reasoning, and on the other, various laws and fundamental principles. However, the form of rationality ought to present in the rational content, for no content can be rational except insofar as has the rational form. If God, freedom and immortality are objects or Ideas of reason, as Kant says they are, then the question remains, what is rational about them. The answer is that they possess the universality of the concept which internally distinguishes itself, and is the concrete unity of its distinct elements. This is the true form of rationality, or the syllogism,

The syllogism in its immediate form, however, is the syllogism of existence or determinate being (der Schluss des Daseins), or the formal syllogism. The syllogistic process itself was only formal to the extent that it was the process of this sort of syllogism, which unites an individual to a universal through a particular (e.g. the individual Gaius to the concept of mortality in virtue of his manhood, the class of mortal beings being more universal in scope than the class of men). This sort of schema, individuality-particularity-universality (I-P-U), was only ex-

plicitly the schema of the first figure of the syllogism, but Hegel, following Kant, argued that the validity of the moods of the other three figures can only be demonstrated by reducing the relationships of the terms in them to the relationship of the terms in the first figure, that is, by showing that those moods are logically equivalent to the moods offthe first figure. Hence, the general schema of the first figure is the basic schema of all the figures.

The syllogism is normally regarded as consisting of three propositions, a major proposition, a minor proposition, and a concluding proposition; but the expression of the syllogism in this form is really somewhat superfluous, argues Hegel, since what really matters in a syllogism is the relation of the terms. It is a subjective reflection which splits this relation up into two premises and a distinct conclusion; all we real ly need to note is that the individual is subsumed under the particular, and the particular under the universal; or conversely, that the particular inheres in the individual, and the universal in the particular. Aristotle based his theory of the syllogism on this relation of inherence. Hegel says of the expression of the syllogism in terms of a trio of propositions that it gives the syllogistic process the appearance of a subjective makeshift (Notbehelf), which one resorts to because one cannot grasp something immediately, something which he seems to think is far from the truth. Far from being a substitute for immediate knowledge, the syllogistic process, critical argument, conceptual thought, is the form of rationality and true cognition.

The fact that Hegel blames the expression of the syllogism in terms of a major, minor and a concluding proposition for the bad reputation of reasoning or deductive thinking in general, and separates it from what he calls the form of rationality, ought to make it clear that when he

writes of the objectivity of the syllogistic process, he does not mean that nature proceeds by framing for itself a major premise, and a minor premise, and then producing a conclusion from these two premises. This process, he says, is simply a subjective form which is given a rational content. The objectivity of the syllogistic process consists in the fact that the different determinations of the concept of a thing are essentially united in it, that is, that it is a universal that is united with individuality through its particularity. I am a man, and through my particular features I am this man. To know me as this man, one has to become acquainted with me through the mediation of those particular features; this mediation provides the objective element in cognition.

The terms in this immediate syllogism have the signification of immediate terms, and are therefore, in respect of content, individual determinatenesses. Thus the individual is here to be taken as any !immediate concrete object 51 e.g. Socrates, this wall etc., perhaps also slightly more abstract entities such as Alexandria and the Greeks; the particular is a single one of the properties or relationships of the individual; and the universal, a more abstract property belonging to the particular. The individual here will, of course, have infinitely many properties that form an aspect of its particularity, however, and which, therefore, could be employed as the middle term in a syllogism (sic) featuring the individual; and through each of those different middle terms it may be united with a different universal. For example, through the middle term of his manhood, Gaius may be united with mortality, but through the middle term of his polytheism, he is united with Paganism. Moreover, the same middle term may unite an individual with several different universals. For example. Gaius may be united through his manhood with animality or rationality besides mortality. Hence, Hegel concludes that it is "completely contingent and arbitrary which property of a thing is employed to connect it with any universal predicate or concept.

Hegel goes on to argue from the fact that an indefinite number of syllogisms is possible for any one subject, and that any one syllogism is contingent in respect of content, that syllogisms concerning the same subject "must also pass over into contradiction". Now we must bear in mind here the extremely broad meaning Hegel gives to the term 'syllogism', and recognise that Hegel is saying the same here as Kant said in the Critique of Pure Reason, i.e. that reason, when applied to the objective synthesis of appearances, necessarily falls into contradiction, but adding that this is a much more common occurence than Kant thought (syllogism here just means 'inference'). Hegel gives a whole host of examples here of cases where one predicate is assigned to an individual on the strength of one middle term, and the opposite from another middle term, so that we end up with two conflicting conclusions correctly inferred from correct premises. It is worth briefly considering these examples of Hegel's, in order to get a better grip on the point he is making.

If we conclude from the tract that a wall has been painted blue, says negel, that the wall is blue, then this is a correct inference; but despite this, the wall may actually be green, if, say, it has also been painted over yellow. Similarly, if we conclude from the fact that man is a sentient consciousness that he is neither good nor evil (because merely sentient consciousnesses are neither good nor evil), this too is a correct inference, but the conclusion is false, because man is also rational. In both these examples, only a single aspect of the object is considered in abstraction from the rest, and inferences are made on the basis of this one-sided consideration of the thing. This is an error in itself, and one which is very common in actual reasoning; too often, only one side of the matter is stressed, and conclusions are reached whose opposites are equal—

valid. Sometimes this is not recognised, and the result is an intellectual schism, and a conflict of factions. Such conflicts are sadly not confined to the issues Kant dealt with in the Antinomies.

These conflicts only result, however, from the employment of this particular form of inference, whereby an individual is connected with a universal through one of its particular properties, this "formal' syllogism. I cannot stress too often that the expression 'formal syllogism' does not refer to the trios of propositions we meet with in syllogistic logic, but only this form of inference. Nevertheless, this form is implicit, in them, and they exhibit its defects in the following way. The premises of this kind of syllogism, as judgements, themselves stand in need of proof. But the proof of their premises would require two further syllogisms, and the premises of the two further syllogisms would also require to be proved, thus creating a demand for four further syllogisms, and so on to infinity. This progress to infinity or infinite progression is, like all such, the expression of a conflict or contradiction, this time between the form of the judgement (an immediate relation) and the nature of the syllogism (which demands the mediation of the terms).

The resolution of this conflict, and therefore also the termination of the infinite progression, consists, says Hegel, in the transcendance of this form of inference, that is, I2P-U. The problem is that the association of the individual to the particular (I-P), and of the particular to the universal (P-U), have also to be established as mediated relations. Now if we try to mediate these by as particular, then in the first case, the particular is treated as a universal, and in the second case, the particular is regarded as an individual, and in both cases, the form I-P-U re-emerges. Hence, what we have to do is to connect the individual and the particular by the universal, and the particular and the universal

through the individual, thus producing two different forms of syllogism, the second and third figures. These are not to be looked on merely as different kinds of syllogism, therefore, but as "necessary alterations" of the first figure, forms which it presupposes. The course of developed ment through the three rigures presents each concept-determination as the middle term, and shows that the true middle term is not a single concept-determination taken in isolation from the rest, but rather their totality.

Hegel's second figure (P-I-U), it should be noted, corresponds to the traditional third, and his third, to the traditional second, as shown below:

(i)	(ii)	(iii)
(P-U)	(I-U)	(P_U)
M-P	M_P	P-M
(I-P)	(I-P)	(U_I)
S -M	M-S	S-M
(I_U)	(P_U)	(I-P)
S-P	S-P	S-P

There is no special reason why the traditional second and third figures are taken in that order, so Hegel is quite at liberty to swop them round, especially since he thinks he can show that they ought to be taken in the order he puts them in, i.e, because this is the order of their deduction. This arrangement also has the advantage that it presents the three figures in the form of a hierarchy, since Hegel's second figure yields only particular conclusions, and his third figure, only negative ones. Hegel omits the ordinary fourth figure (which was anyway, as he points out, unknown to Aristotle), partly, obviously, because it does not fit in with the above, supposedly-deduced schema, but partly also because he thought it was based

on a wholly empty and uninteresting distinction. The position of the terms was simply the reverse of their position in the first figure.

Hegel does consider a fourth figure, however, which relates a universal to another universal through a third universal, and therefore can be regarded as having the schema U-U-U. This is what he calls the mathematical syllogism, and it is otherwise known as the mathematical axiom that if A=B and B=C, then A=6. The relation of equality here replaces the relations of inherence and subsumption, and the fact that the terms are all equivalent means that it does not matter where they feature in the syllogism. This syllogism takes the form of an axiom in mathematics, a self-evident truth which neither admits of nor requires proof, Hegel notes; but the secret of its self-evedence is that it is an entirely abstract and formal proposition (indeed, it is a tautology). This syllogism is one product of the attempt to overcome the shortcomings of the syllogism of existence (it does not simply take one concept-determination as its middle term, since strictly speaking it has no distinct middle term; this is real -ly just an immediate proposition). Another is a new sort of syllogism or inference, in which each concept-determination (individuality, particularity, universality) is no longer merely taken in isolation, but as containing aspects of the others, or reflecting them: the syllogism of reflected ion.

The first form of syllogism of reflection is the syllogism of allness or universality, which Hegel calls "the syllogism of the understanding in its perfection", and it is clear why, since the model syllogism "All men are mortal; Gaius is a man; therefore Gaius is mortal" comes under this description. It is easy to make the mistake of confusing Hegel's formal or immediate syllogism with this sort of syllogism, but the former did not include the term 'all'; it had the form of an immediate in-

ference, e.g. Gaius is a man, therefore Gaius is mortal. Why he thought fit to treat of the figures of the syllogism in the consideration of immediate inferences, I do not know. It seems to me that this is an amazing error which seriously undermines the credibility of his presentation of the figures, for there is a big difference between the two forms, as he points out. The syllogism of allness does away with contingency which infected the syllogism of existence. One may correctly infer from the premises 'x is green' and 'green is pleasant' that therefore x is pleasant, in accordance with the syllogism of existence. But x might not be pleasant — mucus is both green and decidedly unpleasant. However, if one says, in accordance with the syllogism of allness, 'all green things are pleasant', this means that, if x is green, x must be pleasant. The subject here is no longer green in the abstract, but actual objects that are green.

This very perfection of the syllogism of allness, however, i.e. that the subject of the major premiss is all the individuals of a certain type, is also its main defect, for, Hegel argues, anticipating Mill's famous criticism of this sort of syllogism, it means that the major premise presupposes what the syllogism sets out to prove. If we take our previous example of the model syllogism, for example, the major premiss says that 'All men are mortal'; now this is only true if the individuals Gaius, Sempronius, etc., are mortal; but in that case, it can hardly be used to establish the mortality of one of those individuals, viz., Gaius, as it is supposed to do. This statement that all the individuals of a certain type have a certain property, then, appears to require antinduction to justify it. Thus we pass on to the consideration of the syllogism of induction. the middle term of which is a complete list of the individuals of a certain type, indicating their possession of a given property.

The problem is that the list could never be completed, argues

Hegel. I must again regester my disagreement here, as I did when I discussed the notion of 'allness' before. I think an induction of all the individuals could be completed, although never known to be complete. Hegel fails to make this important distinction. I would agree, however, that from the point of view of the knower, the completeness of the list remains problematic. And I also note a clever twist in Hegel's argument here. He says that, implicit in the belief that a particular induction ought to be continued, is the assumption that the general statement it is supposed to prove is correct and therefore ought to be confirmed. This is dubious, but he also says that this assumption is present in the belief that no contradictory instances of it will be found, which is reasonable. He concludes from this, interestingly, that induction also presupposes its conclusion in its premises. It only seems to work if we imagine that the conclusion is true and the induction provides confirmation of it.

The inference from the fact that a given number of individuals possess a particular property to the fact that another individual possesses it, presupposes that, firstly, the former individuals possess that property in virtue of being individuals of a certain type, and secondly, that the latter individual is of that same type. The inference from the fact that two things share the same nature to the fact that they possess the same particular property is the syllogism of analogy. The problem with this syllogism is that it leaves undetermined the question whether those former individuals possess the property in question in virtue of being of that type or not. It might be argued, for example, that since the moon and the earth are both celestial bodies, then if the one is inhabited, the other must be also; but the earth is not inhabited in virtue of being a celestial body as such, but because of the peculiar conditions that obtain on and around it. The syllogism of analogy therefore also presupposes what

it tries to prove, i.e. that the two cases are analogous.

The above syllogisms of reflection could be placed in general under the schema P-I-U, since individuality was still (Hegel says) the essential determination of the middle term (the inferences were all inferences from facts about individuals). Since the syllogism of existence had I-P-U for its general schema, the only remaining schema is I-U-P, which means that the universal in the sense of genus is the only remaining possibility for the role of middle term. The syllogisms which have the genus for mediating factor Hegel calls the syllogisms of necessity, because the middle term is that in which the other terms are united in it in such a way that they are only distinguished by what he calls an "external and inessential form", and appear as "moments of a necessary existence". The immediate form of the syllogism of necessity is the categorical syllogism, which Hegel describes only by saying that it has a categorical judgement for one or both of its premises, so that I assume he means something like: "Cold is a metal: This is gold: therefore this is a metal".

The categorical syllogism, he says, appears on the surface to be "a mere syllogism of inherence", but it is not (like the categorical judgement is no mere judgement of existence) because the predicate of the major premiss is not just a particular property of the subject, but its genus. The predicate of the minor premiss, moreover, is the specific difference or species of that genus. Consequently, it is not contingent here what the middle term is, nor what the predicate is, as it was in the syllogism of existence, and therefore also, the demand for proof which occurred in the latter does not arise here. I think he means here that "Gold is a metal" tells us what gold is rather than just assigning a predicate to it, and therefore does not require a ground or middle term with which to connect subject and predicate. It is not an immediate impression but a

in the state of th

coneeptual truth. It follows too, therefore, that this syllogism does not presuppose its conclusion in its premises, for it does not say that all the individuals of a certain type possess a certain property, but that a species belongs to a certain genus. There is no question of checking bits of gold to see if they are metal; if we do not know that gold is a metal to begin with, we will not know what to check.

However, this syllogism has a similar defect to the categorical judgement, i.e. it does not provide us with any criteria for distinguishing the species mentioned from other species of the same genus. It does not tell us, for example, what gold is apart from being a metal, or the individual is, apart from being a piece of gold. The hypothetical syllogism does away with this defect, insofar as it offers conditions for the existence of something, in the form of a hypothetical judgement. It also includes the additional judgement that these conditions obtain, thus inviting the conclusion that the thing is, or that what we have before us is an example of that thing. The judgement that the conditions obtain, however, or that 'A is', is an immediate judgement, or mather a mere proposition, and this means that this syllogism has the defective form P-I-U (immediacy being equated with individuality). What is needed is a syllogism which excludes even this element of immediacy, and operates only in the realm of, thought: such is the disjunctive syllogism.

The disjunctive syllogism has the form I-U-P, and the universal that forms the middle term appears not only in the form of universality, as the genus, but also as the genus disjoined into its (logical) species, and as embodied in this one of its species to the exclusion of the others. For example, in the disjunctive syllogism 'Poetry is either epic, lyric or dramatic; but this piece of poetry is neither epic nor lyric; therefore it is dramatic', the universal subject, poetry, appears first in

the form of a universal, then as a particular sort of poetry, and finally as this individual piece of poetry. Now the middle term here is no immediacy, but the concept of poetry, which has been generalised out of the emprical material, and given its place in the system of the arts and knowledge as a whole. Only on the basis of this entire system of knowledge can we make a syllogism like this, which never touches the realm of immediate impressions. However, precisely because of this, the disjunctive syllogism is no longer realty a syllogism at all. The peculiar form of the syllogism is that it consists in the internal unity of diverse terms; but this unity is no longer merely inner.

It is at this point, then, that we step out of the realm of subjectivity. The subjectivity of the syllogistic process consisted in the fact that the middle term between the extremes was abstract, and distinct from them. The middle term here, or the unity of the diverse elements, is concrete, in the sense that it is the foundation and principle of them rather then a single property which merely links them. The different forms of syllogism just described are various stages in the impregnation of the middle term, or its ascent to this concrete nature. Its progress may also be seen as the transcendence of mediation, which means that the result of the process is a new form of immediacy, which has energed from the transcending of mediation, an immediacy of thought, but an immediacy which is at the same time a thing that actually exists—an object (Objekt). The step into the realm of thought proper, of the concrete universal, is therefore at the same time a step out of the cage of subjectivity into the realm of objectivity.

Notes and References

```
1. Werke 6, p.243; Miller, p.575
2. Ibid.
3. Ibid.
4. Werke 6, p.244; Miller, p. 575
5. A58f/B82f. Hegel quotes from this section on p.266 of the Suhrkamp edi-
tion, p.593 of the Miller translation.
6. Enc., section 172 (R)
7. Werke 6, p.499f; Miller, p.794f
8. Werke 6, p.253; Miller, p.583
9. Gritique of Pure Reason, Bl31-Bl36; Bl39-Bl41
10. Treatise, p.252
11. Kant, Prolegomena, transl. P. Gray-Lucas (Manchester University Press
1978), p.57
12. <u>Enc.</u>, section 415 (R)
13. Werke 6, p.268; Miller, p.594
14. Werke 6, p.269; Miller, p.595
15. Critique of Pure Reason, B75/A51
16. A58f/B82f
17. Ibid.
18. See the chapter on truth in David Hamlyn's The Theory of Knowledge
(Macmillan 1970)
19. T.K. Swing, Kant's Transcendental Logic (Yale University Press 1964),
p.5-19
20. Werke 6, p.269; Miller, p.595
21. Werke 6, p.275; Miller, p.601
22. <u>Essay</u>, III; iii; 9
23. Ibid.
24. Ibid.
25. Werke 6, p.279; Miller, p.605
26. Werke 6, p.276; Miller, p.602
27. Werke 6, p.277; Miller, p.603
28. Enc., section 163 (Add.)
29. Werke 6, p.279; Miller, p. 605
30. Ibid.;
31. Werke 6, p.280; Miller, p.606
32. Ibid., p.282; ibid., p.607
33. Ibid., p.299; ibid., p.620
34. Ibid., p.293; ibid., p.616
35. Ibid., p.296; ibid., p.618
36. Spinoza, Ethics, transl. R.H.M. Elwes (Dover N.Y. 1955), Part II. prop
proposition XXXV (Note). Spinoza actually mentioned the sun in his example
rather than the moon, but this makes no difference to my point.
37. Enc., section 459 (R)
38. See Frege's Philosophical Writings, p.63
39. Werke 6, p.301; Miller, p.622
40. Werke 6, p.304; Miller, p.625
41. Phenomenology, p.23
42. Werke 6, p.307; Miller, p.628
43. Naming and Necessity, p.62
44. Philosophical Writings, p.2-3
45. Werke 6, p.334; Miller, p.650
```

```
46. Werke 6, p.336; Miller, p.651
47. Ibid.
48. Ibid., p.339; ibid., p.653
49. Ibid., p.343; ibid., p.656
50. Ibid., p.349; ibid., p.662
51. Ibid., p.359; ibid., p.670
52. Ibid.
53. Ibid., p.360; ibid., p.670
54. A407/B433-434
55. Werke 6, p.376; Miller, p.683
56, Ibid., p.370; ibid., p.679
57. Ibid., p.381; ibid., p.687
58. Ibid., p.392; ibid., p.696
59. Ibid.
```

60. This example is adapted from the example Hegel gives in the lecture material (Enc. section 177 (Addition)) of a disjunctive judgement.

Chapter Eight: Objectivity

Hegel begins here by remarking that the transition from the concept to objectivity is the same as the inference from the concept of God to His existence which occurs in the Ontological Proof invented by St. Anselm and adopted by Descartes. Consequently, it is liable to the same misunderstandings. Hegel has already mentioned Kant's argument that " 'Being' is not a real predicate", which his central to his criticism of the Ontological Proof. and he refers back to his previous criticisms of it. Kant confuses 'being' with sensuous existence, and this is not what is intended by Anselm. Hegel is not basing the transition from the concept to objectivity on the ontological proof, it should be noted, but rather the reverse; he says that "the determinate content, God, makes no difference in the logical process, and the ontological proof is merely an application of the logical process to that particular content; and besides, God, as far as 'rational cognition' is concerned, is nothing apart from His predicates. which are anyway based on the concepts produced in the course of the logic.

Hegel is saying here that it is of course impossible to make an inference from the concept of a thing to its 'being', or 'objectivity' if we think of the concept as a mere abstract idea, and its 'being' or 'objectivity' as its presentation in the context of outer experience, its sensuous appearance; but in fact, the term 'concept' here denotes something independent of the subject commonly so-called, as was seen in the last chapter, and it is precisely this aspect of independence which constitutes what Hegel calls its 'objectivity' (thus he distinguishes between Object, the thing in its self-subsistence, and Gegenstand, the thing insofar as it is our object, though it later turns out that the object is

also an object for us. It is not an object of the senses, however, but an intellectual object. Objectivity in Hegel's sense is the objectivity of rational or ethical principles, rather than the world of immediate existence, which in comparison with the former, is transient and subject-relative, a mere Heraclitean flux.

Objectivity in its true sense is not, however, objectivity in its immediate sense. Hence, instead of beginning directly with true objectivity, Hegel tries to show how this concept develops from objectivity in its immediate sense, through a transitional form to true objectivity. This involves a passage from the standpoint of mechanism, where the objective world really is just conceived as confronting the subject as an alien existence, a sort of Fichtean 'non-I', through to the transitional viewpoint of chemism, where substances are conceived of as being capable of a much greater unity than the objects of mechanism, and therefore as resembling much more closely the unity of the subject, and finally to the standpoint of teleology, in which the end appears as the objective element which is the principle of the unity and the development of the sensuous appearances. All three forms are to be found in existence; but the first two are really only superficial forms, so that mechanical and chemical phenomena need to be seen ultimately in a teleological context.

