Abstract

At the end of last year, a prominent Category Theorist revealed a well kept secret on the categories mailing list. I will present a brief overview of the various threads that erupted from this revelation, and how they are relevant to Your Research™.
On a frosty winter day, in a land far, far away, a wise scholar has decided to share some of his thoughts with the rest of the world...

**André Joyal**

Category theory is a powerful mathematical language. It is extremely good for organising, unifying and suggesting new directions of research. It is probably the most important mathematical development of the 20th century. But we can’t say that publicly.

Ohad Kammar <ohad.kammar@ed.ac.uk>
Michael Barr

[.. a colleague’s] reply essentially was, ‘‘Oh, it’s category theory language. Well, I won’t allow any of that in MY notes. No analyst would use that language.’’

21/12/09
Gain...

- a glimpse into some categoriests’ view of themselves...
- experience: can this happen to me? How to avoid this?
Category Theory helps us to structure abstractions. In Computer Science and in other areas (e.g. Physics). Some people seem to think that abstractions don’t buy you anything concrete. E.g. they don’t deliver faster algorithms or new physical theories. These people often overlook that everything they do relies essentially on abstractions which have been established a while ago. Hence, while it is hard to measure the impact of abstractions exactly, IMHO it is almost impossible to underestimate their value.
Design from scratch is for geniuses while ordinary people design by adapting and developing preexisting patterns. Category theory created a powerful system of design patterns for math and beyond (computer science, physics, engineering). It seems it changed the very nature of mathematical design.
Is it the most important?

Is it “probably the most important mathematical development of the 20th century”?

Nearly unanimous consensus: too early to tell... (and this is on the categories mailing list!)
I think we should be wary of slapping ourselves on the back too much.
The fact is that category theory alienated the rest of the mathematical world. [...] Probably it was the result of haughty claims about being the ‘‘most important mathematical development’’, and about being the foundations of mathematics before any serious technical work was done to justify this.
Steve Vickers 8/12/09

I think category theorists have done an excellent job at publicizing the secret. I am very much struck at category meetings --- what a variety of backgrounds the participants come from: lots from computer science of course, and now increasingly many physicists. It seems to me this is exactly because category theory has the qualities you describe. It enables the pure category theorists, the computer scientists, the physicists to meet and talk together with a high degree of mutual understanding.
Charles Wells

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David Spivak 8/12/09
I think we should say it publicly. Gays get to have gay pride, why shouldn’t categorists get to have category-theory pride? Perhaps we’ve just been in the closet too long. I think it’s the right thing to do to explain to people that this stuff is interesting and worthwhile to us.
John Baez  

15/12/09

Seriously, I think the so-called ‘‘secret’’ is the power and glory of category theory. And I think some of the older category theorists on this mailing list have a different attitude than youngsters like you and me. They fought to convince the world that category theory was worthwhile. Some feel they lost that fight. We came along later and are a bit puzzled by that attitude: if you look around at the landscape of mathematics today, categories are everywhere!
category theory is a WELL KEPT SECRET. Secrecy, like charity, begins at home.

... some CT work] was done THIRTY SIX YEARS AGO, and many people since then have been nagging the author to write it up, indeed I myself have been doing so for half of that time now.

Anybody in my generation or younger [older?] can cite lots of examples of ‘‘well known’’ ‘‘folklore’’ results that were supposedly discovered in the 1970s but have never been written up. The worst thing is that any younger person who is so impertinent as to write out a proof of one of these results has their paper rejected.
[..] I asked exactly the people who should have written it whether there was an introduction to [some subfield of CT] for analysts. There isn’t, so I had to write my own. In this, I stated without proof [some folk theorem]. The referee quite reasonably asked for a reference to a proof, but, so far as I can gather, no such proof exists in the literature.
Each of us can help to leak this secret by doing two things:
PUBLISH (= make freely available on the Web) all of the papers that you PRIVATISED by handing them over to commercial journals.
WRITE textbook or encyclopedia accounts of your work for resources like the ‘‘n-cat lab’’.
Immediate effect:

**André Joyal**

You are completely right. I have my share of responsibilities here. I will not try to explain what happened, because it may be counterproductive. I apologise to you and to everyone who may have suffered from not getting access to the information they wanted from me. I am planning to correct the problem by publishing all my ‘‘secret’’ notes, papers and books during 2010, starting this December.
Jim Stasheff 12/12/09
[a cause for dislike of CT is] the high density of new vocabulary in many research papers.

Jim Stasheff 20/12/09
[. . . a solution is] ‘thinking categorically’ and not necessarily writing in that dialect.
It may be just in ‘‘the nature of things’’ when a community A provides abstract models for community B. Something similar appears in relations between physicists and mathematicians, or between physicists/computer scientists and engineers. 

[..]

In a typical good case, the reaction would be like Manin recently formulated in his interview ‘‘we always knew that but thank you for [your] attention’’. In a bad case, ... you know.
I am wondering why is the public image of category theory so important for us. I mean, if category theory is a powerful and useful tool, as it is, then it should be able to take care for itself. Bread does not need advertising. 

I do understand that we need to take care for the public image of our work. Funding depends on that, hiring depends on that. But maybe we should clearly state that this is a matter of advocacy and of influence, and not mix it up with Promoting the Truth. I somehow think that the truth can take care for itself.
Suppose that once upon a time there were two classes of people, say, A and B, with different logics and aesthetics and criteria of elegance. Correspondingly, they had developed different mathematics, MA and MB. It so happened that A-aesthetics and thinking based on it turned out to be inadequate for the reality, and people A were eaten by saber-toothed tigers. Mathematics MA was forgotten and its traces can now be found in ancient archives only. I’m afraid that the A-destiny is awaiting the opponents of cat theory and their non-categorical math. :)
CT has come a long way.
Its potential is still unrealised in full.
Make your results available and accessible: today and in the future.