Preliminary plans for a detailed MacA (or Category Theoretic Mactaggart A series)

Chalmers (2006) said : "The Time and Consciousness conference in Sydney yielded a lot of food for thought. The talks focused on a number of different connections between the phenomena .....There's obviously a lot of room for further work here, and I'm looking forward to seeing how things develop in coming years."

Chalmers is right about the conference providing a lot of food for thought and he is even more right in that there is a 'lot of room for further work'. In fact a lot of ideas but nothing solid yet. And I am hoping to provide something a bit more solid, as I have already tried to do in this blog, especially involving 'specious time" and category theory

#1. To be more explicit about the last paragraph: What I am finding from the conference details, and from earlier work, is that in problems being in and relating to the 'specious present', philosophers are frequently putting forward interesting discussions and concepts nowadays but that these on closer examination seem to have a circular or self-serving element. (Note 1)

I choose as an example Kelly (2006) I quote "...the specious present, by nearly all accounts, lasts only a relatively limited time. Recent estimates generally agree that it is in the area of three seconds or so. But we often experience things to be moving for periods that are longer than this. If you watch an airplane taking off from the runway you can follow its continuous motion for several minutes before it disappears."

Great concept! Kelly then discusses the Retention Theory and its relation to perception experiments and philosophy. Well, for me the whole manifesto of such lucubrations to date seems encapsulated in Alexander Pope's doggerel. "Remembrance and reflection - How allied ! What thin partitions sense from thought divide." In fact Kelly goes on by discussing Kant and Husserl and ends with "What we would like is a standard set of examples that give us the feel for what it is to experience something now as just-having-been." A good idea perhaps - but how? So I am left with the view that a more satisfactory category-theoretic interpretation has to be made and this will come closer to giving us a correct mathematics. When you think of it, perhaps he is looking for an extended A series here but may end up by conflating the lot with a B series, or something other writers may see as a B series.

#2. In sum, a simple B-series interpretation of the world involving the physics of Galileo or Newton/Leibniz or Einstein is very adequate for some predictive descriptions. If we need to we further note that there is as yet no apparent compulsion (as in Le Poidevin (2006)) to consider Relativity (special or general) in any detail to start with, during our own continued lucubrations. Hopefully it will not add to time-ordering problems in our A series or can be dealt with when it does. These problems, which Kelly and others mention, should either fall from our existing simple A series work, but very clearly manifest themselves in the A series discussions.

But there will only be relatively generalised answers at least to begin with, and this is not necessarily bad either. Consider the Baez example of a beautiful and possibly prehistoric use of category theory (Note 2). So we are trying to be like the shepherds of old, but not just inventing the B series as we could assume they did, but the A series!

#3. Smith (2006) is probably also worth chewing on as the dynamic nature of time does seem to come out rather roughly in a scheme which proposes individuals existing at independent 'specious presents" ie a row of ...p0, p1, p2,..... etc. The idea of dynamic following is the hard one to include

in the category and there is no reason why we are obliged to spell it out in terms of B series physics. However it exists as individuals exist in the frames ... p0, p1...etc. for each individual and the fact that we have mapped them on to a kind of ersatz (using Chalmer's (2006a) B-series word) A series or 'fallen' A-series does no harm.

The point is here that the MacA has to include dynamism whether or not some decategorified or set theory version does. At the same time, present day mathematics has no simple format for providing dynamism within category theory statements or proofs. Certainly, the proof could be presented for example in the form of a video or even a notional mental headup display but this would not seem to present more actual mathematical content than the more normal pen and paper. Bearing in mind that at this point we are trying to present an A series in B series terms, this is not surprising.

And it is as well to remember that, say, the B series equation representing a ball rolling down an inclined plane does not need to be rolling down some inclined plane itself to be of immediate use. But this obvious fact is not the same as our current problem.

Indeed the obvious way is to try to write down a decategorified version of MacA in terms of some decategorified element pa where pa is a member of ...p0, p1,...is possibly to let pa be a presentism's p at time ta. This may help to eventually write the matter down in more detail in category theory terms. It sounds like a cumbersome multistep way to do things but may be appropriate. It should perhaps be pointed out that this process is not simply intended to result in an unnecessarily tautologous form of presentism but ultimately for enough positive description to allow an A series.

#4. What to do then? From Chalmers (2006a) we could try to sort out the two-stage model (Note 4) and maybe relate it to Velmans' stuff - bearing in mind Chalmers claims to allow different models (presumably including Velmans' model with required justifications i.e. provisionally as I might do). The result may eventually be a new or a mutual model which could be multi-stage. However #4 is only an indication of possible proceedings; certainly the result should be expressible in terms of category theory.

On the face of it there clearly can be some form of mapping from 'real time' (or 'eden time' or whatever it might be) to a B series time as such mappings have given many of our results in physics to date. To say that is almost tautology. Whether such a mapping presents a suitable or adequate representation or not is another matter. And certainly we may be now encumbered with an 'eden time' A series and an 'apparently observed' A series. Whether this will be a simpler or better way to handle things, as yet we cannot be sure but one way would be to bear in mind a 2-stage representation as a possibility until the matter is more specifically concretised. I think we will need the A series even with the two stage model in any event. It could be that a 'de-Edenised' A series will not look very different to a 'de-Edenised' B series. The process which I would have in mind would be similar to or perhaps equivalent to obtaining categorification by first decategorifying and the categorification again, really not too different to what could normally be used in category theory anyway to obtain suitable categories from naive mathematical results in a fairly transparent way. (Note 5)

References

Chalmers, D. (2006) http://fragments.consc.net/djc/2006/07/time_and_consci.html

Chalmers, D. (2006a) "Perception and the Fall from Eden" (T. Gendler & J. Hawthorne, (eds)

Perceptual Experience. Oxford University Press, 2006.)