(a) Mechanism (Der Mechanismus)

Hegel understood by the term 'mechanism' the conception of the object as a mere aggregate or external unity, which entered into external relations with others. The approach to the world which attempts to explain all phenomena in terms of the effects of matter in motion, which is what is usually called mechanism, is therefore a mechanistic view on Hegel's

account, since it views objectivity as composed of material particles in external relation to one another, but not the whole of mechanism. The aggregates in question do not have to be conceived as material particles or forces. The view that the mind consists of various psychological forces or faculties is equally mechanistic in Hegel's opinion. On the other hand, the mechanistic outlook is, for him, only really adequate for the consideration of material bodies in the abstract. Heat, light and electricity are beyond satisfactory comprehension in mechanical terms, and it is even less satisfactory to try to understand the nature of physical organisms or of the mind using the categories of mechanism alone.

It is true that there is a certain mechanical element in the phenomena of any sphere, of course. The nerves and muscles of my arm move mechanically to some extent, even though I move my arm as a whole: the circulation of the blood is similarly mechanical up to a point. The point is that the mechanical element here is subordinated to other factors and appears only as a secondary consideration. Indeed, when this mechanical element predominates, it is usually a sign that something is wrong. When I am ill and feeling weak, I become much more aware of the weight of my limbs, for example. The mechanical element is also present in the psychological and social spheres. It is essential to the ability to memorise and consequently also to the learning-process, though this does not mean it can fully account for either, and certainly not that we ought to expect to be able to produce mechanical laws of the mind; and there is even an element of the mechanical in artistic production. However, the performance of completely mechanical tasks such as arithmetical calculations is still considered by Hegel as an alienation of intelligence.

The best existing model for the object of mechanism is, Hegel says, the Leibnizian monad. He gives three reasons for this: firstly, each

monad is supposed to be a complete representation of the world, and therefore is a unity which involves plurality or is internally complex; secondly, the ground of its representations is external to it; and thirdly, it is a matter of indifference to each monad whether other monads exist. This is not an ideal model for Hegel, however, because Leibniz regarded the monad as essentially a simple substance, not a composite or external unity. It contained a plurality of perceptions, but then perceptions were precisely peculiar to simple substances; they were not to be found, according to Leibniz, in compounds or machines. Hegel, however, seems to think that Leibniz had no right to call the monad simple, or an 'exclusive one', since such a one presupposed others which it excluded, while the monad was not supposed to require any other for its existence. Moreover, as a substance, it would also have to interact with other substances, which Leibniz said it did not, even though he thought it reflected the world, which surely involved some kind of causal interaction.

What Hegel seems to have been looking for is a world-view exactly like the one Russell attributes to himself in his philosophical auto-biography; a view which he actually compares with Leibniz's. He rejects Leibniz's view as such, but nevertheless salvages from it a distinction between what he calls two kinds of space, i.e. the space "in the private world of each monad", and the space which the monads occupy between them. The former is that private world of given data which features in the chapter on solipsism in his Human Knowledge: Its Scope and Limits, where the reader will recall that he argues that solipsism cannot be formulated by the words "I alone exist" because "...If other people and things do not exist, the word "myself" loses its meaning, for this is an exclusive and delimiting word". We must rather say that certain data constitute the whole universe (or at least the whole universe of knowledge). The latter

is space as it features in post-relativity physics. A man may witness two events A and B in succession, and this will be their order in private space, but not necessarily in physical space. The order in physical space can be inferred, but only if one assumes a causal interaction betweem events in the external world, and in our own experience. Hence, Russell rejects the notion that monads do not interact, and that nothing enters a monad from without.

ate a deterministic view of perception, and of the universe in general.

This view is, for Hegel, characteristic of the mechanistic standpoint.

The mechanical object is indifferent to its determinations, just as these are indifferent to one another. Consequently, those determinations are not comprehensible from its general nature, nor from each other. The form that unites its different aspects is an external one, so that the object is only a mixture, or a certain arrangement of parts. However, this means that the state of the object must be determined from outside, by another object, which, if it is a mechanical object, will be indifferent to the determining role it plays, and will have its own state determined by an object external to it; and so on to infinity, so long as every successive object is conceived as a merely mechanical object. For nowhere in this services will there be a principle of self-determination; determinism reigns, so every object or event must be assigned an external cause.

Since the deterministic sequence of events in the sphere of mechanism forms an infinite progression, there being no principle of self-determination, it is all the same, Hegel says, whether we stop the sequence at one point or another, for nothing can be gained by continuing it. But this is not to say that one point is as good as another, so much as that one is just as bad as another, since the lack of a principle of self-

determination means that for every event that is assigned a cause, there arises another to which a cause needs to be assigned. For every question that is answered, another is raised. Consequently, Hegel says that the term 'explanation', used in relation to this reference of one event to another, is "an empty word". ¹²Mechanistic explanation is in fact of the formal and tautologous sort mentioned in chapter four, where the same content is merely expressed in two different forms; for example, the motion of billiard ball A is 'explained' by the force with which it was struck by ball B; but this force is nothing apart from its expression in the said motion.

The infinite progression here is the expression of the contradiction or conflict between the indifference of externality of the mechanical objects to one another, and the identity of their determinateness (in the above example, the force which one imparts to the other). This conflict is explicitly set out in the mechanical process. Insofar as this process is considered in the abstract, as the formal mechanical process, the interaction of objects takes the form of the communication of the determinateness from one object to another. If the communication of thoughts is to be regarded as an ideal relation, argues Hegel, in which a determinateness is continued unimpaired from one person into another, then communication between material objects must be still more ideal, since the individual personality has a greater capacity for resisting external influence than the material body. Neither the individuality of persons or objects, however, can resist a determinateness which is absolutely universal, such as, in the spiritual sphere, laws, morals and rational principles in general, and in the material sphere, motion, heat, magnetism or electricity.

Objects must also assert their individuality in this process, however (presumably in order to be determined as individuals, rather than a single object); and this assertion is what is generally called reaction

(Reaktion). This is not to be conceived as the mere cancellation (Aufheben) of the initial action or the communicated determinateness, for the latter, far from being cancelled out, is in fact distributed between the two objects. Newton's Third Law of Motion says that the action of any force on a body produces an equal and opposite reaction. Hegel seems to want to say that action and reaction are in fact two expressions of the same force active in two opposed and reciprocally determining bodies. The result of third determining is that the individuality of both bodies is established, and they return to a state of rest. This shows that the determinateness is external to the body; but rest, too, is external to the object here, according to Hegel, and can equally be regarded as produced by an external cause; motion and rest here are merely contingent motion and rest.

The mechanical process can also be considered in a more concrete manner, as the real mechanical process. The objects are then determined as being specifically different from one another. This difference is not merely to be conceived as a quantitative one, as one of mass or force, moreover, but as a genuine qualitative one. The two objects, however, must belong to the the same general sphere in order for the one to be able to act on the other: a sheet hanging freely in the air (says Hegel) is not pierced by a musket ball, and someone very stupid and dishonourable will not be influenced by somebody very wise and noble (the only consistent defence against reason, Hegel says, is to have nothing to do with it). ¹⁴ I am not sure that qualitative difference has to come into consideration here, however. Hegel himself regards the above as primarily examples of something very feeble being unable to be penetrated by something disproportionately strong, and it seems to me that these quantitative determinations are all that is really relevant here.

Hegel goes on to discuss the resistance that occurs when obj-

ects that <u>do</u> constitute a single sphere are brought into contact. Resistance, he says, is "the precise moment of the overpowering of the one object by the other"; even if we replace "is" with "takes place at", this still does not sound quite right. I think he is saying that it is only insofar as the second object has already been acted on by the force that it can resist, in which case "overpowering" (<u>dor "berwältigung</u>) is an unfortunate term to use. Hegel goes on to say that resistance is itself overcome where the object lacks the capacity for what is communicated, and is thus disrupted or destroyed by it. In this latter case, the force acting on the object is something completely alien to it, and therefore has the form of violence (Gewalt). ¹⁶ Fate, he says, is nothing but this force acting on a subject who has made himself into an object by committing a deed, and therefore left himself open to the influence of external forces beyond his control.

The machanical process might in retrospect have been called 'finite' or 'relative' mechanism, in contrast to what follows, which Hegel calls 'absolute mechanism'. For Hegel thought it was important to distinguish between the sort of mechanical relations which hold between the 'inessential single bodies' and those which hold between them and a central body. Hence, in his philosophy of nature, he is very critical of the Newton's attempt, which has long been regarded as one of his major contributions to science, to unite the science of terrestrial motion with that of the motion of the celestial bodies. Even here he points out that the relations of thrust and pressure which obtain between the single bodies on the surface of the earth do not obtain between those bodies and their centre (the centre of the earth). Instead of saying that a body was drawn or attracted toward the centre of the earth by its gravitational pull, Hegel thinks it is more accurate to say that the body strives toward it, since

the former are contingent relations, while the motion of a body on near the surface of the earth toward its cemtre is its natural or essential motion. Newton's assumption that a body undisturbed by external forces would continue in uniform motion in a straight line is an empty abstraction, Hegel continues; the friction etc., which Newton assumes in order to account for the fact that this never happens is actually only a manifestation of gravitation, or centrality, itself.

The elimination of gravitation as an attractive force is clearly a very significant step in mechanics, which is usually credited to Einstein, but here we have Hegel already arguing for it. He does so partly because he thinks that a mechanical system must have a principle of self-determination, and that this is the centre. He goes on to treat of the nature of a mechanical system as a whole, and says that it basically contains three types of body: the central body, dependent bodies without a centre in themselves, and bodies containing their own relative centre. For example, the solar system is essentially comprised of the sun, which is the central body, moons and comets, which are dependent bodies without centres in themselves, and planets, which contain their own relative centre (or gravitational field). Each of these factors mediates in some sense between the - > other two. For example, the centre, as universal gravitation, is what unites the planets and their satellites; the planets, as centres for the satellites, are what unites them to the central body and makes them part of the solar system; and the satellites, since they move relatively to the planets, enable us to declare that the planets move relatively to the sun.

There are, then, three syllogisms (in Hegel's sense) present here, having the respective forms, I-U-P, P-I2U, and I-P-U (the forms of the formal syllogism). At least, this is what Hegel says; in fact, no amount of fiddling can force the relations between the sun, the planets and

the satellites into such neat and tidy schemata. They are more plausibly applied, however, to the relations which obtain in Hegel's other example of a mechanical system, in which the constituents are the state (the centre), the individual citizens (the dependent bodies), and the "needs or external life" those individuals (the relative-centres). Here, firstly, the state (the universal) acts as the middle term between the individuals and their (particular) interests, insofar as it is only in the state that the individuals are capable of satisfying those interests; but secondly, too, the individuals act as the middle term between the state and their interests, insofar as it is their activity that keeps the state going and looks after their interests; and thirdly, the interests of the individuals act as the middle term between the state and the individuals come together in a state to satisfy their private interests.

Actually, Hegel thinks that this last view of the relations between the state, its citizens and their private interests, which has them related in the manner of the constituents in the formal syllogism (I-P-U), is a mere show, that is, it is a very superficial view. This is because the individual here is only an abstract individual, and the state only an abstract universal, external to it and confronting it. It is only to the extent that state and individual are considered in this way, that relations analogous to the mechanical relations of thrust, pressure, attraction and aggregation are appropriate to them. For example, it is only the abstract state that is produced by an aggregate of individuals coming together to submit to the coercive power of a single authority. In fact, the true state is the ethical essence of its individual citizens. They are not merely related to it as to a centre outside themselves, but rather it permeates them. It is present in them in the form of the law they all obey. All mechanical systems are governed by law, which is the true centrality.

This can be seen in the solar system too, where all the orbits of the planets are made in conformity with the laws discovered by Kepler. The planets are not merely attracted to the sun, nor do they merely strive toward it, but rather follow certain definite paths around it in a lawlike manner. Now Russell was aware of this conformity to law here, but not in the practical sphere. The state, far from being regarded as equally fundamental in that sphere as universal gravitation was in the sphere of celestial mechanics, was taken by Russell to be the government machine, which is of course something external to the individual, as are its laws. Hence it ought to come as no surprise that most of Russell's social and political philosophy is concerned with the problem of the extent to which the authority of the state can be allowed to interfere with our personal liberties, and that the main justification offered for such interference is the need for order and organization in the modern world. Russell failed to carry the metaphysics behind the new mechanics over into his politics.

(b) Chemism (Der Chemismus)

The chemical object is distinguished from the mechanical object insofar as the latter is indifferent to its determinateness, while the chemical object has it, and consequently also its relation to another such object, as part of its very nature. A chemical substance, for example, is what it is in virtue of its affinity for certain other substances. its power of combining with them. This determinateness, however — in my example, affinity — is not merely the determinateness of one of the individual chemical objects, but both; each has an affinity for the other. Consequently, we must distinguish between the concept of the chemical object as the "inner totality of the two determinatenesses", ¹⁸ and the determinatenesses in the determinate

minateness that constitutes the nature of the individual objects in their external existence. The individuals strive to come together to realise this inner unity of theirs, and put aside the one-sided nature of their existence. Each object can therefore be said to be the centre of the other, to which it is related.

Chemism is not only apparent in what are normally called chemical phenomena, however, just as mechanism was not confined to the objects of the sphere of mechanics. Although Hegel does not give many specific examples of other phenomena which could be called chemical in the broader sense, he does say that the sex-relation comes under this schema, and that it provides what he calls the "formal foundation" for the phenomena of love, friendship etc. He would probably see this as explaining why Goethe's use of the language of the chemical theory of affinities to describe a complex emotional situation in his Elective Affinities works as well as it does. The reader would do well to recall that Hegel is not just talking about chemistry when, for example, he comes across statements of his like the one that the chemical object is at first an "indifferent base" (Basis). This does not mean that it is one of the basic oxides, but that it is considered only as related to itself rather than to another; a person can be considered as a base in this sense.

The chemical process is the process described above whereby two objects presupposed as having an affinity to one another, strive to overcome their separate existences and unite. The objects are kept apart only by external compulsion, Hegel says, and yet they also require a middle term in which to unite. In the material world, he says, this middle term is water. In the Encyclopaedia; he also adds air, and he really seems to think that chemical substances can only unite in these two elements. though what he says on chemistry there is on the whole very obscure. In

the mental realm, insofar as chemism is present there also, the middle term is the sign, or language. The chemical objects unite <u>in</u> this middle term rather than through it, because it is a middle term in the sense of a medium. Hegel confuses the issue here continuing to use the term 'Mitte' where it is not really appropriate. One could be forgiven for thinking that he believes that chemical substances combine through being placed in water, or that people are literally united by language.

When chemical objects are united, Hegel observes, they cease to exist as independent entities. Now the problem with this point is that it does not seem to apply equally well to all the phenomena in which chemism is supposed to be manifested, It applies very well in the case of chemical substances; chemical compounds are not really 'composed' or 'compounded' of certain substances which at the same time remain independent material entities. The combining substances are not detectable in the compound, but only produced by the process of decomposition. Hydrogen and oxygen, for example, are not detectable in water, but only produced when it is exposed to a high temperature or made the vehicle of an electric current. However, the male and female of the species, when they 'unite' in the act of copulation certainly do not cease to exist as independent entities, at least, not in the sense that chemical substances do when they unite; they do not disappear. It is true that their product is neutral, if this is taken to be the offspring, and neutrality is taken to mean being a third distinct from the other two: but the offspring is not a product in the same sense as the chemical compound, and it must be of the general nature of one or the other of its parents, i.e. of one sex or the other. Consequently, Hegel's point only really works as a general observation about chemical substances.

The chemical process thus far described constitutes, as one might expect, the first in a series of three syllogisms, and has the form

of the formal syllogism, I-P-U. Or at least, Hegel says it does; actually it does not fit into this schema at all. Hegel says that the extremes of the syllogism are the two objects which have an affinity with one another, and I see no reason why these objects should be distinguished as individual and universal, nor why their neutral product or medium (Hegel does not make it clear which he thinks is their middle term) should be regarded as a particular. The second syllogism, which (supposedly) has the form P-I-U, is the syllogism of the process of decomposition. Since Hegel says nothing about this process to distinguish it from the familiar chemical process, I will only comment here that like its predecessor, it does not fit into the abstract schema he puts it in. There seems no reason to describe the activity of decomposition as something particular, nor the product of decomposition (and really there are two products) as universal.

The third syllogism does not even seem to be intended to reperement the structure of any process as such, although the relation whose form it is supposed to represent can, I suppose, be fitted into its schema, I-U-P. For Hegel is arguing here that the failure of the chemical process to realise a unity which also contains an element of difference, shows somehow that in order to realise such a unity, the element of externality and immediacy present in that process must be transcended. This unity is at the root of both chemical processes (i.e. composition and decomposition) which merely exhibit the conflict between unity and difference in the form of the transition of the one into the other, and back again, ad infinitum. If we consider the individual objects as the individual element here, and their product as the particular element, one the assumption that the true universal is to be treated as universal, we can fit this relation into the schema I-U-P. It is the conflict that is the main point of interest here, however; and this is supposed to be transcended in teleology.

What Hegel seems to be getting at here is that there is a need for chemical changes to be seen in a teleological context, as being ultimately a very superficial part of an end-directed process. This does not necessarily mean that they have to be seen as changes brought about by some intelligence in order to achieve a certain pre-determined end of that intelligence, although this is what is immediately suggested by the phrases "teleological context" and 'end-directed process', but it is not possible to say at this stage what else it could mean, because this presupposes the further determination of the concept of the end, or purposiveness, which is to be the result of the account of teleology which is to follow. It seems to me that what is begind this advance to the consideration of objectivity as a teleological process is the need for a principle of self-determination to overcome the infinite regression of events in a deterministic series in which everything is determined by something external to itself.

(b) Teleology (Teleologie)

"Where purposiveness (Zweckmässigkeit) is perceived, an intell-22 igence is taken to be its author", begins Hegel, and this is the first sign that it is teleology in its most familiar sense which he is concerned with here. Teleology, he goes on to say, is especially contrasted with mechanism, since the mechanical object is determined from outside, whereas in teleology there is an element of self-determination. The opposition between final and efficient causes, and the conflict between free will and determinism, are different forms of the conflict between mechanism and teleology. Prior to Kant, Hegel explains, philosophers had proceeded by assuming a fixed idea of now the world is, and then endeavouring to snow

either that such a world would have to be a thoroughly deterministic system, or that it would have to contain freedom. Kant showed that it was equally justifiable to apply the one predicate to the world as to apply the other, and concluded that the truth about such matters was unknowable. Hegel accepted Kant's criticism, but not his conclusion, and argues that we ought to reject the assumption that the two are strictly opposed, and ask instead if the one form of objectivity might not be subordinated to the other. And this is actually what he asserts to be the case; mechanism – and chemism too, insofar as it lacks the principle of self-determination is a subordinate form to teleology.

Teleology has traditionally been favoured by the church as the way of explaining events most suited to the religious point of view, since it ascribes everything to the design of an intelligent being. However, to the extent that it did this, Hegel argues, it departed from the truly philosophical approach to things, which is to consider their properties as stemming from their universal nature, rather than merely being put together in it by the work of some designer. Insofar as teleology had to assume the effecacy of some principle external to the system of things, it is even inferior to mechanism and chemism, Hegel suggests, because the latter do at least make nature appear to be a self-contained system in which everything is explained. Teleology also tended to make God look rather silly, since it presented things as being necessary in respect of their content as well as their form, so that God was depicted as being personally responsible for the existence of every earth-worm or piece of sea-weed, things whose existence one would normally regard as being a matter of indifference.

It is important to point out, however, that these, problems only arise where teleology is merely regarded as concerning external purposiveness. Since the latter is not a familiar phrase, I think I ought to

say something about its meaning and origins. Kant, in his Critique of Tel23
eological Judgement, made a fundamental distinction between relative or external purposiveness, and absolute or internal purposiveness, which Hegel
credits with "unlocking" the concept of life, the immediate Idea, and
thereby raising philosophy above the mere concepts of reflection or the
pure understanding, and incorporates into his own account. External purposiveness is basically the use-value of an object as a means to another object, e.g. the utility of rain for the farmer as a means of getting his
crops watered. Teleology is usually regarded as the science of this sort of
purposiveness, but this is odd, because things considered in respect of the
their external purposiveness are really considered as means rather than
ends. A true teleological consideration would consider things in respect of
their internal purposiveness, that is, it would consider them as ends-inthemselves.

I will say more about internal purposiveness in the next chapter; right now I want to look at what Hegel has to say about Kant's treatment of the conflict between free-will and determinism in the Third Antinomy of 24 Pure Reason, and the conflict between mechanism and teleology in the Critique of Judgement. Actually, he says nothing about the former that he has not already said about the other antinomies; he basically just applies to the Third Antinomy his general point that the proof of the thesis of each antinomy does not establish that the antithesis is contradictory, but only that it contradicts the thesis, and similarly that the proof of the antithesis does not show that the thesis is contradictory, but only that it concontradicts the antithesis; so that the 'proofs' are really superfluous, and the whole antinomy just consists in the assertion of two opposed propositions. It is what he says about the antinomy in the Critique of Judgement that is most interesting, and which, therefore, I want to consider

more extensively.

