Resolved: Objects Early Has Failed

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SUMMARY

The participants will use a debate format with a provocative thesis to explore the pedagogical approach known as "objects early" or "objects first." By arguing in the affirmative, Elliot Koffman and Stuart Reges will point out concerns that have been raised about the approach. By arguing in the negative, Kim Bruce and Michael Kölling will describe schools that are succeeding with the approach and ways to address significant concerns. Owen Astrachan as moderator will ensure that the debate remains civil and will provide some humorous and possibly even insightful commentary on the evidence presented by both sides.

Categories and Subject Descriptors

K3.2 [**Computers and Education**]: Computer and Information Science Education – *computer science education, curriculum.*

General Terms

None.

Keywords

CS1, object oriented programming, objects first.

1. INTRODUCTION

As table 1 makes clear, the volume of email traffic on the SIGCSE mailing list spiked during the fourth week of March, 2004. The normally tame list suddenly had five times the usual number of messages and together those messages constituted seven times the usual number of lines of text. And then just as suddenly as it had begun, the list went back to the usual flow.

The spike started during the third week of March when Eric Roberts posted a message about the new ACM Java Resource Task Force [4]. Several people expressed concern about the implications of an ACM-endorsed set of tools for teaching Java.

The volume exploded when the discussion turned to the question of whether the push to teach objects early has been worth the effort. Clearly many people have strong opinions on this subject.

Table 1. Email traffic on SIGCSE list (2004)

Week	Messages	Total Lines of text
1st week of March	16	1,794
2nd week of March	18	1,002
3rd week of March	24	1,659
4th week of March	95	9,207
1st week of April	13	1,823
2nd week of April	7	481
3rd week of April	24	1,262
4th week of April	19	1,263

The volume was so great, however, that many people couldn't keep up with it. This is evidenced by the fact that the discussion so quickly faded away (a sign that people were worn out) and the fact that Kim Bruce was asked to write a summary of the discussion for *Inroads Magazine* [1].

We have proposed this debate as an attempt to chip away at the complexity of this difficult question. By limiting the number of people who can speak and forcing them to adopt a debate format, we hope to clearly articulate the issues on both sides. We also chose the debate format to underscore the fact that this issue will not be settled in 75 minutes. As with any controversial subject, both sides of the argument have merit. So we see this more as the beginning of a discussion rather than an attempt to settle the question.

2. A TRADITION OF FRIENDLY COMBAT

In choosing this format we are emulating a tradition long established at the annual OOPSLA conference of exploring complex questions by taking things to an extreme and interjecting humor. At their 1999 conference they featured "The Show Trial of the Gang of Four for Crimes Against Computer Science" in which they explored the question of how useful design patterns have turned out to be [2]. In 2002 they had a debate "Resolved: Objects Have Failed" in which they explored the question of whether object-oriented programming has lived up to its promised potential [3].

We are also taking a page from William F. Buckley and the many debates sponsored by the television show Firing Line on controversial subjects like affirmative action, abortion rights and political correctness. In particular, we liked the way that Michael Kinsley as moderator of the debates was able to use humor to keep tempers from flaring. He reminded the participants and the audience that, even though we may disagree bitterly, that we still respect each other and want to be friends at the end of the day. We invited Owen Astrachan to play this role for our debate. The combination of Owen's well-known equanimity and his sangfroid under fire makes him the perfect choice to judiciously stir this caldron of controversy.

3. THE PARTICIPANTS

It is fitting that the four who will debate this issue all participated significantly in the March debate on the SIGCSE mailing list. The most difficult choice was whom *not* to include. Particularly among those arguing for the objects early approach, we simply couldn't include all of the passionate and articulate advocates. Their absence from the debate should not in any way be construed as a reflection on the merits of their arguments. We simply couldn't include everyone.

Oddly enough, the difficulty was in finding people willing to argue against objects early. Elliot Koffman opined on the mailing list that there is a "silent majority" that is not comfortable expressing their concerns, which could explain why few were eager to argue the affirmative side of this debate.

Below is a brief biography of each debate participant and some of their professional experience that is relevant to the debate.

Arguing in the affirmative that objects early has failed are:

Elliott Koffman: Elliott is a Professor of Computer Science at Temple University. He is the author of several popular CS1 and CS2 textbooks and has been involved in computer science curriculum issues for many years, including serving as the chair of the committee that rewrote the course descriptions for CS1 and CS2 in 1984.

Stuart Reges: Stuart is a Senior Lecturer in Computer Science and Engineering at the University of Washington. He served as the second chief reader for the AP/CS exam and was heavily involved in the design of intro courses and undergraduate curricula first at Stanford University and then at the University of Arizona.

Arguing in the negative that objects early has not failed are:

Kim Bruce: Kim is the Frederick Latimer Wells Professor of Computer Science at Williams College. He has been a long-time contributor to SIGCSE discussing such issues as the inclusion of mathematics in the computer science curriculum. Recently he has developed a graphics-based approach to CS1 that he is in the process of exporting to other schools.

Michael Kölling: Michael is an Associate Professor of Software Engineering at the Mærsk McKinney Moller Institute in Denmark. He has been a frequent contributor to SIGCSE and is the creator of the popular BlueJ integrated Java development environment designed for novices. He is also the coauthor of an objects early CS1 textbook.

Moderating the debate is:

Owen Astrachan: Owen is a Professor of the Practice of Computer Science at Duke University where he serves as Director of Undergraduate Studies. Owen has been heavily involved with the AP/Computer Science program, serving as a committee member, the third chief reader and as chair of the task force that recommended the recent switch to Java. Owen has also been a frequent contributor to SIGCSE and provided a memorable talk at the 2003 conference when the keynote speaker was unable to attend.

4. REFERENCES

[1] Bruce, K. Controversy on How to Teach CS1: A discussion on the SIGCSE-members mailing list. *Inroads Magazine (in production)*.

[2] Cunningham, W. The Show Trial of the Gang of Four for Crimes Against Computer Science. Described at http://c2.com/cgi/wiki?ShowTrialOfTheGangOfFour.

[3] Gabriel, R., and Steele, G. Resolved: Objects Have Failed. Opening arguments available at http://dreamsongs.com/Essays.html.

[4] Roberts, E.. Resources to support the use of Java in introductory computer science. *Proceedings of the 35th SIGCSE technical symposium on Computer science education*.