Kelly S.D. (2006) The Puzzle of Temporal Experience Sean D. Kelly Princeton University To appear in Philosophy and Neuroscience, eds. Andy Brook and Kathleen Akins (Cambridge).

Le Poidevin, R. (2006) "The Experience and Perception of Time", The Stanford Encyclopedia of Philosophy (Winter 2004 Edition), Edward N. Zalta (ed.), URL =. states: "I ignore here the complications introduced by the Special Theory of Relativity, since tenseless theory—and perhaps tensed theory also—can be reformulated in terms which are compatible with the Special Theory." Well the matter can be argued either way but it is fair to say, with Le Poidevin, that special relativity is probably easiest left out of it provided we tie a proverbial piece of string to our finger to remind us of it if actually need be.

Smith, Q. (2006) http://www.qsmithwmu.com/reference_to_the_past_and_future.htm , Time, Tense and Reference (eds. A. Jokic and Q. Smith). M.I.T. Press, forthcoming

Notes

1. I am very sympathetic to those who succumb to this problem. For example, a point was made very clearly on Yogacara Network (http://www.yogacara.net/node/2443) "How much pomp, circumstance and apparatus academia requires in order to frame even a very small and simple point. References to everything in the literature ever said on any vaguely related topic, detailed comparisons of your work to whatever it is the average journal referee is likely to find important -- blah, blah, blah, blah, blah.... A point that I would more naturally get across in five pages of clear and simple text winds up being a thirty page paper!" It is not going much further to retreat from substance to form and to provide only self-serving form.

2. arXiv: math. QA/ 9802029 v1 5 Feb 1998 Categorification John C. Baez. This says: "Long ago, when shepherds wanted to see if two herds of sheep were isomorphic, they would look for an explicit isomorphism. In other words, they would line up both herds and try to match each sheep in one herd with a sheep in the other. But one day, along came a shepherd who invented decategorication. She realized one could take each herd and `count' it, setting up an isomorphism between it and some set of `numbers', which were nonsense words like `one, two, three, . . . ' specially designed for this purpose. By comparing the resulting numbers, she could show that two herds were isomorphic without explicitly establishing an isomorphism! In short, by decategorifying the category of finite sets, the set of natural numbers was invented."

3. Chalmers (2006a) states: "It is a further question how this model should be extended to the representation of time and motion. I am inclined to say that the two-stage model can be extended to time as well as to space, though this turns on subtle issues about the metaphysics of time. A natural suggestion is that the Edenic content of temporal experience requires A-theoretic time, with some sort of true flow or passage. Our own universe may not instantiate these perfect temporal properties, but it may nevertheless instantiate matching B-theoretic properties (involving relative location in a four-dimensional “block universe”) that are sufficient to make our temporal experiences imperfectly veridical, if not perfectly veridical. The representation of motion could be treated in a similar way." and

"One might go so far as to suggest that Eden is a world with classical Euclidean space, and an independent dimension of time, in which there is true passage and true change. Our own world is non-Euclidean, with time and space interdependent, and with pale shadows of perfect passage and change. On this view, Einstein’s theory of spacetime was one more bite from the Tree of Science, and one more step in our fall from Eden."

4. Chalmers (2006a) on two-stage: "the two-stage view yields natural answers to the objections to the Fregean view that were grounded in phenomenological adequacy. On the relationality objection: the two-stage view accommodates relationality by noting that there are certain specific and determinate properties—the perfect color properties—that are presented in virtue of the phenomenology of color experience.

When Jack and Jill both have phenomenally green experiences in different environments, the two experiences have a common Edenic content, and so both are presented with perfect greenness. This captures the intuitive sense in which objects look to be the same to both Jack and Jill; at the same time, the level of ordinary Fregean and Russellian content captures the intuitive sense in which objects look to be different to both Jack and Jill. By acknowledging Edenic phenomenal content in addition to Fregean phenomenal content, we capture the sense in which perceptual phenomenology seems to be Russellian and relational."

5. On the 'abstract nonsense' issue. Category theory is anything but 'abstract nonsense', a term which may have sounded funny as a mild joke for the cognescenti , many years ago. The term could actually be very misleading today for an important but difficult topic which is certainly not very abstract anyway. I have seen genuine confusion on the internet in cases when people in some way innocently ascribed a literal meaning, even a wouldbe positive meaning, to 'abstract nonsense' as a term for category theory. The term 'abstract nonsense' was apparently devised as an 'in joke' by Norman Steenrod, a topologist, (1910-1971), who in fact liked category theory and found it immensely useful. But Birkhoff and MacLane's "Algebra" or Geroch's "Mathematical Physics" as 'abstract nonsense' ? Neither book is particularly abstract and certainly not nonsense, even metaphorically. And both books are brim full of the practical uses of category theory! Further, computer people seem to have found many non-abstract uses for the subject to the point where the term 'category theory' has almost been hijacked by the computer people, so that people almost think it is a computer technology term not a mathematics or fundamental physics term. (Historically the readable "An Application of Abstract Nonsense to Surface Area" by Harriet Lord, illustrates the use of category theory).