This antinomy takes the form of an opposition between the statement that "All production of material things is possible on mere mechanical laws", and the statement that "Some production of material things is not possible on mere mechanical laws". Kant evidently thought the proofs of the antinomies in the <u>Critique of Fure Reason</u> were superfluous too, because he does not supply any for the thesis and antithesis of this later antinomy. The palaver which went with the so-called 'sòlution' of the Antinomies of the <u>Critique of Pure Reason</u> is also dispensed with here, and Kant simply says that we are unable to decide which one of these statements is correct, because "we can have no <u>a priori</u> determining principle of the possibility of things on mere empirical laws of nature", i.e. there might be cases of material things whose production is not possible on mere mechanical laws, but any apparent example of this might equally turn out to be an example of the production of a material thing in accordance with mechanical laws we do not know about (and could never know about).

Simply because this metaphysical issue could not be decided, however, Kant thought that it could not be the real issue. The real issue he thought, was the apparent conflict which arose in the course of the scientific imvestigation of nature, between the "a priori (?) maxim of the understanding": which says that "All production of material things and their forms must be estimated as possible on mere mechanical laws", and the empirical discovery that "Some products of material nature cannot be estimated as possible on mere mechanical laws". To say 'apparent conflict', because Kant goes on to say that there is no conflict here at all. I personally have no doubt about the incompatibility of these two statements; if I must judge or estimate that all A are B, I must equally be able to do so, on Kant's own principle that 'ought implies can'. When Kant later asserts

that all that is really being said here is that we ought always to try to explain things mechanically as far as possible, while at the same time admitting that certain things might not be susceptible to this sort of explanation, moreover, he actually amends the content of the two statements somewhat; there is no "as far as possible" or "as far as lies in our power", for example, in the first statement.

Hegel picks up on the fact that Kant's second pair of propositions are just as contradictory as the first, and argues that the latter's handling of the supposed conflict between mechanism and teleology generally ignores the central philosophical question here, i.e. "which of the two principles possess truth in and for itself", which I take to mean which of the two principles is the true form of objectivity, and which is only a very superficial form of it?". This is not the same as saying that Kant must, after all, opt for either a mechanistic monism or a straightforward dualism of ends and causes, because Hegel recognises the existence of both forms while at the same time insisting that they cannot merely be. indifferent to one another. Kant's approach seems to treat them as indifferent, at least to the extent that he argues that we may switch from proce eeding in accordance with the first maxim of the antinomy to the second "when a proper occasion for its employment presents itself". The possibility that, say, mechanical causation is inseparable from teleological processes, does not seem to occur to him.

Hegel commends Kant, however, for calling the teleological judgement a reflective rather than a determining judgement. That thought that by doing this, he was declaring it to be a highly subjective and inferior sort of judgement, but this is certainly not how Hegel takes it. He takes it as an intuition of its high status, because the universal that features in the determining judgement, he says, is only an abstraction,

while the universal of the reflective judgement is a concrete universal, which contains particularity rather than putting it aside. ‡ think we can take it that Hegel is interpreting the phrase 'reflective judgement' in his own special way here, so that the 'reflection' involved is that which we met with in my chapter four, the self-movement or self-determination of a thing whereby its essence is revealed, and the 'judgement' is the judgement or determination of the concept, i.e. much the same thing, only seen at a different level. The teleological process <u>itself</u>, then, is, for Hegel, a 'reflective judgement', insofar as in it, the concept (or subject) "determines external objectivity absolutely", i.e. it is that in the light of which the series of mechanico-chemical changes must be comprehended.

It is not merely such a judgement, however, but also takes the form of a series of syllogisms (surprise, surprise). In the first of these syllogisms, the universal concept is united with individuality through the middle term of particularity (our old friend, the schema I-P-U). What this means, I think, is that the first stage of the teleological process is the determining or particularisation of the end or concept. The universal as such is indeterminate and therefore (tautologically, in Hegel's terminallogy) unrealisable. The end must always have a determinate content. It is in this respect finite and contingent, and consequently stands opposed to the external, mechanico-chemical world, instead of pervading it. The particularisation of the concept is at the same time an exclusion (Ausschliessen) of certain features and an unlocking or an opening-up (Aufschliessen) of itself, literally, self-determination. This process appears in the social or ethical sphere as the process of decision, and is dealt with in this form by Hegel in the Philosophy of Right.

The self-determination of the concept or subject, however, or if the reader prefers, the investing of the subject with a specific con-

tent, at the same time brings it into relation with a part of the external world, which becomes for it a means of realising itself in that external world. The end requires a means, or a middle term which has the form of an external thing, in order to unite it with objectivity, because it is finite, and therefore contingent. Hegel goes on to say that the means is "the formal middle term of a formal syllogism", which is unfortunate, since this would give it the form I-P-U, which I have just argued is the form of the first syllogism of the teleological process. Actually, the case for regarding both as being of this form is a good one, since Hegel says that concept and objectivity are only externally combined in the means (a trademark of the formal syllogism is the external combination of terms); this strikes me as a good reason for not paying too much attention to Hegel's schemas, despite the fuss he makes about them.

The means, as an external object, cannot resist the end as it would resist another external object, because it has no internal purposiveness, no end of its own. It is absolutely penetrable by the end. The end is therefore immediately or directly united with the means; that is, there is no further means or middle term in or by which end and means are united. If one supposes that such an intermediary is necessary, then one also has to postulate a means between the end and that means, and so on to infinity; and the imfinite progression, here as everywhere else, would only be the expression of a contradiction. This lack of an intermediary can be seen in the most common-place examples: when I move my arm in order to reach for something, there are an indefinite number of mechanical movements involved in this; but I do not perform an indefinite number of actions. I do not first move this muscle, then that, or attend to any of my nerves; I simply move my arm. The nerves and muscles come into play automatically in the service of the end I have in view.

If the activity of realising the end only consisted in determining external objectivity, consequently, its product would not in fact be an end in any sense, but only a means. The end must not, therefore, be entirely external to objectivity, but rather its activity must in some sense be internal or essential to its nature. And Hegel seems to want to say that this is the case; the mechanical and chemical changes which take place in the realisation of the end are not simply external to it, but rather have to be comprehended in the light of it, The appropriation of the means, and the determination of another object through it, says Hegel, can be regarded as violence, insofar as the end is external to both objects, but the fact that the end determines the second object only through a means is the cunning of reason. (der List der Vernunft). What Hegel seems to mean by this is that if there were nothing to mediate between, say, my desire and its fulfilment, I would be completely at the mercy of external objectivity, i.e the determinism of the mechanico-chemical world. The fact that I need a means to the fulfilment of my desire means that there is a point in this process where I have to rise above the contingency of this deterministic series, and do something necessary in order to satisfy my end. It is in this performance of a necessary act, paradoxically, that my freedom lies.

It is for this reason that rationality manifests itself in the means. This is literally true. Human reason is manifested in the tools and machines men invent and employ to achieve their ends, rather than those ends themselves. Even the humblest creature can have a desire for food and warmth, but only man displays his ingenuity in finding means to these ends, in making weapons for hunting, implements for cooking and tools for farming and for making clothes. This is why Hegel says that:

To this extent, the means is superior to the finite ends of external purposiveness: - the plough is more honourable tham are immediately the enjoyments which are produced by it, and which are ends. The tool

lasts, while the immediate enjoyments pass away and are forgotten. In his tools man possesses power over nature, while in respect of his ends, on the other hand, he is subject to it.

This does not mean, however, that the end stands outside the mechanical process, just because it employs a means to mediate between it and the mechanical object in which the end is to be realised. In fact, it is present in it, insofar as its power over that object consists in the fact that the object is identical with the end, and the mediating activity (the obtaining of the end through the means) reveals this identity. The realisation of the end is really only the translation of the content from the form of subjectivity to the form of objectivity.

ever, we see that it contains the end or purposiveness only in the form of an external determinateness. However, this effectively makes it a means, since only a means has its purpose outside it; and indeed, Hegel argues that it is a matter of indifference whether we regard something determined by an end external to it as a means or a realised end. All objects in which an end is realised are equally means of an end, and fulfil that end only through being used up or worn away; that is, they fulfil the purpose they were made for only through this 'negation' of their mechanico-chemical parts. For example:

A house, a clock, may appear as ends in relation to the tools employed in the process of their production; but the stones and beams, or wheels and axles etc., which constitute the actuality of the end, fulfil it only through the pressure that they suffer, through the chemical processes with air, light and water to which they are abandoned, and that deprive man of them by their friction, etc. 36

The fact that any mechanical object which is an end in relation to some means, is, nevertheless a means in relation to some other end, gives us a final infinite progression, the overcoming of which can only be achieved by advancing beyond the sphere of external purposiveness, and considering the notion of intrinsic purposiveness, or the Idea of life.

Notes and References

```
1. Werke 5, p.88f; Miller, p.86f
2. Werke 6, p.403; Miller, p.706
3. Ibid., p.407-408; ibid, p.709
4. Ibid.
5. Ibid., p.409; ibid., p.711
6. Werke 5, p.249; Miller, p.216-217
7. Werke 6, p.411; Miller, p.712
8. Ibid.
9. My Philosophical Development, p.17-18
10. Ibid.
11. Human Knowledge: Its Scope and Limits (Allen and Unwin 1948), p.191
12. Werke 6, p.413; Miller, p.714
13. See Enc. sec. 264 and Remark
14. Werke 6, p.420; Miller, p.719
15. Ibid;; ibid., p.720
16. Ibid.
17. Ibid., p.425; ibid., p.724
18. Ibid., p.429; ibid., p.727
19. Ibid.
20. Ibid.; ibid, p.728
21. Ibid., p.434-435; ibid., p.732
22. Ibid,, p.436; ibid., p.734
23. I. Mant, The Critique of Judgement, transl. J. C. Meredith (Oxford
University Press 1969), p.366f. (I refer to Kant's pagination, which is
given in the margin of the Meredith translation).
24. Critique of Pure Reason, A444-A447/B472-B475
25. Critique of Judgement, p.387
26. Ibid.
27. Ibid.
28. Ibid., p.387-8
29. Werke 6, p.443; Miller, p.739
30. Critique of Judgement, p.387
31. Ibid., p.388
32. Werke 6, p.444; Miller, p.739
33. G. W. F. Hegel, The Philosophy of Right, transl. T. M. Knox, (Oxford
University Press 1980), paras. 12-13
34. Werke 6, p.449; Miller, p.743
35. 1bid., p.453; ibid., p.747
36. Ibid., p.457; ibid., p.750
```

Chapter Nine: The Idea of Life

The Idea in general, according to Hegel, is the Madaquate concept. that which is objectively true, or the true as such"; something "possesses truth only insofar as it is Idea". This means that the Idea is the unity of the consept (or subjectivity) and objectivity, and that something is true only insofar as its objectivity corresponds to its concept, which point was made earlier anyway. This Hegelian Idea is not to be confused with what are commonly called 'ideas' (and what he calls 'vorstellungen'). nor even with what he calls Begriffe. Hegel's Idea is based on the Kantian, notion of the Transcendental Idea or concept of reason. This was basically a concept of the unconditioned (das Unbedingte), a word which, in Hegel's time, was synonymous with the Absolute, and designated a necessary concept of reason to which no corresponding object could ever be given in experience. The concepts of reason, said Kant, enables as to conceive or comprehend (begreifen) experience as a whole, while the concepts of the under-tstanding, or the categories, enable us to understand (verstehen) particular experiences. ...

Hegel is very critical of this last distinction, because he thinks that all concepts are products of reason,, and an understanding by means of concepts (Begriffe) must be a comprehension (Begreifen). What Kant terms 'concepts of the understanding' are not actually concepts at all, but only representations, and 'understanding' here is equally only the grasping of the rule underlying the particular experiences. He is even more critical of the view that the ldea is to be taken as something 'unreal' (nur Unwirkliches), that is, that it is 'only an idea'. Kant, too, argues against this view, but only with respect to the Idea of practical reason, which he says serves as a standard in all that bears upon the practical.

He still regards the other Transcendental Ideas as mere Ideas, largely because they transcend experience, and therefore cannot be assigned a corresponding object in experience. Hegel argues against this that the objectivity of the Idea precisely depends on the fact that it encompasses more than just a single empirical particular.

Not even the Kantian Fractical Idea, however, corresponded to the Hegelian Idea. For the Hegelian Idea was not a standard, an ideal to which we must strive to bring the condition of the real world ever nearer, but the actual unity of the ideal and the real. Far from things having to be brought nearer to the Idea, it is rather the case that things are, only to the extent that they are Idea, i.e. insofar as their reality corresponds to their concept. The reality that does not correspond to its concept is mere appearance. A man is, only insofar as he corresponds to the human archetype, and any features he may possess which do not conform to that archetype are merely accidental. The Idea is not merely the unity of the concept and reality, however, but also of subjectivity and objectivity, and can therefore be called (following Schelling) the subject-object; and this is not some curious kind of object, but the very striving of a thing which is itself its own end toward its own self-realisation. The Idea, says Hegel, is essentially a process.

The simple unity of the concept or end with objectivity, or the immediate Idea, is what Hegel called life. It is important to understand that life, as it is treated in the Science of Logic, is not the same as life as it is treated of in the empirical sciences, nor even as it is considered in the philosophy of nature, or in relation to spirit or mind, according to Hegel. It is not considered as a stage in the development of the concept of nature, and therefore Hegel does not consider the various natural forms of life, i.e. plant life, animal life, nor their particular

life-processes. It appears rather as a stage in the development of the unity of subjectivity and objectivity, and is therefore considered in abstraction from any of its concrete forms. It is the subject, considered as the soul (Seele) of the living organism realising itself in the objective world (where the soul is conceived of in the Aristotelean fashion, as the principle of animal life, rather than as an immaterial thing externally related to the body of the organism).

It was seen in the last chapter that Hegel thought that the Kantian distinction between external and internal purposiveness "unlocked" the concept of life; this was because it enabled one to distinguish between mechanical objects and products of art or artefacts, and living things, such as animals or plants, which Kant grouped together under the names 'physical end' and 'organism' (Organismus). These 'organisms' could be considered as art-products insofar as the existence and form of their parts was possible only in relation to the whole? However, they were distinct from them insofar as they were, in two ways, both cause and effect of themselves; firstly, they reproduced themselves, through the processes of growth and nourishment, and secondly, they reproduced others of the same genus, through the process of sexual reproduction. In accordance with the first form of reproduction, therefore, the parts of a thing do not merely exist for the sake of one another, as do the parts of ancartefact like a watch, but also produce one another, and thus determine the whole, so that the concept of the whole serves as the ground of our knowledge (Erkenntnisgrund) of the connection of the parts.

Hegel agreed with Kant here, except on two points. Firstly, he preferred to stress the negative side of the mutual reproduction of the parts, arguing that each existed at the expense of the others, rather than for their sake, and that the whole existed at the expense of all. It is

only as a self-reproductive being, as he puts it in the https://example.com/html. There is no particular element which actually endures throughout the life of the organism, which causes us to speak of it as the same organism. Self-preservation is self-reproduction, and the living being exists only insofar as it continues to make itself what it is. It is is own product, its own end and its own means. This view, which Hegel sometimes expressed by saying that the organism is an active syllogism, or a process (rather than a mere lifeless object) can be seen as the conclusion of a long-standing philosophiwal debate on the identity of living things, the original protagonists in which were Locke and Hume. Hegel admits, with Hume, that the matter and external form of the organism are merely transient, but insisted that its substantial form, i.e. its concept or specific nature, the principle of the series of phenomena, is always present in its general process of development.

Secondly, Hegel could not accept Kant's view that the concept of the whole is only the ground of our knowledge of the connection of the parts of the organism. This is anyway a conceptual impossibility, since we could have no knowledge of the connection of the parts of the organism through the concept of the whole unless those parts were actually connected in accordance with the concept; but in that case, it would not only be the ground of our knowledge, but the real ground of the connection of the parts. Kant, who cannot admit that the concept is a real ground, since the only sort of ground he recognises is the external cause, must therefore admit that we can have no knowledge here, and I think he does this. 'Erkenntnis' is not meant to be knowledge in the strict sense, but only 'cognition', or rational schematization. Hegel cannot accept this sceptical conclusion, however, and insists that the concept or end is the real, internal principle of the organization and development of the living being, so that

if the organization and development of something does not adequately serve or produce the end, it is a defective specimen of that thing.

Hegel begins his consideration of Rife by looking at the moments of the concept of the living individual as such, considered as a totality which is indifferent to objectivity, that is, which exists in separation from it. These moments are supposed to correspond to the moments of the concept (universality, particularity, and individuality). Universality is represented by sensibility, which Hegel interestingly describes as the self-feeling of the individual. It is not something outside of itself that the sentient being is aware of, so much as its own simple, "co-called' impressions. Hegel does not explain what constitutes an impression here, but in the Encyclopaedia he seems to suggest that it could be an event in the nervous system, which would make his view of sensibility rather like Russell's. Bertainly, it is like Russell's view insofar as it suggests that we only ever immediately experience ourselves. It is also like it in that Hegel seems to regard it as a contingent matter whether an impression has a physical or a purely mental cause.

Particularity is represented by irritability, or the capacity for being stimulated externally and for reacting to stimuli. ¹⁵This is distinguished from sensibility insofar as it involves interaction with the external world. This still does not take the form of external determination, however, for the external world — which here includes even one's own body — only provides stimulus, not determination, and the subject does not passively receive, but actively responds, to that stimulus. The deer does not mechanically cause the lion who spots it to chase after it, the lion reacts to the presence of his prey. Finally, individuality is represented by reproduction, by which I think Hegel means primarily the individual's reproduction of itself through the processes of growth and nourishment, but

possibly sexual reproduction too. It is through the satisfaction of its urges in response to external stimulation that the individual reproduces itself, and therefore makes itself what it is. Hegel says in the Encyclopaedia that reproduction is the grounf of the other two moments, and I think he means by this that sensibility and irritability can only exist in the context of the self-realisation of the living individual. It can do without them, but they have no meaning apart from it.

The roles of sensibility and irritability in the process of reproduction are spelled out a little more clearly in the consideration of it from the outside as the process of the assimilation of the objective world, which Hegel here calls the life-process (der Lebenprozess). The living individual here opposes itself to the external or objective world as an absolute subject and end-in-itself (Selbstzweck), which can do as it wants with objectivity, which it sees as lacking any intrinsic purpose or value. Its feeling of self constitutes the certainty of the individual that what lies before it is nothing but a mere means for it, but nevertheless it still has the urge to overcome the appearance that the object has of being something independent of it. The individual therefore strives to assimilate the object to itself, while at the same time externalising and objectifying itself. There are two forms of the process of assimilation mentioned in the Encyclopaedia, of which the first is the assimilation of the world through the senses; it is only the second form, however, which Hegel concerns himself with here, namely, what he calls the real or practical process.

This process begins, he says, with need (Bedurfnisse), which has two sides to it; firstly, the living being perceives objectivity as being opposed to the ego, as 'non-I'. This happens in ordinary empirical cases of need, such as hunger, thirst, etc., where I am aware of myself as a physical being having various physical needs which I must satisfy wheth-

Ego; Sartre would probably say I am aware of my facticity, the extent to which I am physically limited. Secondly, however, the living being also perceives the possibility of overcoming the pafticular limitations which it suffers through interaction with the external world, and thereby at the same time overcoming the alien nature of external objectivity and making it 'I', instead of 'non-I'. It is often thought that it is in our desires that we are free, but really they make us dependent on the external world; only in satisfying them do we re-establish our independence. Fichte, Hegel sometimes complains, neglects the fact that our limitations are able to be transcended, and therefore retains the 'non-I' alongside his 'I', thus failing, despite himself, to be a consistent Idealist.

The fact that, where there is need, there is a limit, and at the same time there is no limit (i.e. there is a limit which must be transcended), is for Hegel a contradiction or conflict to be resolved in the practical process. It is a centradiction that is actually feltaby the living individual, moreover, and in the form of feeling, it is pain. (Schmerz) Of course, Hegel is extending the use of this term beyond its usual limits; we would not normally say that a hungry person, say, was in pain, unless his hunger was particularly acute. However, since there are occasions on which we do say this, he can at least claim that his usage is reflected in ordinary usage. Hegel remarks here that "Pain is therefore the privilege of living natures". He seems to think that this is so because only the living being can perceive a limitation as a lack, which in turn is because only the living being has the possibility of making good that lack (though really I would have thought the important thing is that only the living being can perceive). I do not think the use of the word 'privilege' is just black humour on Hegel's part, therefore; he seems to think that pain is

a necessary pendition of the activity of living things in the subordination of the mechanico-chemical world to their purposes.

This world is able to be made conformable to the subject, cor to the end of the subject, says negel, because it is indifferent to determinateness, that is, because it is not an end-in-itself. The living being as such, on the other hand, cannot be acted on by the external world. That is, it can be acted on - if a piano falls on my head it will certainly do me a great deal of damage - but not in such a way that we can say that it enters into relation with a living being as such - the piano damages me insofar as I am a mere ballistic object, Therexternal world, in other words, does not act mechanically on the living organism in the context of the life-process of that organism, but only as an external stimulus. The presence of the deer does not act mechanically on the lion in such a way as to cause it to chase after it and kill it, it only stimulates it into action; and it can only do this if there is at the same time an inner stimulus at work inside the lion, that is, if the urge or drive to hunt deer is already present in it.

This means effectively that the external stimulus is only a 17 show of stimulus (as Hegel puts it in the Encyclopaedia), insofar as it merely provides an occasion for the living thing to manifest the activity corresponding to one of its various drives; and of course, it is only necessary that the organism believes that the correct stimulus is present, and not that it actually is, and so the external stimulus is doubly extraneous. It is the drive or urge, the inner stimulus, which is fundamental, and this is part of the nature of the organism. Hegel expresses his basic point best on the Encyclopaedia when he says that:

...nothing whatever can have a positive relation to the living being, tumless the latter is in and for itself the possibility of this relation, i.e. unless the relation is determined by the concept (of the thing), and therefore entirely immanent in the subject.

It is only because it is part of the nature of the lion to chase deer that the deer can enter into relation with it, for example. What is at issue here is basically the nature of instinctive behaviour. Hegel makes this clear in the Encyclopaedia, and although he does not mention it explicitly in the Science of Logic, I think his consideration of it in the former is enlightening and highly relevant to an understanding of the treatment of life in the latter.

The instinctive behaviour of animals had been considered as teleological from the time of Aristotle onwards, but became discredited by the time of Descartes. The difficulty was that regarding this sort of behaviour as end-directed appeared to necessitate attributing a capacity for representational thought to even the lowest species of animal, something which seemed unlikely on empirical or scientific grounds, and was unpalatable on social and religious grounds. Consequently, this view was replaced by one more suited to the materialistic outlook of the times; animals began to be regarded as mere complex machines, and their instinctive behaviour as accountable purely in terms of mechanical laws. There were problems with this view too, however; besides the fact that animals did not seem to behave like machines, for example, they developed, reproduced themselves, and appeared to move spontaneously, certain types of behaviour such as sighting and pursuing prey could only be explained in mechanical terms by invoking the old mechanistic bogy of 'action at a distance'.

The difficulty seemed insuperable until Kant introduced the conception of inner purposiveness, which, as Hegel argues, in fact only restored the viewpoint that had already been taken up by Aristotle in his treatment of life. The problem was that Aristotle had been misinterpreted; it was thought that he had believed that animals consciously pursue their own ends in their instinctive behaviour, but this is not the case. He

believed, according to megel, that certain things act unconsciously in pursuit of ends, and designated such things by the term 'phusis'. Kantan and Hegel preturned to this view, and Hegel consequently defines instinct as "purposive activity acting in an unconscious way". ²⁰The animal does not recognise its ends as such; it does not reflect on them, or on the various ways its acts may be described, and it dertainly does not reason to itself, e.g. 'This animal is an x; x's are easy to catch and good to eat; therefore I ought to chase after it' - it simply chases after it without any more ado.

The Aristotelian-cum-Kantian-cum-Hegelian view is also important from the point of view of modern issues. Firstly, Russell argues in his autobiography that the so-called 'conditioned reflex' plays a prominent role in the learning-process. This is so, but flussell, if we take the Hegelian view, underestimates the active role which the subject plays in what appears to be a mere external conditioning. Far from merely being determined from outside, the animal acts purposively, and contains within itself the possibility of a relation with the external stimulus, which immediately is, say, some of its own favourite food. Only because of its connection with the dietary requirements of the animal can the food act as a stimulus, and only through their connection with the food can the colour-of a button, say, act as a stimulus. The test of the consciousness of an animal is the number of obstacles it can overcome to satisfy its natural needs, because the connection with its natural or instinctive behaviour becomes more and more remote.

This last point might also be expressed by saying that the test of the consciousness of a living thing in general is its ability to adapt to a foreign environment. The most intelligent creatures, such as human beings, tend to be able to adapt to any environment, one way or another.

They can always find some way of satisfying their basic needs, even where the environment is very hostile toward them. This means that they tend to survive, whereas other, less intelligent and therefore less adaptable beings, tend to be killed off by disturbances of the natural order. Here, it must be noticed, is a view which recognises the continuity between the 'minds' of human beings and other animals, or at least the behaviour of human beings and other animals, while at the same time observing that there is not merely a difference of degree here, but also a qualitative difference, since the success in adapting to its environment which human beings enjoy is due to their capacity for conceptual thought and language. Russe ell chooses mainly to stress the side of continuity.

I said earlier that this instinctive behaviour of the living being is part of its life-process, which is a process of assimilation. I want now to look at the various empirical forms this process takes, in order to illustrate what hegel is saying, and also to show how what he is saying fits the facts as he sees them. In the Encyclopaedia, Hegel distinguishes between formal and real assimilation, the former involving the organism giving to parts of its environment an external form which accorded with its purposes, while at the same time leaving the objectivity of the material untouched. This form of assimilation is typically manifested in the activity of the constructive instinct, for example, the building of nests, dams, lairs, etc. This is the highest form of assimilation, Hegel says, because in this form, the living thing comes to express itself in the external world, rather than simply destroying it as it does in real assimilation; at the end of the process, moreover, the organism confronts an external expression of its own nature, it realises itself in the external world and recognises itself in the fruits of its labour. Thus, in place of the vague sort of self-satisfaction it obtains through satisfying its hunger, it has a specific sort of satisfaction in its creation.

Real assimilation involves the consumption or destruction of the specific features of inorganic matter. It is typically manifested in the processes of digestion, breathing etc. The object, or inorganic matter, is first seized by the organism in a mechanical fashion, for example, as food is clasped by the claw and then taken into the mouth by the action of the jaw. But the process of assimilation does not continue in a mechanical or chemical fashion. It cannot do, argues Hegel, for the organism is a subject, a unity-in-difference, and the constituents in a mechanical or chemical process remain external to one another (even in the chemical process the compound formed by two substances is external to those substances). What I think Hegel means here is that the end-product of the mechanical or chemical process is only another mechanical or chemical object, and not anything organic, not part of a whole interacting with others to reproduce that whole. Of course, we could choose to say that there are no true organisms, and that the so-called process of assimilation is therefore only a process between one mechanical object and another, but this is another matter.

The central feature of the process of assimilation, then, Hegel argues, is the immediate transformation of the inorganic (or at least, relatively inorganic) matter into organic matter. The mechanical process,, says "egel in the Science of Logic, "is immediately broken off, and externality transformed into internality". This is made possible by the fact that, relative to the subject, the external object or inorganic matter is not a substance, and therefore the end does not appear merely as an external form which is given to it, but as its essence, as the soul appears as the essence or intrinsic form of the body. It is only the transformed object which then, goes on to play a part in the reproductive process of the

organism, so that the subject preserves itself and reproduces itself out of itself, by its own means. Although this point is basically a priori, Hegel mentions a great deal of empirical evidence in support of it in the Encyclopaedia, and also in some of the lecture material, referring in particular to Spallanzani's experiments. However, it would take me too far away from a discussion of the Science of Logic to go into what he says.

Hegel also deals with the second of the two ways in which the organism, according to Kant, is both cause and effect of itself, i.e. through the process of sexual reproduction, the propagation of the species. Kant said that the living thing preserved itself generically in this process, or to put it another way, that the process preserves the existence of the kind. For Hegel, however, the process of reproduction only generates an infinite progression of individuals. The genus or kind only manifests it— self in the corruption or passing—away of those individuals whereby all of them are shown to be merely finite. Or at least, it manifests itself in the transcendence of individuality. This occurs in the sexual urge insofar as this is no longer a merely egotistical urge; the individual no longer acts to preserve or to reproduce its own individual self, but rather in order to propagate the species; and it does not see the other which confronts it as merely something to be assimilated, but rather recognises it as another of its kind; indeed, as its other, one of the opposite sex.

Hegel refers to the transcendence of egetism which is implicit in the sexual urge as the 'death' of the individual. In the Encyclopaedia, he maintains that the genus-process takes a number of forms, each of which result in the death of the individual in some sense. The sense is literal in all cases except for the one we are concerned with, and even here Hegel points out that the lowest organisms perish in the reproductive process, so that his metaphor is really quite appropriate. It also enables him to

allude to the Christian belief in the Hereafter, in his remark that "The death of this life is the emergence of spirit". ²⁷This does mot mean that Hegel himself believes in this doctrine as it is usually understood; in fact, he would say that philosophy gives meaning to the myth, and in this case, the meaning of the myth is that it is only by transcending the pre-occupation with the particulars of sense which is characteristic of the standpoint of life that the subject becomes aware of itself as a universal, and in fact, becomes a true subject.

It is perhaps appropriate to conclude here by saying something about modern developments in the debate between mechanism and teleology. If we are to believe David Hull, the view that the science of mechanics, narrowly defined as the science of matter in motion, provides an adequate explanatory base for biology, has long since been shown to have been "crudely mistaken". 28 The debate is consequently no longer between mechanism and teleology as such, but rather between the more sophisticated notions of organicism and reductionism, the reductionist being someone who believes that the behaviour of what has been called organic nature can in fact be accounted for purely in terms of the laws of physics and/or chemistry. 29 This is not such an important difference from our point of view, however, since mechanism as Kant and Hegel understood it was broadly enough conceived for the laws of physics and chemistry to be included under its schema as 'mechanical', or at least, 'mechanico-chemical', laws, that is, laws that account for the behaviour of the object insofar as it is only a composite being or a chemical object.

The results of further experiment do not seem to have had much effect on the controversy either, though this is hardly surprising, since it is surely not the sort of question that can be settled by recourse to empirical fact. It is precisely a question of how we are to interpret

certain empirical facts. The development of influential new theories such as evolutionary theory and the theory of the molecular basis of heredity has similarly done little to resolve matters, since theories which are perceived to be inconsistent with one viewpoint are denounced by the proponents of that viewpoint, while they are championed by the proponents of the other viewpoint; and there is not even any clear agreement about which theories support which point of view. Consequently, the debate still continues today in much the same way as it did in Hegel's day. This is because it has roughly the nature of one of those metaphysical debates described by Kant, which are capable of carrying on forever without ever being settled one way or another.

Hull seems to suggest that one of the main barriers to progress on this issue is the absence of a universally accepted definition of any of the key terms of the debate, for example, 'organism' or 'teleological system'. 50 He seems to think that the problem of teleology consists in establishing a set of necessary and sufficient conditions for something's being, for example, an organism. 31 We need to know, in other words, what distinguishes organisms as a group from non-organisms. This search for the essence of teleology has so far proved to be a failure, he says. He then assumes that the concept of a 'teleological system' or organism is a 'cluster concept', and goes on to examine likely candidates for the specific characteristics constituting the clusters, only to conclude eventually that they are all inadequate. It seems to me, however, that by looking for such definitions, Hull is making precisely the error which ecastitutes the real barrier to progress here. These definitions would be essentialist definitions, which Popper has argued have no role in science, along with corresponding questions such as "What is life?"; 54 even if we do not want to go this far, we can at least accept that there is no necessity to produce

such definitions.

megel - though Popper would deny this - rejects the project of looking for the essence of a term such as 'life' or 'organism', and begins instead by saying that mechanism and chemism presuppose a principle of self determination which is to be found in external teleology, while this presupposes a self-determining being, i.e. one which has itself for its own end; and then calls this being an 'organism'. This is more like what Popper calls amnominalist definition than an essentialist one. It does not tell us what all things which are intuitively acknowledged to be organisms have in common, but it does tell us the sort of thing which Hegel refers to by the term 'organism'. This obviates many of the problems of the previous approach; for example, it does away with the problem of how to distinguish organisms from non-organisms. In Hegel's terminology, an organism is something which is its own end, and which reproduces itself in the afore-mentioned dual sense. It might be argued, of course, that we might one day be able to construct a machine that acted in the interests of its own selfpreservation, and that reproduced itself, and that Hegel would have to call such a machine an 'organism'. But I do not think this is really a problem for Hegel; for such a machine would surely differ in a very important way from an ordinary machine such as a steam-engine or a type-writer, which is just a mere means, so much so in fact that the term 'machine' would no longer be appropriate to describe it.

Interestingly, Hegel avoids other problematic features of modern organicism. He is not committed, for example, to the belief that living creatures differ from inanimate objects primarily in having different types of organization, and he is not committed to saying that the organization of a teleological system is something 'over and above' the arrangement of the elements that constitute it. That is to say, he certainly

believes that a teleological system is more than a mere external arrangement of parts, but he does not believe that it is the organization of the system - which is surely nothing more than the arrangement of its parts - which makes it so. It is rather the self-reproductive nature of the system that makes it more than a mere mechanical aggregate. It is in any case wrong to look upon the living being firstly as a machine, and then ask what mystery ingredient has to be added in order to bring it to life. This way of thinking belongs to the technological sphere, which is the sphere of external teleology, not life.

Finally, Hegel does not have to insist on the indispensability of teleological explanation, where this consists in making statements of the form "X exists in order that y", or "The function of X is y", about various features of particular organisms. It is really surprising that this is still an issue, because it seems obvious that these sorts of statement also belong to the sphere of external teleology, rather than that of life. We ought not really to employ statements of these forms unless we are talking about parts of artefacts, products of intelligent activity. It is nonsense to say that "Hedgehogs have spines on their backs in order to help them defend themselves", just as it is nonsense to say that "Rain exists to water the crops". This would only make sense if we assumed that there was a Divine Architect creating such things, which nowadays most scientists are loth to do. We ought really to say that "Hedgehogs have spines with which they defend themselves", and "Rain is the result of atmospheric pressure". An explanation in terms of inner purposiveness would be something like, "Hedgehogs eat in order to preserve themselves" and would only explain the instinctive or conscious behaviour of animals or people.

Notes and References

```
1. Werke 6, p.462; Miller, p.755
2. Ibid.
3. Kant is equally scrupulous about distinguishing between representat-
ions, concepts and Ideas. See Chitique of Pure Reason, A320/B377.
4. A328/B385
5. Ibid.
6. See De Anima, Bk.II, ch.1-2.
7. Critique of Judgement, p.370
8. Critique of Judgement, p.371
9. Ibid., p.373
10. Ibid., p.371
11. Ibid., p.373
12. Werke 6, p.467-477; Miller, p.766-767
13. Enc.,
14. Enc., section 401
15. Enc., section 353
16. Werke 6, p.481; Miller, p.770
17. Enc., section 361
18. <u>Enc.</u>, section 359 (R)
19. Enc., section 360 and remark.
20. Ibid.
21. My Philosophical Development, p.102-103
22. Ibid., p.95
23. Enc., section 361-362
24. Werke 6, 482-483; Miller, p.771
25. Enc., section 365
26. Critique of Judgement, p.371
27. Werke 6, p.486; Miller, p.774
28. David Hull, Philosophy of Biological Science (Prentice-Hall Inc., New
Jersey 1974), p.127
29. Ibid., p.125f
30. Ibid., p.125-126
31. Ibid., p.103
32. Ibid.
33. Ibid., p.103-104
34. Open Society, Vol.II, p.13-14
```

Chapter Ten: The Idea of Cognition

The Idea of cognition is also referred to by Hegel as the Idea of spirit, and spirit is taken to be synonymous with thought and selfconsciousness. Hegel makes a point of distinguishing between his view of spirit and that of Rantian and pre-Kantian philosophy, and it is indeed necessary to grasp this distinction if one is to fully grasp this section. Pre-Kantian metaphysics was concerned with spirit as \$801, that is, as a thing (ein Ding) whose properties it tried to determine a priori from the general idea (der allgemeinen Vorstellung) of the soul. These properties. if the inquiry was truly a priori, would not be given in experience, but would be essential or metaphysical properties of the soul, e.g. simplicity, substantiality, or immortality. However, the general idea of the soul was itself drawn from experience, and the soul or mind, according to Hegel, exhibited quite contradictory characteristics. On the basis of experience, one could argue equally convincingly that the soul was not composite, or that it had to be composite. Hence, pre-Kantian metaphysics was in principle unable to establish any doctrine of the soul for certain.

Kant argued, therefore, that the true rational or metaphysical doctrine of the soul would strip the idea of the soul of all empirical content. (which for Kant meant all content), and consider only the bare representation of the ego or self which accompanies all concepts, but cannot itself be called a concept, the representation of the 'I' (or even the 'It') which thinks. This 'I' is the transcendental subject, a thing-initself, which is known only through its predicates; that is, its existence as the substratum of those predicates is inferred from the existence of those predicates, although we are otherwise unacquainted with it. Moreover, any hudgement which had it as subject, that is, which tried to say

something about it, would be circular, since it would already have made use of its representation, as Kant puts it. This inconvenience (Unbequentich-keit) pertains to it because this consciousness is not itself the representation of an object or state of affairs which may or may not pertain in the world, but rather the general form of representation, insofar as this can be called cognition.

It was, in other words, impossible to know anything off the sould because it was not an object of experience, and could not therefore be united with another object in accordance with some category of the understanding. Metaphysics hitherto had tried to predicate concepts of the understanding of the soul, e.g. by asserting that the soul is a substance, but this was illegitimate, because these concepts were only legitimately applied to intuitions. It was not possible, then, to derive anything except for merely analytical propositions from the analysis of the idea of the soul. One could say that the soul always had to be regarded as subject, and never as predicate, but this was not sufficient ground for calling it a substance, with all the other considerations that entails, e.g. persistence through changes of its accidents. It is invalid to infer anything about reality from what is necessitated by grammar; the fact that the latter forces us to speak of the soul as if it is a substance does not mean that it is one.

Hegel believes that Kant's criticism here is essentially Humean. The philosophical psychology which Kant had especially in mind was susceptible to a radical empiricist critique because it treated of something which was supposed to lie hidden behind mental phenomena. The empiricist critic simply had to refuse to recognise the possibility of knowledge of a mysterious supersensible essence. This approach is less successful when applied to ancient doctrines of the soul, however, such as

those of Plato and Aristotle. The soul is not conceived by them as an invisible, intangible thing, but, for example, as the principle of life, something of a different logical order entirely. The ancient doctrines are immune to Hume's brand of criticism because they contain the concept, rather than the mere abstract idea of the soul, that is, they treat the soul as the universal ground of its empirical determinations rather than an airy residue which remains when they are taken away. Hegel is ready to concede that if one takes the empirical idea of the self, and then strips from it everything empirical, one is left with no idea of the self at all. but the concept is not merely an idea from which everything empirical or determinate has been stripped.

Hegel is also very critical of Kant's argument that any judgement which purported to be about the subject, would be circular, because it would already have 'made use of its representation'. He is wide of the mark at first, because he takes Kant to be saying that a judgement about the subject would be circular because one has to make use of the self in figure of it, but it seems to me that he is correct in questioning the viciousness of the circularity involved here. Kant's argument is basically that knowledge of the truth of a judgement presupposes knowledge of the subject of that judgement, and that since the subject is not an object of acquaintance, this would have to be knowledge by description; but to know the truth of the description one must know the subject, etc. However, it is not really clear that the subject is not an object of acquaintance in any sense. It might not be an object of intuition, but this does not mean it cannot be an object of knowledge at all; it might be an object of thought, like a law or principle.

What Kant wanted to say, argued Hegel, was really that the self could only appear as the subject of a judgement (where a judgement is ta-

ken to have the form 'I think P', and the 'I' is the subject, the thought the predicate) or the subject of consciousness, because there is no intuition in which it is given as an object of consciousness; and consequently the subject cannot be conceived of as having any objective reality at all. The problem with this view is that it involves the same unjustified equation of sensuousness and objective reality which has been observed in Kant's arguments on previous occasions. Hegel, far from accepting this equation, argues that one must go beyond mere sensuous intuition to the thought of the universal in order to become acquainted with objective reality. Hence, the fact that the subject we not an object of sensuous intuition does not mean that it is not an objective reality, nor that it is not an object of knowledge. Indeed far from self-knowledge being an impossibility, according to Hegel, all knowledge is a form of self-knowledge.

Hegel expresses this point more explicitly in his treatment of the phenomenology of spirit in the Encyclopaedic. Kant, he explains, regarded spirit merely as consciousness, and therefore had only a phenomenology, not a philosophy.of spirit. Consciousness, however, is only the appearance of spirit; spirit proper is self-consciousness. It is true that the subject, considered as a mere referent of perceptions, cannot occur as an object of outer or inner sense, indeed, it is trivially true; but in fact, both the subject, as a mere referent of perceptions, and the external object, are only abstractions from the fundamental fact, which is the subject-object relation, the 'I think P'. Really, subject and object are just different aspects or moments of that one fact, which Hegel calls spirit; they are, if you like, active and passive spirit, spirit as perceiving and spirit as perceived. Thus, all consciousness is truly self-consciousness, although when it is merely intuitive, the object is not the self as such, but only a single aspect of its external existence; one has to go

beyond the individual appearances of the self to grasp the universal that is their ground.

Hegel says, of course, that spirit as it appears in logic is different from spirit as it appears in the philosophy of spirit, but all he means by this is that it is not to be considered as a stage in the development of spirit, but rather as a stage in the development of the absolute Idea. It appears in logic in its developed form as the free subject which has itself for object, a self-conscious being as distinct from the soul of the living organism, which is only unconsciously purposive. This subject pursues truth, i.e. the unity of subjectivity and objectivity, and it obtains it by transforming the object into a determination of itself, by assimilating it to itself. It relates itself to an external world, but it does so with the conviction that the world is completely knowable in terms of the categories it employs. It contains within itself the esse ential features of the world, the fundamental laws and principles, and its activity consists in showing that the non-essential features conform to those fundamental laws and principles.

degel's division of cognition is based on Schelling's division of Transcendental philosophy in accordance with the fundamental convictions it is supposed to vindicate, into theoretical philosophy, which vindicates the belief that our ideas correspond to reality, and practical philosophy, which vindicates the belief that our ideas arise freely in us, and can be realised. The former belief implies, or seems to imply, that external objects determine our representations, and therefore that the ... world of sense dominates the world of thought, while the latter implies, or seems to imply, that our representations can determine external reality, and therefore that the world of thought dominates the world of sense. The degel is to show that the former belief actually manifests just as much

the determination of external reality by subjectivity, and therefore the dominion of the self over the not-self, and that the latter belief actually manifests just as much the determination of the subject by the external world, and therefore the dominion of the not-self over the self.

If negel is right in arguing that the view which insists that in the process of cognition one must set out from the external world has as its result who conclusion that what we call knowledge is really only subjectively valid, then Russell is placing himself in just such a sceptical position when, in the Problems of Philosophy, he declares bimself to be against the view that the enlargement of Self which he says characterises the acquisition of knowledge is obtained by showing that the world is so similar to the (given) self, that knowledge of it is possible without the admission of anything foreign to it (a view which both he and Popper attribute to Hegel), and suggests instead that we must start out from the not-Self, and treat that as determining the Self. Russell thinks he is arguing against the views of Mant and Hegel, but Hegel suggests that the assumption Russell makes is in fact the very presupposition which leads to the sort of views he (Russell) detests, which put up a barrier between subject and object and imprison the former in a cage of its own making.

(a) The Idea of the True (Die Idee des Wahren)

The first side of the Idea of cognition is therefore the theoretical Idea, which initially takes the form of the urge of the concept or self to transcend its own subjectivity and give itself content.

This content is to come from the external world. Yet at the same time, the self also seeks to see itself reflected in the material which it believes itself to be passively receiving from an external reality; that is,

it wants to see the material ordered in accordance with its own categories. The fact that these categories are applied to the data of experience as an external form, however, makes the connection of the phenomens only a synthesis, or a subjective connection. Reason is conceived of here as a Lockean Understanding, and the truth it aims at is not, therefore, truth properly so-called, but only a conformity with the ideas and experiences of others, that is, mere rectitude (Richtigkeit). This is because the synthetic proposition is still a datum (eines gegeben) of experience, a contingent fact; we have to go beyond data to get at the truth. This does not involve acquiring more data, but giving some sort of foundation to to what we have.

Finite cognition is basically a cognition of the particular. It always aims at solving specific problems, at resolving specific doubts, or at filling in particular gaps in human knowledge. It does not attempt to say anything about the world as a whole. This is partly what is meant by calling such cognition finite. Popper seems to think that all cognition is of this sort. The problem with this assumption is that it forces one to say that the results of science can only ever be problematic, since the validity of the scientific enterprise as such is not able to be demonstrated by finite cognition. The presuppositions of science, however, have to be grounded if we are to know the truth. We have to have established the truth of the basic principles of inquiry, to have grasped the general form of the world, in order that we can truly be said to know any of its particular features. This means that finite cognition, if it is truly cognition at all, must be subordinate to a more general form of inquiry, which Hegel called speculative cognition, or philosophy.

Hegel argues, in the <u>Science of Logic</u>, that finite cognition has both an analytic and a synthetic side. The former is to be distin-

guished from the latter by the fact that it does not contain any element of mediation, while the other does. It is, in other words, intuitive as distinct from demonstrative cognition; though to say this is only to introduce more familiar terminology, not to explain anything, since these terms themselves are usually defined in terms of immediacy and mediation. 14 Yet this only tells us something about analytic and synthetic cognition, it does not tell us what they are. Hegel assumes that the reader is already familiar with his use of the terms 'analysis' and 'synthesis'. No doubt his original philosophical audience were, but it would be a mistake for me to assume such familiarity today. Modern philosophers appear to have lost sight of the origins of the analytic-synthetic distinction, and often assume that they are to be found in Kant's distinction between analytic and synthetic propositions. This, however, is an error, since the distinction between the analytic and synthetic methods predates

Kant's critical writings by more than a hundred years.

In fact, it was Descartes, in his Rules for the Direction of the Mind (written c.1628), who first distinguished between analytic cognition and synthetic cognition (though he did not use those terms in the text, but only later in his Replies to the Second Set of Objections).

Descartes, having argued that there are only two mental operations by which knowledge can be acquired, i.e. intuition and deduction, and that it depends on our viewpoint which one is appropriate, goes on to declare that if one is to discover the truth by either of these means, one has to have a method, a set of guidelines on how to proceed. The method of ancient geometry and algebra is the most certain, he argues, although the objects of both these sciences are very impoverished. Consequently, he decides to employ this mathematical method in philosophy. It consists in reducing complex or confused propositions step by step to propositions which are sim-

pler, and then, beginning with the intuitive apprehension of all those that are absolutely simple (relative to a given context), to ascend to knowledge of all the rest. The first half of this process is termed 'analysis', and shows a priori how a thing is derived or discovered; it is the best method of instruction. The second half is termed 'synthesis', and is the opposite procedure, the a posteriori demonstration of a fact.

This distinction became more firmly established in philosophy after Arnauld included a version of it in his Port-Royal Logic of 1662. This version was based on the account in Descartes' Rules, of which Arnauld possessed a manuscript copy (it was not published until 1701). It contains some important additions to that account, however, important because they were taken up by later writers, and became part of all subsequent accounts. For example, Arnauld says that analysis is a method for the discovery of truth, while synthesis is only used to make one understand a truth; Descartes had only said that analysis showed how a thing was discovered, not that it was the method of discovery - indeed, he thought it was the best method of instruction. Again, Arnauld argues that the synthetic method is the most important of the two; Descartes gives no grounds for saying this. He is also the first to state explicitly that in analysis, one proceeds from the more specific to the more general, while in synthesis, one proceeds from the more general (and simple) to the less general (and more complex); and he clarifies the point that there are not really two methods, so much as one method with two sides to it:

...analysis and composition (synthesis - P.J.) differ only as the road by which we ascend from a valley to a mountain differs from the road by which we descend from the mountain to the valley.

The same stretch of land is traversed in each case, but it is not merely arbitrary whether we go up or down, for this is determined by our starting-point.

The basic character of this distinction did not change significantly in the intervening years between the publication of the Port-Royal Logic, and that of Hegel's Science of Logic. Leibniz expressed his version of it in characteristically mathematical terms, but really added nothing to it. He writes in his essay Of Universal Synthesis and Analysis (c.1683) that:

Synthesis is when, beginning from principles and running through truths in order, we discover certain progressions and form tables, as it were, or sometimes general formulae, in which the answers to what arises later can be discovered. Analysis, however, goes back to principles solely for the sake of a given problem, just as if nothing had been discovered previously, either by ourselves or by others.

The most important thing to note here is that Leibniz quite obviously does not agree with the view that analysis is the method of discovery. In fact, he contends that some sorts of discoveries are made more in accordance with the analytic procedure, others more in accordance with the synthetic procedure; one proceeds more synthetically when one discovers a new application for something already in existence, more analytically when one discovers the means of bringing about a given end. The difficulty here is that one may discover that something already in existence can serve as a means to a pre-existing end, and in this case, the Leibnizian distinction breaks down.

This distinction was so popular by the beginning of the eight-eenth century that Newton even included his version of it in the following passage from the end of his <u>Opticks</u> (1704), quoted by Schwarz in his introduction to his translation of Kant's <u>Logic</u>, which is partly concerned with the development of this distinction:

As in Mathematicks, so in Natural Philosophy, the investigation of difficult things by the Method of Analysis, ought ever to precede the Method of Composition. This Analysis consists in making experiments and Observations, and in drawing general Conclusions from them by Induction... By this way of Analysis we may proceed from Compounds to Ingredients, and from Motions to the Forces producing them; and in general, from the Effects to their Causes, and from particular Causes to more General

ones, till the argument end in the most general. This is the method of Analysis; and the Synthesis consists in assuming the Gauses discover'd and established as Principles, and by them explaining the Phenomena proceeding from them and proving the Explanations.

This is probably the clearest statement of the distinction so far, but it only really applies to analysis and synthesis in natural philosophy (i.e. natural science), rather than analysis and synthesis in general. The main feature Newton has fastened onto from previous formulations of the distinction is the characterisation of analysis as that which proceeds from the more specific to the more general, and synthesis as that which proceeds from the more general to the more particular. This is to be the central feature of formulations of the distinction from now on. Note the rather obvious connection here between analysis and synthesis and induction and deduction, which are the more specific terms for what Newton describes.

The account of the distinction which appears in Kant's <u>Logic</u> provides a final, neat summary of the salient points of the previous accounts. Kant writes as follows:

The analytic method is opposed to the synthetic method. The former begins with the conditioned and what is grounded, and goes on to principles (a principiatis ad principia); the latter goes from principles to consequents, or from the simple to the composite. As the first could be called the regressive method, so the latter could be called the progressive method.

Kant does not tackle the question of whether or not analysis is 'the method of discovery', but merely notes that it 'is also called the method of discovery', a fact which would indicate a very casual treatment of the subject by Kant, if it was not the case that the Logic is only an edited version of a manual for lectures, and is therefore mainly in the form of notes. His comment that the analytic method is more suitable 'for the purpose of popularity', while the synthetic method is more suitable 'for the purpose of the scientific and systematic eleboration of cognition', 29 probably based on Descartes' remark in the Replies that people find the analytic method of instruction more satisfying. This, then, is the basic

course of the development of the analysis-synthesis distinction up to the time of Schelling and Hegel.

The distinction between analytic and synthetic propositions developed independently of the distinction between analytic and synthetis method. It has its roots in leabniz's distinction between truths of reason and truths of fact. Truths of reason were primary truths, for which no reason could be given. They were necessary truths: either identical propositions, or propositions which could be reduced to identical propositions by a finite analysis. This process of analysis consisted in the substitution of a definition for one of the terms of the proposition, so that the identify of subject and predicate, or at least the inclusion of the predicate-term in the definition of the subject-term, is revealed. Truths of fact are not absolutely primary, though some are primary for us, i.e. those derived from immediate experience, which, for Leibniz, as for Kant after him, meant more than just experience of the empirical self. All truths of fact, however, are contingent, because their analysis cannot be performed. This is presumably because they concern concrete objects which can be regarded from infinitely many different points of view.

A careful study of Kant's accounts of the distinction between analytic and synthetic propositions in the <u>Critique of Pure Reason</u> and the <u>Logic</u> reveals that it is really little more than this Leibnizian distinction under another name. In the <u>Logic</u>, Kant defines analytic propositions as propositions whose certainty rests on the identity of subject and predicate, and opposes them to synthetic propositions, whose certainty, he suggests in the <u>Gritique of Pure Reason</u>, rests on experience. The identity of concepts in analytic propositions, he continues, is either explicit, as in the tautology 'Man is man', or implicit, in which case an analysis of one of the terms of the proposition will reveal either the identity of

subject and predicate, or at least, the inclusion of the predicate-term in the definition of the subject-term, or of the predicate-concept among the set of ideas which make up the complex idea of the subject. Kant does not explicitly mention inclusion, but we know that he too thought this was the mark of an analytic proposition because of the formulation of the examples he gives in the <u>Logic</u> to illustrate the difference between the two types of proposition, that is:

To every x which pertains to the concept of body (a+b), there also pertains extension (b), is an example of an analytic proposition.

To every x which pertains to the concept of body (a+b), there also pertains attraction (c), is an example of a synthetic proposition.

This shows more clearly why Kant insisted that '7+5=12' is a synthetic a priori, rather than an analytic proposition, i.e. because it has the form 'a+b+c=d', not the form 'a+b+c=a(or b or c)'.

(aa) Analysis

Analytical cognition, says megel, is characterised by the fact that it contains no element of mediation, i.e. it is not derived or demonstrated knowledge. It is usually thought that the analytical method proceeds by taking up an object or problem, and resolving it into its various elements, which are then reised up into the form of abstract ideas; but such a procedure, megel contends, would not lead to the cognition (Erkennen) of the object, but only anchoser acquaintance (eine nahere Kennthis) with it. What I think he means by this is that analysis does not really produce knowledge, but only clear and distinct ideas. This proposition is generally accepted, and was in megel's time too; but megel goes on to suggest that this sort of analysis is not therefore, true analysis. True analysis has as its products, not mere ideas, but concept-determinations (Begriffsbestimmungen) immediately contained in the object, for example, determinate being, being-for-self, whole, part, cause, effect, simplicity,

complexity, or any of the other determinations considered in the Logic so far.

Prior to Hegel, the production of these determinations, or categories, had been regarded in one of two ways: either it was considered as a mere taking-up of these categories from experience, as the ideas of red, square, hard, soft, are simply taken up from experience (supposing for argument's sake that this view of the origin of those sort of ideas is correct), or as the result of the spontaneous activity of the mind. The former view had been exploded by the criticism of Locke and Hume, which, although it sought to trace such concepts back to their roots in experience, and thus vindicate the empiricist standpoint, in fact succeeded in showing that they could not be accounted for solely in terms of experience. Consequently, the latter view had come onto vogue; but Hegel is equally unhappy with that: it is just as one-sided, he says, to represent analysis as though there were nothing in the object that is not inserted into it, as it is to suppose that the resulting determinations are merely extracted from it. The view of Transcendental or subjective Idealism, in which the subject actively posits or sets down these concepts and says that phenomena must conform to them, is just as wrong as the view of what negel calls 'so-called realism', which says that the subject is an 'empty identity' which simply receives them from outside.

In fact, both views says Hegel, simply fasten onto a single aspect of analysis and make it out to be the whole. The true account must mention both sides of the process and say that they are both appearances of a single reality: for analytic cognition, which is nothing but the transformation of the given material into concept—determinations such as those mentioned above, is both a positing or a setting down of the concept by the mind, and a presupposing that it is objectively valid, and

its result therefore appears on the one hand, as the product of a merely subjective activity, and on the other, as something which is objectively real. The concept is not, of course, given in experience in the abstract form in which it appears in cognition — substantiality is not able to be perceived by the senses among the particulars of experience where Hume thought to look for it — but for all that it still underpins it and constitutes the objectively real element in it. It is only for the mind, but it is not therefore purely mental.

Analytic cognition, as a form of cognition, is supposed to involve some sort of progress, argues Hegel, but in fact, it does not seem to do so. Or rather, it does <u>seem</u> to do so insofar as it begins with a concrete ar complex thought-determination which is subsequently analysed, yielding further determinations which are then also analysed, and so on. However, this is not real progress, for all we are doing here is repeating the same act of analysis on a succession of different determinations, each of which is taken as concrete or complex; and in each case, what we begin with has a greater content than that which we end up with. Consequently, we learn nothing. This is not just true of analysis in the sense Hegel is speaking about it here, moreover, but also of mathematical analysis, and the method of analysis as it is employed in natural science; we learn nothing by transforming pnenomena into forces etc. All we do is distinguish groups of phenomena, and generally simplify the complex data which we are initially presented with.

This seems to suggest that analytic cognition is a very imperfect form of cognition, and therefore that there is a need for a higher form, involving some sort of mediation, and therefore some sort of progress. This is synthetic cognition. Regel notes that Kant's deduction of the pure categories is not, in fact, the genuinely synthetic progress, that

it ought to be. Kant merely bases his list of categories on his table of the logical functions of judgements, which is itself only the product of an analysis of empirical judgements. Kant might just as well have taken them from a direct analysis of the mind, as far as Hegel is concerned; and in fact there is evidence that he might actually have done this, the table of logical functions of judgements being a red herring. For the deduction takes place in the Transcendental Analytic, which begins with a sub-section entitled the Analytic of Concepts, in which he states that what is to follow is "the hitherto rarely attempted dissection of the faculty of the understanding itself, in order to investigate the possibility of concepts a priori by looking for them in the understanding alone, as their birthplace, and by analysing the pure use of this faculty "40 The true deduction of the categories would have to progress synthetically, however, and would be the presentation (Darstellung) of the transition of the simple unity of self-consciousness into its determinations which Hegel attempts in the Science of Logic.

(bb) Synthesis

Synthetic cognition, then, involves the element of mediation missing from analytic cognition. It aims at the necessary connection of that which is diverse. It must begin, however, by taking up objects from experience and then relating them in accordance with its general principles. This given element, Hegel seems to suggest, means that this form of cognition is conditioned from outside, and is therefore imperfect. The ideal form of cognition ought to be self-determining (which means however that it will never touch experience and be of direct help in comprehending it). It is true that it proves the necessity of various laws and propositions, but the necessity involved here is not the necessity of the thing in and for itself, but rather only their necessity for the cognizing

subject. I think megel is referring here to the fact that propositions are demonstrated by being derived from other propositions which the knower holds to be true, or inductively from experience, the former sort of demandation being relative, therefore, to the presuppositions of the subject, the latter to his or her experience. He contrasts this to the denivation of the determinations of thought in the course of the Logic, in which all presuppositions are grounded, forming a circle of necessary at thoughts.

Hegel distinguishes three sides to the notion of synthetic cognition, of which the first is the side of definition. The first thing to notice about negel's account of definition - and one of the few things in it he does not owe to Kant - is his insistence on the necessity of definitions being framed in terms of genus and differentia. Locke had argued in his Essay that the framing of definitions in these terms is only a contrivance to save the labour of enumerating the several simple ideas which constituted the proximate genus, and Leibniz, for the most part, agreed with him.42 Kant thought it was necessary with regard to what he called nominal definitions in a comparison, but not otherwise. Hegel, however, distinguishes between definition and description; description is for representation, he writes, 44 meaning that the enumeration of ideas which Locke mentions is not a part of cognition, like the analysis of ideas is not a part of cognition, but only serves to give us a more or. less precise conception of something. A description of Paris might make us more familiar with that city, but it gives us a lot of extraneous material along with what is essential; a definition does away with that material, and just gives us the simple thought. It is this that is requisite for the beginning of the process of synthetic cognition.

It might appear from this that Hegel is about to put forward

what Popper has called an essentialist view of definition, that is, that a definition states the essence of a thing, but this is not the case. He gel in fact goes on to say that there is no way of distinguishing the essential properties of a thing, or at least, any concrete natural or mental object. He states quite clearly that:

Since individuality, as that which is determined in and for itself, lies outside the determination of the concept of synthetic cognition, there is no principle available for determining which sides of the object are to be regarded as belonging to the determination of its concept, and which only to the external reality. This constitutes a difficulty in respect of definitions, which at this level of cognition cannot be overcome.

There are exceptions to this rule, however; it does not apply, says Hegel, either to geometrical objects or to the products of self-conscious, end-directed activity (Kant said it did not apply to 'arbitrarily invented concepts'; it is characteristic of him to speak of defining concepts rather than objects). It is easy to say what the essence of one of either of these two sorts of object is, because they are both essentially human inventions. A triangle is essentially a rectilineal figure with three sides, because the term 'triangle' is reserved for figures of that type, instances of which may or may not be found in experience; and a watch is essentially a device for telling the time, insofar as this is the purpose it was invented to serve. We may conceive of a watch, even though there are none in existence.

In the case of what negel called the concrete objects of nature and spirit however (Kant said the empirical and synthetic a priori concepts, including, in the former category, concepts such as fire, water, air and gold, and in the latter category, concepts such as substance, cause cause, right and equality), the objects are not man-made, and have infinitely many aspects which could be fastened onto and used to define it. There is no way of deciding between them. One might favour a particular property on the grounds that it is common to every individual of the type in question, or because it is relatively permanent, but these are

property on the grounds that it is common to every individual of the type in question, or because it is relatively permanent, but there are not sufficient conditions of essentiality. There is one test of the essentiality of the predicate, which is that it can be derived from the other properties of the thing; but if it is presented as something which has been deduced, as belonging to the object, then the proposition which expresses that fact is no longer a definition proper, but a theorem. Definitions result from the analysis of ideas, not from reasoning. This means, however, that the content of the definition is merely contingent, and that the definition itself is not to be taken as a statement of the essence:

Definition...does away with the peculiar determinations of the concept, which would essentially be the principles of the object, and contents itself with <u>marks</u> (Merkmalen), i.e. determinations whose essentiality to the object itself is a matter of indifference, and which are rather only intended to be <u>distinguishing marks</u> (Merkzeichen) for an external reflection.

Hegel goes on to make the important point that, precisely because definitions only provide marks whereby something can be distinguished, and are quite arbitrary, the cognition of the concepts of objects does not begin with them, that is, we do not need a definition of something before we can tell that it is different from something else:

...on the contrary, an obscure feeling, an indefinite, but deeper sense, a presentiment of what is essential, has preceded the discovery of the genera in nature and in spirit, and only afterwards has a specific externality been sought to satisfy the understanding.

This is important, because according to Popper, many philosophers, including Hegel, have thought that knowledge of an object begins with an intellectual intuition of its essence which is immediately articulable in a definition. This 'essence' will be a property, say, which is common to every individual of a single type. Hegel argues in opposition to this that there are no such properties, because whatever property we choose, there is always the possibility that an individual will be discovered, which one wants to regard as a member of a certain species, but which does not poss-

ess its defining characteristic:

...while the definition ought to give the determinateness of the concept in an immediate property, there is no property against which an instance cannot be brought in which the entire habitus allows one to discern the concrete thing which is to be defined, but the property which is taken as its characteristic snows itself to be either not yet fully developed, or wasted away.

Hegel, then, would agree with Popper in condemning what the latter calls the 'essentialist' view of definitions. He believes that the way we define a thing is quite arbitrary, so that roughly any of its general characteristics can serve to distinguish it. Definitions are not statements of the essential principles of an object, and science does not begin with them. It is possible to arrive at the essential principles of an object, but only as a result of scientific activity, and not prior to it, and these principles will therefore not be immediate properties of the object, but ones which have been deduced from those immediate properties. The idea of a philosophical analysis which clarifies thoughts and provides logical: definitions as a preliminary to scientific activity is therefore an empty one as far as Hegel is concerned; it is related to the doctrine of immediate knowledge which he criticises in the Encyclopaedia, and can only lead to dogmatism, as Popper points out in his own onslaught on the essentialist view of definitions and the doctrine of intellectual intuition (which is really the doctrine of immediate knowledge and is not to be confused with Fichte, Schelling or Hegel's 'intellectual intuition').

Megel next considers the concept of division. Since there are no a priori grounds for the division of things, this can only proceed by a process of trial and error. One fastens onto an attribute of things, for example, colour, and then proceeds to divide things up in accordance with their different colours. If the objects which are grouped together by this principle appear to have very little else in common, then this is a sign that our principle is inadequate and needs to be replaced. If we proceed in accordance with this method, then we are just as likely to light upon

artificial classifications as we are natural ones, and it is impossible for us to be certain that a particular classification is truly natural even if it is, because no matter how closely the individuals which are grouped together in accordance with a particular principle resemble one another, there is always the possibility that our ground of division is a superficial one, and that we are excluding from a species individuals that really ought to be members of it.

The se-called 'laws' of division are therefore, according to Hegel, nothing but a set of 'formal, empty rules'. He gives the example of the rule that division must 'exhaust the concept'. In fact, every member of the divided species 'exhausts the concept', in the sense that each, insofar as it conforms to its concept has all the general features belonging to a thing of its type, but this is not what is meant. What is meant is that the principle of division ought to embrace all the species of a given genus, which, strictly speaking, Hegel argues, is a tautological proposition, since if it does not give us all the species, it cannot be the principle. It often happens, of course, that new species are discovered which do not fit in with the chosen definition of the genus, in which case either we must modify our definition, or regard the new species as a species of a different genus; the fact that it is all the same here in a priori terms whether we choose to do the one or the other shows, says Hegel, the unsystematic nature of the procedure of this sort of division.

It is to be attributed to an instinct of reason (einem Instinkte der Vernunft) therefore, rather than the method of synthetic cognition, when it so happens that, in following this method, we select grounds of division which closely approximate to natural grounds. For example, when zoologists distinguish species of animal by their teeth and claws, that is, by the animal's weapons, this shows a certain intuitive grasping

of what is essential to the very nature of the animal, since it is through these weapons that the animal establishes and preserves itself as an independent existence, that it distinguishes <u>itself</u> from other animals; their nature determines the sort of food it eats, the sort of territory it inhabits, and so forth, and as such an important indication of the entire <u>habit</u>—us of the animal, constitutes a very natural ground of division. The just—ification of this <u>intuitively</u>—based division, however, must come from the deduction of the concept of the animal organism which Hegel claims to provide in his philosophy of nature.

Finally, Hegel considers the theorem. (der Lehrsatz; in the Encyclopaedia, der Theorem). The detailed cognition of the objects of its various aspects and their relations to one another, is expressed in theorems or propositions. Whereas definitions omit details and merely contain the abstract idea, in theorems, the object is known in the conditions and forms of its real existence. The theorem is therefore a synthetic proposition, which means that its terms do not merely spell out the same content in different forms, but have a distinct content, and are only united in virtue of some mediating term, or necessary connection. It is wrong to suppose, says Hegel, that theorems can be advanced merely on the strength of immediate experience; for the latter does not give us grounds for the connection of the terms, it does not establish a necessary connection. My statement might be wrong, therefore, but my reasoning cannot be challenged, because there is none involved here. I have only made a statement asserting what I believe to be the case, I have not advanced a theorem on the strength of a reason.

It might be asked how we are to distinguish those predicates of the subject which are to be included in the definition from those which are merely to be attributed to it in theorems. In fact, this is the same

question Hegel tackled in his treatment of definition, only seen from a different perspective; and consistently with the answer ne gave there, he says here that there is, at the level of cognition, no principle available for making this distinction. There appears to be such a principle implicit in the fact that the immediate attributes of a thing belong to the definition, and the mediated or derived ones to the theorem; but in fact, there are really no immediate properties as such, only properties which are presupposed or immediately stated as belonging to the object rather than being deduced. The definitions contained in any finite science, and the axioms too, insofar as they are not mere tautologies, are simply theorems of another science which appear as presuppositions in the science in question.

Hegel believed, incidentally, that here was to be found the solution to the problem of Euclid's parallel axiom, which by 1800 had come to be labelled 'the scandal of geometry'. This said basically that there passes through a point P, not on a line L, one and only one line M, in the plane of P and L, that does not meet L no matter how far M and L are extended. This obviously posed a problem for those who believed that Euclid's definitions and axioms warranted acceptance only on the ground of their ability to be corroborated by sense-experience, for not only can we not witness the infinite production of a pair of lines, we never even see parallel lines in the region of space which immediately surrounds us. Consequently, many mathematicians thought that this definition stood in need of proof, and attempted either to deduce it from other axioms, or find a substitute for it. Hegel. however, saw that there was nothing special about this definition. None of the others were able to be corroborated by sense-experience either; we do not meet with mathematical lines and points in our daily lives. All Euclid's definitions and axioms are merely assumptions,

which cannot be proved in geometry itself, but only appear as theorems in a higher science: the only higher science being philosophy itself, however.

Part of this view has, of course, since been vindicated. The notion that the definitions and axioms of Euclidean geometry are only assumptions, and not incontrovertible truths, has become mathematical dogma since the recognition of the existence of non-Euclidean geometries, though the notion that those assumptions are demonstrated or otherwise in philosophy, or that the demonstration or otherwise of those assumptions is philosophy, has by no means been accepted. Nevertheless, it is fair to say that Hegel shows himself here to have a far greater grasp of the nature of science, and a far greater relevance to modern scientific developments, than is usually accredited him. Moreover, in this case it is interesting to see how his view on this matter is no mere isolated insight, but proceeds from the most fundamental doctrines of his philosophy, i.e. his neo-Aristotelianism, and his (possibly consequent) belief, in contrast to Kant, that far from the possibility of the empirical verification of its propositions being the mark of science and the foundation of its certainty, it is rather necessary to advance beyond this reliance on sense-experience alone in order to take up a truly scientific standpoint.

There are two classes of theorem, according to Hegel; those which express a relation which is only incidental, that is, which represent just one aspect of the whole, and those which express a relation which is fundamental, and definitive of the whole thing. The latter can indeed be regarded as definitions, but they are not definitions which are immediately taken up by a subject and which therefore appear as presuppositions of a science, but definitions which are arrived at in the course of a science, and which distinguish the essential elements of a concept. This can be seen in geometry, Hegel argues, remarking at the same time on the super-

ficiality of the view that "assigns an equal value to all propositions on the ground that in general each contains a truth and is equally essential in the formal progress, in the context of the proof", thus effectively saying that Wittgenstein's remark in the <u>Tractatus</u> that "All propositions are of equal value", does not even hold good for all scientific propositions. In fact, theorems differ in status, and this fact is intimately connected with the progression of geometry as a whole, from theorem to theorem, as a complete deductive science.

It is usually assumed that the only principle inherent in the arrangement of the theorems in Euclidean geometry is the principle that every proposition which is neither an axiom or a definition, and which enters into the proof of another proposition, shall be proven prior to the assertion of that proposition; in other words, that we advance from the known to the unknown. If this was the case, however, Hegel seems to say, then this arrangement would merely be a matter of convenience; but, in fact, it has its own internal logic, based on the principle that the sequence as a whole strives to represent the unity of concept and reality. The early theorems, the reader will recall, show how the parts of a triangle reciprocally determine one another; given the lengths of the two sides and the included angle, it is possible to discover the lengths of the remaining side and the other angles. Now since the intellect only needs the former in order to know the whole, we may distinguish two elements of these early theorems; a conceptual or intellectual element, the figure reduced to its bare essentials for the intellect, and the real element, that which is left over, and has to be deduced. The distinction of these two elements, however, presupposes their original unity, and it is the implicit aim of the first book of Euclid's Elements to arrive back at that unity, and to express it in the form of a proposition, or more precisely, an equation (Gleichung),

since unity in the mathematical sphere takes the form of equality.

This equation is Pythagoras's theorem that in any right-angled triangle, the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the other two sides. Hegel says that Euclid closes the first book of his Elements with this theorem, "for in it, a perfect determinateness is achieved"; in fact, Euclid does not close the first book with this theorem, but with its obverse, that is, that if the square of the length of the hypotenuse of a triangle is equal to the squares of the lengths of its other two sides, then that triangle is a right-angled triangle; but far from showing up Hegel's lack of familiarity with Euclid, this fact only seems to confirm his main thesis, for this is surely the real definition of a right-angled triangle. Euclid goes on, Hegel points out, to close the second book with the reduction of the rectangle to the square, that is, the demonstration of the possibility, given any rectilinear figure, of describing a square equal to that figure, which is again therefore an equation of a simple and a complex figure, though not a real definition.

It is not possible, however, to go completely through the <u>Elements</u> and show that Euclid's progress always conforms to this pattern, because it does not. This, for Hegel, is a deficiency in Euclid; although he dare not say so explicitly at a time when Euclid was still generally the by-word for scientific perfection, truth and certainty, it is obvious that Hegel, like the great mathematicians of his time, was becoming highly sceptical of Euclid's reputation, especially in the light of the progress of analytic geometry. The inadequacy of Euclidean geometry had in fact been practically admitted in mathematical circles for at least two centuries, since the advance of science and technology had produced a need to work with configurations not satisfactorily dealt with by Euclid, like ellip-

ses and parabolas, and facilitated the development of analytical geometry. The latter was the flip-side of synthetic geometry, and had to be added to it if any further progress was to be made in geometry overall. The basic difference between analytical and synthetic geometry, from Hegel's point of view, was that in the former, the selution to the problem is contained in the problem itself, while in the latter, it is necessary to bring in material from outside. This is construction, by which the problem is solved, or by which the material for demonstration is provided, and it is ther therefore appropriate to say something here about Hegel's view of this procedure.

The construction, Hegel argues, first acquires its sense in the context of the proof; in itself, it is 'blind and unthinking'. The construction tells us, for example, to draw a line AB through a point C, and we simply obey, in the faith that this will assist us in the demonstration of the theorem; it is only when the theorem has been proven in this way that we see why it was necessary to draw that line. We then become aware of the end which that action served, an end which was not initially apparent, but which was revealed in the course of the proof. The proof itself, by which the connection asserted in the theorem first comes to appear as something necessary, is, however, lacking as much in objectivity as construction is lacking as much in thought. That is, because the course of the proof is purely formal and independent of experience. One only has to study the thing to grasp intuitively that it is correct. It all follows from the circumstances presented in the construction, which were blindly assumed precisely for the purposes of proof. In reality, these corcumstances are consequences of the nature of the object; the proof reverses the true relation.

Kant, in the Critique of Pure Reason, went so far as to dec-

lare that "mathematical knowledge is the knowledge gained by reason from the construction of concepts", opposing this to philosophical knowledge, which was simply knowledge "gained by reason from concepts", which, for Hegel, was the same as saying that mathematics did not really deal with concepts at all, but only with "abstract determinations of sensuous intui63
tion". This, he thought, was correct, but he bristled up against this procedure, also known as construction, which Schelling and others had attempted to introduce into the philosophy of nature, that is, the classification of the objects of science and philosophy in accordance with some presupposed scnema based on empirical concepts. Schelling, for example, classified the planets in accordance with an analogy with the series of metals, so that Venus was the copper planet, Mercury the planet of quicksilver, and the Earth, the planet of iron, etc. This procedure, Hegel thought, added nothing to our knowledge of nature; it was no more than a rather fatuous exercise of the imagination.

Hegel concludes from the formal character of synthetical or deductive reasoning that the synthetic method is of very limited value. The only reason for the relative success of its application to geometry is the abstract nature of the objects of geometry. Geometry is a science of magnitude, he says, it abstracts from the qualitative aspect of things, and concerns itself mainly with their quantitative features. It is therefore capable of being given a purely formal treatment, while other sciences, which are less concerned with the quantitative features of things are not. The element of the sublime which it seems to possess is also due to the fact that it contains nothing concrete enough to stir up men's passions in controversy. This point was also noted by Hobbes, who remarked that he had no doubt that "if it had been a thing contrary to any man's right of dominion, that the three angles of a triangle should be equal to two angles of

The factor of the second of the following section is the second of the s

· 1

a square, that doctrine should have been, if not disputed, yet by the burning of books of geometry suppressed, as far as he whom it concerned was able 64

Hegel goes on to call geometry "a simple science of the finite". Now it is true that, as Kline remarks, Euclidean geometry has often been described as "closed and finite", i.e. because it is restricted to theorems drawn from a finite set of axioms, and because it 'avoids the infinite' (actually it does'nt, but some people, apparently including Professor Kline, nevertheless think it does); but it is not usual to refer to geometry as such in these terms. What Hegel means here is simply that it is confined to the consideration of things qua quantitative, and therefore in a very limited aspect. Geometry, therefore, soon reveals its limitations. In the course of the science, one comes across irrational or incommensurable magnitudes (the former being regarded as a misnomer by Hegel, since it is precisely irrational numbers which reveal the inadequacy of the merely formal, verständigen treatment) which indicate the qualitative inequality of specific difference of figures. The grasping of this qualitative aspect requires a material or philosophical inquiry, rather than a formal, deductive one, and its theorems will no longer be grounded on mere intuition.

If the synthetic or deductive method shows itself to be inadequate here, then, it is even more so with respect to other sciences, the objects of which are more concrete. It has already been seen that definite ion and division in the empirical sciences are very arbitrary, and stand in need of proof; a further problem for such sciences, if they which to give themselves the form of strict synthetic or deductive sciences, is that the laws and forces which they deal with, which are the result of generalisations from experience, would have to be placed at the head (an die Spitze)

of the science, in order to supply a set of fundamental propositions from which the rest are deduced. This is the same reversal that was noted earlier (p.326); the propositions from which the theorems are deduced are in reality generalisations from the theorems. There is really only a show of proof here, then; nothing is gained by giving the science a deductive form. And indeed, this approach can lead to dogmatism, if the definitions and axioms of the science are taken as absolute and incontrovertible, so that no empirical counter-examples can be admitted.

Hegel's answer to this dogmatic approach is that one must first turn the whole process upside-down, so that it becomes evident that It is phenomena which provide the ground for our generalisations, laws and forces etc.. and not vice-versa .- here again, Hegel's battle-cry is 'Let the phenomena speak for themselves!' - and that it is possible therefore that we might have to modify these generalisations in the light of new experience; and that, secondly, one must take these laws and forces for what they are, namely, presuppositions, which ought initially to be accepted in order that one may effect an entrance (in sie hineinkommen - 1 am using Miller's translation of this phrase because I like it) into the sciences to which they belong, but which are not beyond criticism by one who has already effected such an entrance. One who wishes to have the necessity of such presuppositions demonstrated to him or her before commencing the study of a science - or perhaps even one who argues that this is not possible, and therefore that certainty in the sciences is not possible either, a sort of Kantian - will, for one reason or another, not advance beyond the startingpoint.

The synthetic or deductive method on its own is most inadequate of all, however, in philosophy. It ought not to surprise people to find Hegel saying this; after all, he has just argued that the deductive method is inadequate with regard to the empirical sciences — which are strictly speaking inductive or analytic sciences — and it has already been seen that he believed that philosophy was a much higher form of science, which justified the presuppositions of the empirical sciences, so that it would seem to follow that this method is not adequate on philosophy either. Nevertheless, it is a very common belief that degel's method is deductive. The majority of Hegel's British and American commentators, at least, until fairly recently, have believed this; and even in recent times, T.K. Swing has accused Hegel of having made "the outrageous claim of having deduced everything by the magical force of the principle of contradiction alone". Those who remain unconvinced, and insist on seeing an explicit denial by degel that his method is 'deductive' in the ordinary sense, could do worse than examine the following statement from the Philosophy of Right:

Logical deduction, a method commended by Leibniz, is certainly an essential characteristic of the study of positive law, as of mathematics and any other science of the understanding, but this deductive method of the understanding has nothing whatever to do with the satisfaction of the demands of reason or philosophical science.

Rationalism, or the belief that truth is obtainable purely by the afore-mentioned method of logical deduction, was in fact already a dead duck by the time of the writing of the Science of Logic (1812), or so Hegel would have us believe. Kant dealt it a death-blow in the Critique of Pure Reason, when he showed that deductive reasoning from conflicting premises could lead to antimomies irresolvable on that level of reasoning. Hegel has already pointed out, nowever, that Kant went on to make the error of concluding that therefore human reason is finite, and that men cannot attain to truth, whereas all that in fact followed from the existence of the antinomies was the inadequacy of the method of reasoning which led to them, but could not get beyond them. Jacobi improved on Kant, insofar as he saw that it was deductive reasoning that was limited, rather than the

human mind. He erred too, however, if we are to believe Hegel, since he concluded that all we can do is to retreat back into immediate or intuitive knowledge, which he identified with Human belief, and which, therefore, is not really knowledge at all. The fact is, according to Hegel, that if we are to grasp the truth, we need a higher sort of method altogether, one which enables us to ground all the presuppositions of a science in the course of that science.

The necessity of such a method would be a different sort of necessity to the necessity inherent in the synthetic or deductive method. It would be a necessity which dod not stand opposed to freedom. The necessity of the synthetic method does stand so opposed, since what determines the thing (i.e. the truth of a proposition) is something external to it (i.e. the truth of another proposition). In what is to be called the speculative method, on the contrary, the thing (i.e. thought or the subject) determines itself. That is to say, one does not try to establish a connection between the subject and predicate of a proposition on the basis of a connection between the terms of another proposition, assumed to be correct, which only provides a subjective justification of the initial proposition, but rather one begins with a thought and proceeds from that to other thoughts, without ever asserting or presupposing anything about the external world. The subject here moves only in its own element, and is therefore a collider the procedure.

(b) The Idea of the Good

The subject which is its own object is first considered, however, as an individual subject which confronts the external world in the
belief that it is an end-in-itself, while that external world is only a

means for it, and therefore of no intrinsic value. The subject has here, a particular end or good which it has the urge to realise in the external. world. This end or good is taken by it to be something objective and absolute over against external reality, and consequently one ought not to say that its urge to realise itself thus is an urge to give itself objectivity, at least in the sense of objective validity, but rather to give itself "this empty form of immediacy". The content of the end is not given from outside, but determined by the subject itself. As something determinate, it is necessarily finite and limited; but this notwithstanding, it is also infinite insofar as it is taken by the subject to be an absolute postulate, that is, as something whose validity is presupposed prior to action, as an absolutely or intrinsically valuable end.

The difference between Hegel's argument here and the argument in the passages on teleology or external purposiveness is that in the latter the end was assumed to be something merely finite, and so equally a means to an end. Now the end here may also be semething finite, i.e. a certain desired state of affairs, but if this is the case then it will experience the inevitable fate of finite things - it will pass away. Or to put the matter another way, if take some finite object for our end, it might be realised, but it might also be destroyed or perverted; or, despite being good in the abstract, it might conflict woth other finite goods in reality. Moreover, it might not even be able to be realised. Kant and Fighte had asserted that the good as such could not be realised, though they only meant by this an ideal state, which is, of course, only another finite object, and therefore there are really no strictly a priori grounds why it cannot be realised. (though there are many practical reasons). Indeed. if it were strictly unrealisable, then there would be no moral duty to try to realise it, as Kant and Fichte say there is ("Man must approximate, ad infinitum, to a freedom he can never, in principle, attain", writes Fichte); for as Kant rightly says, ought implies can.

If the good is taken to be something finite, then, it is merely something which bught-to-be (ein Sollen), and an opposition opens up between a Kantian Kingdom of Ends and a Kingdom of Heans. Hegel does not go into detail about the conflict between these two realms here, because he says he has already considered it fully in the Phenomenology (this explains why the section on the Idea of the Good in the Science of Logic is so short in comparison to the section on the Idea of cognition). This is one part of the Logic which can be adequately replaced by material from elsewhere. I do not intend to say much about this material, since Hegel omits it, but I would remind the reader that Hegel argues in the Phenomenology that the subject that tries to realise some very abstract end is destined to be made aware of the limitations imposed upon him by the external world. The person who thinks that the external world is entirely without intrinsic value or even the possibility of value, will cease to realise it.

It is in the nature of the will that is considered in separation from cognition to presuppose the intrinsic worthlessness of the world, however, and it is this very presupposition which presents it from achieving its end. No matter what the state of reality is, it will always be worthless from the point of view of the will. The process of the will must therefore be completed by the process of cognition, in which the external world is presupposed as valuable. The process therefore works as follows: In the action, I alter the external world which has been presupposed as worthless, and give it some value; consequently, I am no longer confronted by a world which is worthless, but my own end in the form of external reality. I may not have realised my own immediate end, but

I have nevertheless externalised my will, and therefore spiritualised the world of sense. In this way I have at least achieved the universal end of destroying the opposition between the world of sense and the world of spirit, even if not in my own particular case.

The point is that I will only perceive myself as limited by the external world insofar as I perceive my end as the realisation of some state of affairs, and do not take the wider view of it as the overcoming of externality. If I take this wider view, and see my deed as the reflection of my freedom, then I begin also to perceive myself as a universal or transcendental subject. I must therefore reflect on my actions and try to recognise in them and their effects, the presence of myself as a free subject. If I only see the imperfections in reality, the ways in which it does not conform to my subjective ideas as to how things ought-to-be, then I will act again; and I will always be able to perceive imperfections, because whatever I establish in the external world will only be a transient existence. Nevertheless, in my changing of the world, I will always be confronted woth my own freedom, and not just a mechanico-chemical world which determines me; that is, I will be confronted with an objective world whose "inner ground and actual subsistence" is the concept, or universal subject; and this, Hegel says, is the absolute Idea.

Notes and References

```
1. Critique of Pure Reason, B400/A342
2. Ibid., B404/A346
3. Ibid.
4. Ibid.
5. Werke 6, p.490; Miller, p.777
6. De Anima, Book II, Ch.1-2
7. Werke 6, p.490; Miller, p.777
8. Enc., section 415 (R)
9. System, p.10-11 (347-348)
10. Ibid.
11. P.92
12. Conjectures and Refutations, p.395
13. Ibid., p.28-29
14. See especially Locke's Essay, Bk.IV, Ch.II
15. Philosophical Works (Vol.I), p.7-8
16. Ibid., p.9
17. Ibid., p.11-12
18. Ibid., p.14-19
19. Arnauld, The Art of Thinking, transl. Dickoff and James (Bobbs-Merrill
Co., 1964), p.302f
30. Ibid., p.302
21. Ibid., p.309
22. Ibid., p.307, 309
23. Ibid., p.307
24. Philosophical Writings, p.10f.
25. Ibid., p.16
26. Logic, p.lvi-lvii
27. Ibid., p.149
28. Ibid.
29. Ibid.
30. Philosophical Writings, p.87-88; 96f.; 184
31. Ibid., p.87
32. Ibid.
33. lbid., p.88
34. Ibid., p.15
35. It is commonly thought that Leibniz believed that God could actually
perform the infinite analysis required here. This is a logical impossibil-
ity, however, which Leibniz was well aware of, as we see from the follow-
ing passage from the Philosophical Writings:
```

But in the case of contingent truths, even though the predicate is in the subject, this can never be demonstrated of it, nor can the proposition ever be reduced to an equation or identity. Instead, the analysis proceeds to infinity, God alone seeing — not, indeed, the end of the analysis, since it has no end — but the connexion of terms or the inclusion of the predicate in the subject, for he sees whatever is in the series... (p.109)

God could not reach the end of the series, therefore, but he could grasp its principle. I think megel wants to say that man is able to grasp its principle too.

36. Logic, p.117

37. Critique of Pure Reason, A

38. Logic, p.118 39. Ibid. 40. Critique of Pure Reason, A65-66/B90 41. Essay, Bk.III, Ch.III, section 10 42. New Essays, Bk. III, Ch. III, section 16 (p.291-292) 43. Logic, p.145 44. Werke 6, p.513; Miller, p.795 45. Open Society Vol. II, Ch. 11, section II (p.9f.) 46. Werke 6, p.513-514; Miller, p.796 47. Critique of Pure Reason, A729/B757 48. Logic, p.142; Critique of Pure Reason, A728/B756 49. Werke 6, p.516; Miller, p.798 50. Ibid., p.517; ibid., p.798-9 51. Open Society, p.9-12; p.15-16 52. Werke 6, p.518; Miller, p.799 53. Enc., sections 61-78 54. Werke 6, p.524; Miller, p.804 55. Ibid., p.527; ibid., p.806 56. Kline, p.461 57. Werke 6, p.530; Miller, p.809 58. Tractatus 6.4 59. Werke 6, p.532; Miller, p.810 60. Elements, Book I; Proposition 48 61. Werke 6, p.533; Miller, p.811-12 62. Critique of Pure Reason, A713/B741 63. Enc., section 231 (R) 64. Quoted Kline, p. 338-339 65. Werke 6, p.536; Miller, p.814 66. Kline, p.76 67. Swing, p.49
68. Hegel's Philosophytof Right, transl. T.M. Knox (Oxford University Press 1980), p.20

69. Werke 6, p.542; Miller, p.819

71. Werke 6, p.548; Miller, p.823

70. Science of Knowledge, p.115 (I, 118)

Chapter Eleven: The Absolute Idea

The Absolute Idea is said by Hegel to be the identity of the theoretical and practical Ideas. Each of these by itself has been seen to consist in a mere striving after the union of Self and Not-Self which is destined always to be unsuccessful; finite compition is not true knowledge. and the pursuit of one's desires does not constitute true freedom. The problem with these Ideas is that subject and object in them are conceived as essentially separate, as the abstract Ego and the equally abstract external, sensyous object. The true subject, however, has itself for its object, and the true object is the self. This self-knowing Self is the Absolute Idea, whose knowledge is true knowledge, and who is really free. Its knowledge is true knowledge, because it is free from the predjudices of sense-experience and the 'received' wisdom of the age, and concerns only that abstract knowledge which is above such things; and its freedom is true freedom, because in its occupation with such abstract knowledge, it is free from the selfish desires which previously determined it, and actively determines itself.

The Absolute Idea has been compared to Aristotle's Prime Mover, and indeed, degel himself says in his lectures that the two are basically the same. The Absolute Idea, he says, "is the norsis noeseos that Aristotle long ago termed the supreme form of the Idea". However, Aristotle's concept is of no clear relevance to us today, and since it is also very obscure, comparisons with it are not likely to be fruitful. Fortunately, there are other cooparisons that can be made with much more recent, and also much more lucid material. Russell, in his Problems of Philosophy, speaks of knowledge as a form of union of Self and Not-Self, and argues that such a union "is impaired by dominion". The is attacking the view which says that knowledge consists in making the Not-Self

conform to the Self, a view which he (and Popper for that matter) attribute to both Kant and Hegel, but his Self is clearly only the individual or personal Self, not the Kantian Transcendental Subject, or the Hegelian universal subject. He says that:

Everything in contemplation, that is personal or private, everything that depends upon habit, self-interest, or desire, distorts the object, and hence impairs the union which the intellect seeks. By thus making a barrier between subject and object, such personal and private things become a prison to the intellect. 4

This is Hegel's argument too, as I understand it. Russell goes on to contrast the intellect which is preoccupied with its own desires and opinions to what he calls the 'free intellect' which is engaged in philosophic contemplation.

The free intellect will see as God might see, without a here and now, without hopes and fears, without the tranmels of customary beliefs and traditional predjudices, calmly, dispassionately, in the sole and exclusive desire of knowledge - knowledge as impersonal, as purely contemplative, as it is possible for man to attain. Hence also the free intellect will value more the abstract and universal knowledge into which the accidents of private history do not enter, than the knowledge brought by the senses, and dependent, as such knowledge must be, upon an exclusive and personal point of view and a body whose sense-organs distort as much as they reveal. 5

Russell's view of philosophy might be different from Hegel's in many respects, but his description of the free, philosophising intellect could quite easily be a description of the Absolute Idea.

Russell's free intellect appears only to be that which contemplates, however. The Absolute Idea, on the other hand, is regarded by Hegel not merely as a knower, but also as the "sole object and content of philosophy". It is reason as subject in the act of comprehending reason as object. It must be its own object, in order to truly know and to be truly free; for if it has something alien for its object, then either it is determined from outside, or it only gives an external form to what is outside it. It does not merely contemplate itself in the abstract, however, but in the whole range of its concrete forms. It contemplates, in other words, its

own development through the host of pure concepts previously considered, which constitute its entire content, insofar as it is considered in its own pure essence and not as it presents itself in nature or spirit, these being only finite modes of its existence. Logic, or pure philosophy, is therefore the expression (Ausserung) of the content of the Absolute Idea, the Idea as the original Word (das ursprüngliche Wort) or Logos.

This content has already been considered, however, and so all that remains to be considered here is the <u>form</u> of the development of the system of logic, which is the same as philosophical <u>method</u>. This is not merely something left over here, however, as if the true content of this chapter was the content aforementioned, and Hegel merely omits it in order to avoid repeating himself. In fact, Hegel believes, as has been seen, that in thilosophy, as in art and religion, the true content is the form. Now this argument is usually applied to the Kantian habit of regarding thought as the <u>form</u> of knowledge, and sense as its content, and means that the true content of knowledge is the pure concepts; here, however, Hegel is saying that the true content of philosophy is not the pure concepts as such, each of which has been shown to be finite, so that the whole range of them is only the show or manifestation of the Absolute Idea, but the form of this development itself, philosophical method, which is the power behind the concepts, that both gives birth to them, and overcomes them.

The notion that the true content of philosophy, or a philosophy, is not so much system as method, is one that degel would have found relatively easy to justify historically. It is hardly contentious to state that from Descartes onwards, philosophers have been preoccupied with the question of the most adequate method, whether for philosophy alone, or for cognition as a whole. The British Empiricists stressed the importance of the method of analysis, the Rationalists the importance of the synthe-

between the two by introducing a third method, which he called the critical method. Always it is the method which is the focus of attention, rather than the particular theses supposedly; proven or discovered by it. Anyone can put forward the propositions contained in Descartes' Principles of Philosophy, Spinoza's Ethics or Kant's Metaphysical Elements of Natural Science; what makes these works philosophically interesting is the form which is given to those propositions.

'Method' in Hegel's sense, however, is not merely the species or mode of cognition (die blosse Art und Weise des Erkennens), which would effectively mean that it is only an external form which is given to an alien content, but the process of development of the Absolute Idea itself. It is as such "the soul of all objectivity", that is, of the body of the logic first and foremost, and all other determinate content has its truth in it, that is, it transcends all previous determinations. This has been demoned strated in the course of the logic, in which every other determination has been shown to be inadequate, so that, instead of the given object being the foundation in relation to which this process is merely an external form, the process itself, on the contrary, has proved to be "the absolute foundation and ultimate truth". The method, in other words, is the pure activity of the pure subject, the thinking of the pure subject, and that subject is, only insofar as it is active in this way, that is, only insofar as it thinks.

Thes activity of the subject is no mere subjective or private and personal activity, however, but "universal absolute activity" (die allgemeine absolute Tätigkeit), and is to be recognised, according to Hegel, as "the unrestrictedly universal, internal and external mode (My stress - P.J), and as the absolutely infinite force, which no object, insofar as

it presents itself as something external, remote from and independent of reason, can resist, maintaining its own peculiar nature in opposition to it, and not being penetrated by it. In other words, it is not only the form or activity of the mind, but also of things, that is, "of concepts, insofar as they appear initially to representation and reflection as 11 others". It is not only the soul but also the substantiality of things. The demand that the method philosophy seeks must be universal, says Hegel, is usually taken as a demand that it be a method for everything, i.e. all cognition, but really it means that it must be the form of both thought and things.

It is this thesis, above all, which has been rejected by philosophers since Hegel. Even in his own lifetime, philosophers such as Herbart and Schleiermacher were dismissive of it. Weberweg, in his System of Logic, distinguishes between the 'subjectively-formal' logic of Kant and Herbart, which he says "puts the forms of thought out of all relation to the forms of existence", and the 'metaphysical' logic of Hegel, which "identifies the two kinds of forms, and thinks it can recognise in the self-development of pure thought the self-production of existence". Weberweg himself, who was such a major influence on the English Hegelians, adopts the view of Schleiermacher, namely, that the forms of thought context to the forms of reality, but are not identical with them. This view is by no means peculiar to Schleiermacher, of, course; it is the natural or pre-philosophical belief of anyone who has ever engaged in thought; everybody who reflects imagines that by doing so they can arrive at the truth about the external world.

The problem with this assumption is that it can only ever be an assumption, because there is no conceivable way in which it can be justified. Any justification would have to presuppose precisely what it

was trying to prove, i.e. the correspondence of the logic of our thought with the logic of the world;; there is no possibility of somehow 'stepping outside' of the form of our thought, and comparing it with the form of things. If we are going to justify the objective validity of the forms of thinking, therefore, we ought first to abandon the presupposition of the absolute separation between thought and reality, that is, the conception of thought as mere subjective presentation and reality as external existence (see introduction, p.6); only then will we stop seeing the problem as the establishment of an external relation between two 'things', a 'mental' thing which we know, and an extra-mental thing which we do not know if we know or not, and only then will the problem become soluble. Indeed, it will disappear.

This is basically the same argument which Hegel introduced in the Introduction and the Second Preface to the Science of Logic in the form of a preliminary reflection. The method, in Schleiermacher's view, functions merely as the instrument and means of cognition. Certainly it has this function, according to Hegel, but it is not merely such a means or instrument, or rather, only in finite cognition is it such an instrument. In true cognition, subject, object and method are no longer mutually external like the terms in the formal syllogism (I-P-U), but rather only moments or aspects of a single concept. The subject knows itself, through itself. This is the circle which Kant said vas involved in self-knowledge (see previous chapter, p. 303); we see here that, as Hegel observed earlier on in the Logic, rather than being a vicious circle, it is the true form of knowledge and freedom. The moments of this form or method are not therefore merely taken up empirically, but are the moments of the concept in the form of moments of the method.

Hegel goes on to consider the determinations of the concept

in their signification as determinations of the method, beginning (logically enough) with the concept of the beginning. This concept or determination has, of course, already been mentioned at the beginning of the Logic in a series of lengthy remarks, but this, for Hegel, is where it really belongs. It has been seen, says Hegel, briefly recapitulating his previous remarks, that the beginning, if it is not made "arbitrarily and with a categorical unconsciousness", can appear to present various difficulties, but it is in fact relatively unproblematic. Whatsoever the beginning be made with, ne continues, it ought always to be made with something immediate. This is really an analytic proposition, since if we consider something through the mediation of another, we consider it as a result, not as a beginning. Since it is immediate, this object must also be an object of acquaintance; not an object of sense, however (for this is what we begin with in art), nor an object of sensuous representation (for this is what we begin with in religion), but one of thought, which Hegel also calls here 'supersensuous inner intuition'.

Intellectual Intuition which Popper criticises. The latter is an infallible mental vision of the truth of certain propositions, or more typically, of the correctness of definitions supposedly expressing the essences of things. This faculty is a fiction, as Popper rightly says; but this is not the intuition which negel has in mind, because this is not an intuition of the correctness of definitions, but an intuition of pure concepts. The difference is that a definition predicates something of a subject which is assumed to exist in reality, so that it may be either true or false. The truth of the definition would then either be known through its correspondence or non-correspondence with reality, in which case it would not be known a priori, or through another proposition, in which case it

would not be known immediately, and besides, the proposition it was known through would either have to be grounded in experience, or mediated by another proposition, and so on to infinity. The pure concept, on the other hand, is more like the predicate of the definition; it presupposes nothing in reality, and cannot be true or false. Our intuition of it cannot be incorrect, but only because it cannot be correct.

The concept we begin with in logic can have no other content besides the merely formal characteristics of simplicity and universality; but it is this very simplicity and universality, this lack of determinate content, which necessitates our advance from it. The necessity of the advance from the beginning must be inherent in the beginning itself, for if it is merely done for the sake of the method, as, for example, in geometry when one advances from one proposition to another, or draws a line from a certain point, merely for the sake of the proof, then the method is merely formal and deductive. It has to involve the deficiency of that which we begin with, for if we begin with what is perfect or absolute, there is no need to advance, or the advance is a mere superfluity. It is true that what we begin with is potentially the absolute, but this is far from saying that it is actually the absolute. The absolute actualises itself throughout the entire course of the logic; in the beginning it is no more than a drive or urge to realise itself.

The expansion of these point which Hegel goes on to undertake is misleading. The essential point here, according to Hegel, is that the Absolute Method, i.e. the universal subject in its cognizing activity, finds the determinateness of the concept within the concept itself. In finite cognition, he says, the intellect which seeks to make its concept more determinate merely takes up again the material which it left out in its creation of the universal in the first place by a process of abstract-

ion (see chapter seven, p.221), but in absolute cognition or philosophy, one must locate determinateness in the concept. Hegel compares this demand with that he regards as Plato's demand that philosophers "ought to consider things in and for themselves", by which I presume that he refers to Plato's frequent warnings, through Socrates, that one ought not to allow oneself to be distracted by particulars, but concentrate on the concept in hand; Socrates is often made to say, "Don't give me an example of X, tell me what X is".

What is misleading in all this is that what degel means by the determinateness of the concept is different in one case to what he means be it in the other. In the first place, he is referring to determinateness or particularity in the common sense; sensory particulars as opposed to universals, or simply universals which are closer to such particulars. This leads one to think that he is merely criticising the view that we regrasp acconcept through its instances, and advocating instead the analysis of a concept into its constituent ideas. This seems to be what he means by locating determinateness within the concept. This is not the case, however, because here he is introducing his own peculiar notion of determinateness or particularity, i.e. particularity as relation-to-another. The determinateness of the concept turns out to be the fact that it is related to another concept, or mather, initially, that it is opposed to another concept. This moment of the advance, the transition of the concept into its opposite, is what negel calls its dialectical moment.

Dialectic, says decel, is a very ancient science founded by Plato, and has been much maligned and misunderstood. It is often regarded as an art, but in fact it is more than that, because it is not something which only target talented individuals can master, but a universal and necessary feature of reason of the mind. In modern times, we have Kant to

The dialectical element in reason is expressed here, then, in the form of a conflict of reason, or paradox. Expressed in such a form, inet. i.e. as a problem or puzzle that needs to be resolved, it prompts the general conclusion that the assertions made are contradictory and null. The reason for their contradictory nature and their nullity is considered to lie sither with the knowing subject, or with the object itself, i.e. either our thinking is said to be defective in some way, or the object is regarded as a mere fiction, it is said that there is no world independent of my representations (Kant), no motion (Zeno, Hume, and also, effectively, Russell) and no mathematical point (Hume and Russell). These three examples are the only ones regel mentions at this point in the Logic, but there are many others which can be culled from the study of the history of philosophy, and degel thinks it is theoretically possible to put together a paradox based on the determinations of any concept in the Logic. Obviously, however, he does not think it is desirable to form such paradoxes.

Hegel says of the view that merely attributes the conclusions of dialectic to intellectual trickery that it is "the usual view of so-

called sound common sense (gesunden Menschenverstandes) which takes its

19
stand on the evidence of the senses and ordinary ideas and sayings", and
mentions as a typical example of this attitude, the response of Diogenes
the Cynic to Zeno's paradoxes on motion: he simply walks up and down. The
history of philosophy is full of examples of this sort of response to unlikely philosophical theses; Doctor Johnson's 'refutation' of Berkeley
by the kicking of a stone is another obvious example, and Moore's dogmatic insistence on the truth and certainty of a whole host of 'common
sense' statements is a further, more recent one. Hegel says of this dog20
matic approach, rightly, 1 think, that it "must be left to itself". This
is presumably because it is not a critical response, so much as a rejection of reason and a clinging to pre-reflective unperturbedness. At the
same time, however, Hegel recognises that the true solution of the paradox must be a validation of those pre-reflective beliefs.

It must be said here, however, that the responses dealt with above are not really genuine responses to paradoxes, but rather responses to one of the sort of solutions to the paradoxes he outlines, namely, the denial of the existence of the object. Diogenes walked up and down to show the absurdity of the thesis that there is no motion, not the absurdity of saying that the response both be here and not here at the same instant, which is Zeno's paradox, as opposed to Zeno's conclusion.

Doctor Johnson, similarly, whicked the stone to refute the thesis that there is no matter, not to solve the paradox that we both perceive, and do not perceive, matter; and moore insisted that he knew that the world had existence of the external world, not in order to solve the paradox that what we perceive is, and is not, outside us. The usual response of the dogmatic philosopher to the bare paradox is simply to say that our reasoning must

be wrong somewheres

Scepticism and Transcendental Idealism insist, on the contrary, that there is nothing wrong with our reasoning, but that reason as such is unable to provide us with knowledge of things-in-themselves. This position has already been dealt with sufficiently in chapter four, so it is not necessary to go into it deeply here. I merely note that while degel agrees that reason is necessarily dialectical, he does not therefore despair of it, but argues that this is only one stage in the process of reason, and that it is necessary to go beyond this stage to the resolution of the contradiction that dialectic produces in the ground-concept, that is, the more fundamental concept of which the opposed determinations are only moments. The trouble with scepticism and Transcendental Idealism is that they stop at the stage of contradiction, and are content to admit our ignorance of the truth. Hegel is not, and therefore questions the finality of the dialectical stage, and the approach to dialectic which makes it appear final.

The problem with the usual presentation of dialectic, Hegel argues, is that it concentrates our attention on the knowing subject and its object, and leaves the concepts of the predicates attached to the latter out of account, or rather assumes them to be walid. If the problem is considered to be one of assigning predicates to an object, and it seems that only contradictory predicates can be assigned to it, then it is obviously going to appear as if the problem lies with either the subject or the object. But in fact, argues Hegel, subject and object here are nothing apart from the categories which permeate them, anddtherefore the latter cannot be brought into contradiction merely through them. It is not simply that the world (e.g.) must be said to be both finite and infinite, whatever is finite is just as much infinite because the concepts are in-

separable. It is therefore these concepts (or were properly, these determinations, which we ought to be concentrating on. It is the great merit of the Kantian philosophy, says Hegel, to have drawn attention to the former uncritical procedure and tools to have "given the impetus to the restoration of logic and dialectic in the sense of an examination of the determinations of thought in and for themselves".

These determinations of thought are in and for themselves a transition, however; that is, the determinations considered in the logic presuppose their opposites: being presupposes nothing, finite presupposes infinite, individual presupposes universal etc. (though i am worried about that last example; they do not seem to be strict opposites, and besides, legel tends to treat them as part of a trio). If one tries to separate them, and treat them as indifferent to one another, like sensuous determinations such as blue and red, or lion and tiger, which are only contingently united in an object, then one invariably generates paradoxes. If one says, for example, that there are continuous magnitudes and there are discrete magnitudes (like there are Indian elephants and African elephants), then the former become infinitely great, and the latter infinitely small, and both thereby contradict the notion of magnitude. One cannot think continuity except within certain limits; but then it becomes continuity in the context of the discrete unit.

The generation of the second term through the internal diallectic of the first means that the first term is no longer considered as immediate, but as mediated, that is, as related to another. It is this relation to another which Hegel regards as the <u>particularity</u> of the initial concept or determination. The second term here is the negative of the first, and in the course of the method as a whole, the first negative. It does not merely <u>cancel out</u> the first term, however, as is commonly

believed, but ratner, as its other, contains or presupposes it. It is not, in other words, its contradictory opposite, but its polar opposite. The one presupposes the other, as the positive presupposes the negative, and at the same time, what is taken to be the positive is just as much negative in-itself, and vice-versa. This is Hegel's first great discovery, that far from these so-called contradictory predicates cancelling each other out, they are in fact quite inseparable, and he expresses this insight in the following way:

To hold firm to the positive in its negative, to the content of the presupposition in the result, this is the most important thing in rational cognition; at the same time, it takes only the simplest reflection to prove to oneself the absolute truth and necessity of this requirement, and as for examples of this proof, the whole logic consists of such 22

It could be argued that Kant thought that determinations such as finite and infinite were not contradictories, but he certainly did not go so far as Hegel and say that the two determinations were inseparable. Hegel thought that his point in respect of each pair of determinations in the logic could be expressed in the form of a proposition, for example, 'The finite is infinite,', 'One is many', 'The individual is the universal'. This form of expression was inadequate, however; the negative propositionss 'The finite is not infinite,', 'One is not many', 'The individual is not the universal' would also have to be added to make a closer approximation to the truth. This is because these propositions are not meant to be statements of abstract identity, i.e. they do not assert that the terms mean the same thing, but statements of speculative identity; i.e. they assert that the concepts involved are distinct elements which are united in one relation, and exist only as moments of that relation. In Hegel's terminology, the two determinations are moments of a single concept.

The second, negative or determinate determination is, according to Hegel, contradictory in its self. This is presumably because this

notion, e.g. the infinite, many, the universal, is explicitly determined as the opposite or other of the first determination, and yet at the same time as presupposing it or containing it. The infinite, for example, is the non-finite, but there is no non-finite without a finite; similarly, nothing is non-being, and there is no non-being without being. This is easier to show with some examples than others, of course — many is not obviously non-one, the universal not obviously the non-individual — but Hegel thinks the same point applies in every case. Again, then, the determination itself shows its inseparability from its other, it is not merely brought into contradiction with it by our subjective thinking. On the contrary; if their mutual presupposition is not evident,

its thoughts together. For the material, i.e. the opposed determinations in one relation, is already posited and ready to hand for thought. Formal thinking, however, makes identity its law, and allows the contradictory content which it has before it to descend into the sphere of representation, into space and time, where the contradictories are held outside one another, one next to the other or one following upon the other, and thus come before consciousness without any mutual contact. Furthermore, it specifically lays down the principle that contradiction is unthinkable; but in fact the thinking of contradiction is the essential moment of the concept. Formal thought thinks the same in fact, but looks away from it at once, and in saying the above, only makes the transition from it to abstract negation. 23

"Only in time can two contradictorily opposed predicates meet in one and the same object, namely, one after the other", said Kant in the Critique 24 of Fure Reason. G.H, von Wright points out in his Time, Change and Contradiction that this is not strictly true, since spatial difference also dissolves the contradiction. Hegel argues, however, that by focussing on the use of polar concepts in the finite or spatio-temporal realm, we only avoid confronting the inseparability of the opposed determinations. For example, if we concentrate on the application of the determinations of cause and effect in experience, we see that y is the cause of z and the effect of x, where x, y, and z are events taking place in temporal succ-

ession. Since y is a cause in a different respect, and at a different time to when it is effect, this disguises the fact that y is in itself both cause and effect, or that whatsoever is cause is just as much effect. The infinite regression of causes and progression of effects which we meet with in experience is the expression of this contradiction.

The contradiction here is not, as has been seen, a formal contradiction, but the unity of opposed concepts. Each contradiction in the logic is just one form of the general contradiction between the Self and Non-Self, that is, the unity of the two in the living organism or thinking subject. Thus Hegel says that the contradiction is:

...the simple point of the negative relation-to-self, the innermost source of all activity, animal and spiritual self-movement, the dialectical soul which everything true has within itself, through which alone it is true; for on this subjectivity alone rests the transcendence of the opposition between concept and reality, and the unity which is truth. 25

It was seen in chapter nine that the Non-Self appears as a limitation to the Self; similarly, the Self for whom the finite is semething positive or absolute sees the non-finite or (bad) infinite as a limitation, as semething unattainable. And in both cases there results the urge to transcend the limitation. This is achieved through the negation of the Non-Self or non-finite, which is at the same time the negation of the Self and the finite, and the establishment of a higher Self or a higher concept (in this case the true infinite), in which Self and Non-Self, finite and (bad) infinite, are only moments. It is the transcendence of this opposition between Self and Non-Self that constitutes self-conscious freedom. It is

...the innermost, most objective moment of life and spirit, through which a subject, a person, a free being is. 26

The negation of this negative determination restores the positivity of the first determination, though not the determination itself, since it is not merely its formal but its real negation. It yields, "if one insists on counting", a third term, which Hegel calls the unity of the first or immediate term, and the second or mediating term. Now the important expression here is "if one insists on counting" (Wenn man zählen will). Evidently, Hegel was already facing or expecting criticism over the predominance of triadic divisions in his philosophy. I have already argued (chapter two, p.55) that Hegel attached no particular significance to the number three in itself. In fact, the constant occurence of triads in his philosophy is due to his belief that every movement in the system reflects the movement in which the Not-Self opposes itself to the Self, and then both are transcended by a higher Self. Kant saw the necessity of triadic divisions in his Transcendental philosophy, says Hegel, although he did not give an adequate account of why they are necessary.

The sources for our knowledge of Kant's views on his own triads are the <u>Critique of Pure Reason</u>, the <u>Critique of Judgement</u>, and the <u>Logic</u>. Kant says in a footnote to the introduction to the <u>Critique of Judgement</u>:

It has always been thought somewhat suspicious that my divisions in pure philosophy should always come out threefold. But it is the nature of the case. If a division is to come out a priori, it must be either analytic, according to the law of contradiction — and then it is always twofold (quodlibet ens est aut A aut non A) — or else it is synthetic. If it is to be derived in the latter case from a priori concepts (not, as in mathematics, from the a priori intuition corresponding to the concept), then, to meet the requirements of synthetic unity in general, namely, (1) a condition, (2) a conditioned, (3) a concept arising from the union of the conditioned with its condition, the division must of necessity be trichotomous. 28

In a note in the <u>Logic</u>, he says similarly that division out of the principle of <u>a priori</u> synthesis is threefold, consisting of (1) the concept of the condition, (2) the conditioned, and (3), the deduction of the latter from the former. We see this method in action in the construction of the table of categories in the <u>Critique of Pure Reason</u>. ²⁹ Kant specifically asks us to note that the third category in every class arises from the

combination of the previous two; for example, allness (Allheit) is plurality combined with unity, limitation is reality combined with negation; and Mant also says, less plausibly, that community is substantiality combined with causation, and necessity, possibility combined with existence. There are similar examples elsewhere in the Mantian corpus.

This clearly does not explain a great deal; the meaning of the terms 'condition' and 'combination' is not clear here, for one thing. It is clear, however, that Kant based his division on 'the principle of a priori synthesis', whatever that might mean. I think a clue to what he means is to be found in his famous principle that there can be no analysis without a prior synthesis. The division of the first and second concepts is an analytic or logical division, and this presupposes the prior synthetic unity of those concepts in a third, fundamental concept from which they are abstracted as moments or elements. Such concepts are the truly primary concepts in each class, the hignest concepts of the transcendental unity of self-consciousness. Kant does not say this, but then he says little or or nothing in general to explain and justify those concents of his which I considered above. Consequently, I feel justified in suggesting this interpretation, which at least fits in with his general position and gives some intelligibility to his comments in the above passages.

It was Fichte who extended this position into something more obviously foreshadowing degel's method, or rather Hegel's view of the procedure of the absolute subject. Fichte thought not only that there could be no analysis for in his terminology, antithesis) without a synthesis, but also that there could be no synthesis without antithesis; both were 'inseparably united', and could only be distinguished by an external reflection. Further, he went on to construct the entire theoretical part of his system by indicating oppositions or antitheses which he then went on

to reconcile, until finally he reached a point where the given opposites could no longer be reconciled. The whole procedure is supposed to be based on the principle that in the self, a divisible Not-Self (the external world) is opposed tota divisible Self (the empirical subject), which in turn is based on the principle that there is a Self, and the second principle that there is a Non-Self opposed to it. Tichte argued that these ideas were implicit in Kant's philosophy, though Kant dissociated himself 34 from them.

sion of Kantianism, though he makes many important changes in his version of it. In the first place, he operates with concepts instead of propositions, the concept of being replacing Fichte's starting-point, &=A (or I=I, or again, 'I am'). Fichte's oppositions then become opposed deter-s minations of thought, which are not merely brought together into the external unity of a synthesis based on an absolute postulate (the Self), but are rather shown to be mere moments of a more fundamental unity or concept. Similarly, Fichte's infinite progression of oppositions becomes a completed system in the form of a circle of concepts, and ends with the absolute unity he only postulates as something derived rather than postulated. The fact that Fichte's system is unable to be completed is due to the fact that he is unable to properly transcend the opposition of self and Not-Self, because his Self remains a mere postulate, and therefore an external given.

It is also worth mentioning here, in the hope of burying the question once and for all, that besides the fact that he does not employ these terms, it is inadmissable to call the three terms of Hegel's method 'thesis', 'antithesis' and 'synthesis', because the first term is not a thesis, i.e. a proposition, the second term is not an antithesis, i.e. an

is a for all a many play,

opposing proposition, and the third term is not a synthesis, i.e. a combination of the first two propositions. The first term is a determination of thought (an idea not gained from sense), the second an opposing determination of thought, and the third, the concept of which the previous determinations are only moments. The identity of the terms will differ where the method is taken as a process in other spheres; the beginning, for example, may be the living embryo (in the sphere of life), or the subjective end (in the sphere of teleological action). Incidentally, it is equally incorrect to ascribe the myth of the dialectic of thesis-antithesis-synthesis to Fichte; antithesis and synthesis occur in his philosophy as methods, not propositions, and the thesis is not part of the system, but its presupposition.

The triads in the Logic are often divided up into separate groups, each containing three different concepts. This is a distortion, however. The third term of each movement, for Hegel, is equally mediatedand immediate. This means that, although this term comes on the scene through the negation of the first two terms, it is nevertheless no mere result, but also a fresh beginning. This is admittedly not obvious from the Logic; it appears, for example, that the third to being and nothing is becoming, and yet we do not begin again with it, but with a different determination, determinate being. I am still not sure myself how Hegel would explain this; perhaps becoming is not the true third to being and nothing, but only a transitional concept, but then he does seem to regard it as their third, as the quotation on page twenty-five shows. Determinate being itself goes through various transmutations before it finds an 'other': it becomes quality, then something. I suspect that the method Hegel really follows in the Logic is not half so rhythmic as the one he describes.

Hegel goes on to say that the method, in the way outlined above, expands into a system. It forms a system, rather than a mere infinite progression of movements, because the whole thing winds itself round into a circle. The advance of the logic, which appears to be taking us further away from the beginning, is actually approaching it once more, at least insofar as it is in the form of a result. The progressive determination of the beginning, which constitutes the synthetic side of the method, coincides with its regressive grounding, which is the analytic side of the method. Initially, the course of the logic appears to be a mere advance through concepts which are progressively richer and more concrete in content, but in fact, each extension of content is a further determination of the Absolute Subject, which thereby individuates it and makes it into a simple subject or pure personality which embraces all content within itself, and which is therefore practically indistinguishable from the abstract Self we began with.

This is fine so far as it goes, but it has very little relation to what goes on in the text. The reality is quite chaotic in comparison to this smooth-flowing stream of divine thought. I have already mentioned that it is difficult to trace any clear examples of results of logical movements being used to make fresh beginnings. There are other difficulties too: the <u>Logic</u> appears to consist of a four-tier system of triads, the first consisting of the major spheres, being, essence, and the concept, the second of the subordinate spheres, e.g. quality, quantity, measure, etc. Now it the method supposed to be active on every level? If it is, then how is it that the same concept (e.g. being, actuality, the concept) appears on several levels? If, on the other hand, it is not, then why the triads? And at what level or levels is the method active? There are instances where fourth-tier concepts (e.g. finitude, the thing) even app-

ear to divide within themselves. The whole thing is very confused, and not at all like the easy, step-by-step progress Hegel describes.

I do not think we ought to conclude from the fact that the form of Hegel's Logic does not correspond exactly to his ideal of philosophical form, however, that therefore the form of the Logic must be at fault. Rather I think we ought to turn our attention to that ideal. For it does not, in its detailed exposition, even conform to Hegel's general conception of what the Absolute Method ought to be. Hegel argues that it must not merely be an external form into which the material of cognition is fitted, or a method which I employ on that material like a tool, but the activity of the Absolute Subject in thought and in reality. But the method outlined above is precisely such an external arrangement of given material, i.e. the ordinary forms of thought. It is an arrangement which is based on a very interesting idea about the nature of philosophical debates and how to resolve them, but it is a merely external one nevertheless. Philosophers do not have to engender conflicts, and then resolve them in Hegel's fashion, and they certainly do not have to advance in this way through a hierarchy of thoughts. The trouble with Hegel's method is that it is too much of one.

The Logic itself, however, precisely because it is much less methodical than the Method Hegel describes, succeeds as a work of philosophy. That is, because it is not merely the application of a method, it manages to say all sorts of different things of philosophical interest; and if the philosophical points Hegel makes cannot all be derived from one miracle method, at least they are all interconnected and make a basically consistent picture. The picture I perceive is of a philosophy which has as its aim the resolution of all conflicts; which does not, however, come down on one side or the other, but advances beyond both; a philosophy which is

concerned with criticism, but with the criticism of concepts rather than propositions; a philosophy which sees itself as the general foundation of the sciences, rather than opposed to science; a philosophy which conceives of knowledge on the model of self-knowledge rather than knowledge of objects; a philosophy which does not detract from the mathematical, but points out its limitations; and a philosophy in which the mechanical is subordinated to the organic and the spiritual.

The fact that the grounding which takes place in Hegel's Logic is a regressive grounding, or an analytic grounding, which grounds the particular, or abstract universal, by the universal, or the more concrete universal, also means that it is not a deductive philosophy in any common sense, but one which proceeds by spectacular intellectual leaps, such as those which are made in the sciences when new theories are advanced to account for phenomena. Hegel's philosophy is 'presuppositionless' only insofar as its 'presuppositions' are finite concepts which are criticised to produce his first principle, which then serves as their foundation. It is not an unchallengeable dogma. I have tried to argue that Hegel fought against the dogmatic spirit of his time, which clung to Newton in its physics, Euclid in its geometry, Aristotle in its logic and Kant in its philosophising, and revived the spirit of speculation. This being the case, it is clear that the dry, uninspiring accounts of the Science of Logic which have so far been the rule need to be put aside, and Hegel's ideas presented in a way in which the scientific community in general can profit from them. It is my hope that this thesis at least gets this process under way.



Notes and References

- 1. Encyclopaedia, section 236 (Addition)
- 2. Problems of Philosophy, p.92
- 3. Conjectures and Refutations, p.325-326
- 4. Problems of Philosophy, p.93
- 5. Ibid.
- 6. Werke 6, p.549; Miller, p.824 7. Ibid., p.551; ibid., p.825
- 8. Ibid., p.551; ibid., p.826
- 9. Ibid.
- 10. Ibid.
- 11. Ibid., p.552; ibid., p.826
- 12. System of Logic, p.xi
 13. bid.
- 14. Ibid.
- 15. Werke 6, p.490; Miller, p.777
- 16. Ibid., p.553; ibid., p.827
- 17. Toid., p.557; ibid., p.830
- 18. See also chapter four, p.
- 19. Werke 6, p.559; Miller, p.832
- 20. Ibid.
- 21. Ibid., p.560; ibid., p.833
- 22. Ibid., p.561; ibid., p.834
- 23. Ibid., p.562-563; ibid., p.835
- 24. Critique of Pure Reason, B49
- 25. Werke 6; p.563; Miller, p.835
- 26. Ibid.
- 27. Ibid., p.564; ibid., p.836
- 28. Critique of Judgement, p.39 (Note)
- 29. Pritique of Pure Reason, Bll0-111
- 30. Ibid., B131
- 31. Science of Knowledge, I.113
- 32. Science of Knewledge, I.114-115
- 33. Ibid., I:91-I.115
- 34. Ibid., I.468-I.491

General Bibliography

- I have referred to the following:
- Aristotle, Works: the revised Oxford translation, ed. Barnes (Princeton University Press 1984)
- Arnauld, A, The Art of Thinking, transl. Dickoff and James (Bobbs-Merrill Co., 1964)
- Boyer, C., The History of the Calculus and its Conceptual Development (Dover 1959)
- Descartes, R., Philosophical Works, Vol. I and II, transl. E. S. Haldane and G. R. T. Ross (Cambridge University Press 1911)
- Einstein, A., The Meaning of Relativity, (London 1950)
- Esposito, J. L., Schelling's Idealism and Philosophy of Nature (Associated University Presses Inc., 1977)
- Fichte, J. G., The Science of Knowledge, transl. Heath and Lachs (Cambridge University Press 1982)
- Frege, G., <u>Translations from the Philosophical Writings of Gottlob Frege</u>, ed. P. Geach and M. Black (Basil Blackwell 1952)
- Megel, G. W. F., Werke, Vol.5, 6, 8, 9, and 10, ed. E. Moldenhauer and K. M. Michel (Suhrkamp Verlag, Frankfurt am Main 1969)
- Hegel, G. W. F., Phenomenology of Spirit, transl. A. V. Miller (Oxford University Press 1977)
- Hegel, G. W. F., Science of Logic, transl. A. V. Miller (George Allen and Unwin 1969)
- Hegel, G. W. F., The Jena System, 1804-5; Logic and Metaphysics; translation edited by J. W. Burbidge and George di Giovanni (McGill-Queens University Press 1986)
- Hegel, G. W. F., <u>The Difference Between Fichte's and Schelling's Systems of Philosophy</u>, transl. Harris and Cerf (State University of New York Press, Albany 1977)
- Hegel, G. W. F., Philosophy of Nature, transl. A. V. Miller (Oxford at the Clarendon Press 1970)
- Hegel, G. W. F., Philosophy of Mind, transl. W. Wallace (Oxford at the Clarendon Press 1970)
- Hegel, G. W. F., Logic, transl. W. Wallace (Oxford at the Clarendon Press 1975)
- Hume, D., A Treatise of Human Nature, ed. Selby-Bigge, (Oxford 1968)

Hull, D., Philosophy of Biological Science (Prentice-Hall Inc., New Jersey 1974)

Kant, I., Critique of Pure Reason, transl. N. Kemp-Smith (Macmillan 1985)

Kant, I., Critique of Judgement, transl. J. C. Meredith (Oxford at the Clarendon Press 1928)

Kant, I., Logic, transl. R. S. Hartman and W. Schwarz (Bobbs-Merrill 1974)

Kline, M., Mathematics in Western Culture (Penguin 1953)

Leibniz, G. W., Philosophical Writings, ed. G. H. R. Parkinson, transl. G. H. R. Parkinson and Mary Morris (Dent and Sons 1973)

Leibniz, G. W., <u>Mew Essays on Human Understanding</u>, transl. P. Remnant and J. Bennett (Cambridge, Cambridge University Press 1981)

McFarland, J. D., <u>Kant's Concept of Teleology</u> (Edinburgh University Press 1970)

McTaggart, J. M. E., <u>A Commentary on Hegel's Logic</u> (New York, Russell and Russell Inc., 1910)

Mure, G. R. G., A Study of Hegel's Logic (Oxford University Press 1950)

Mueller, G., <u>Hegel: the Man, his Vision and Work (Pageant Press Inc.,</u> N. Y. 1968)

Plato, Collected Dialogues, ed. E. Hamilton and H. Cairns (Princeton U. P. 1961)

Passmore, J., One Hundred Years of Philosophy (Penguin 1965)

Popper, K. R., Conjectures and Refutations (Routledge and Kegan Paul 1963)

Popper, K. R., The Open Society and its Enemies, Vol. II (Routledge and Kegan Paul 1945)

Rocke, A. J., Chemical Atomism in the Nineteenth Century (Ohio State University Press 1984)

Russell, B. A. W., ABC of Relativity (Allen and Unwin 1985)

Russell, B. A. W., Human Knowledge: its Scope and Limits (Unwin 1948)

Russell, B. A. W., Mysticism and Logic (London 1917)

Russell, B. A. W., Problems of Philosophy (Oxford University Press 1985)

Russell, B. A. W., My Philosophical Development (Unwin 1985)

Russell, B. A. W., Logic and Knowledge, ed. R. C. Marsh (London 1956)

Russell, B. A. W., Principles of Mathematics (Allen and Unwin 1937)

Ryle, G., The Concept of Mind (Penguin 1973)

Strawson, P. F., Introduction to Logical Theory (Methuen and Co., 1952)

Schelling, F. W., <u>System of Transcendental Idealism</u>, transl. Heath (University Press of Virginia 1978)

Spinoza, B., Ethics (Dent and Sons 1948)

Stace, W. T., The Philosophy of Hegel (Dover 1955)

Swing, T. K., <u>Kant's Transcendental Logic</u> (New Haven, Yale University Press 1969)

Ueberweg, F., System of Logic, transl. T. M. Lindsay (London 1871)

von Wright, G. H., <u>Time, Change and Contradiction</u> (Cambridge University Press 1969)

Wittgenstein, L., <u>Tractatus Logico-Philosophicus</u>, transl. D. F. Pears and B. F. McGuiness (Routledge and Kegan Paul 1961)

Wittgenstein, L., Philosophical Investigations (Basil Blackwell, Oxford 1953)