## Interview with Berit Brogaard

Luca Moretti: You have been giving significant inputs to various areas of analytic philosophy, including–I would say–philosophy of language, metaphysics, philosophy of mind, and epistemology. Furthermore, you are an active researcher in the area of cognitive neurosciences–you have done empirical research, for example, on synaesthesia and autism. You are the President of the Southern Society for Philosophy and Psychology and of the Central States Philosophical Association, the American Editor of *Erkenntnis*, the Philosophy of Language editor for *PhilPapers*, you serves on the editorial boards of various academic journals. You write for trade and popular magazines and are also a very active blogger. Last but not least, you are a poet in Danish language. All this is quite amazing. I think it would be interesting for our readers–to begin with–if you could tell us something about your intellectual history.

Berit Brogaard: When I grew up I wanted to be a writer. I wrote my first novel when I was ten or so. That was never published, of course. The only people who read it were my mom and my history teacher. When I was a teenager I published my first collection of poetry. That was followed by two additional collections of poetry. I also published a young adult novel that took place in Brazil and a children's book on Charles Darwin. All the books sold quite well. But I lived in Copenhagen at the time. I was writing in Danish. There are only about five million people in Denmark. So good sales rarely mean sales from which you can make a living. So I decided to enter the university. I studied biochemistry and neuroscience. I also took some language and philosophy courses. What I really wanted to do was brain imagining. But at the time students were not allowed anywhere near that equipment. I ended up doing my research project on a neurotransmitter that doubles as a hormone at two labs, one at Novo Nordisk and the other at the Danish National Hospital. That involved blending pig brains and livers and isolating receptors (and I was a vegetarian!). After finishing my degree I decided that this kind of work wasn't for me. So, I got in touch with Professor Talmy, a cognitive linguist in the States. He agreed to work with me. I enrolled in the linguistics program there. Talmy is blind. So we taped our term papers for him. Over the next couple of years I completed my coursework in linguistics. Then I bumped into some logicians as well as Barry Smith from the philosophy department (the two departments were located in the same hall at the time). They convinced me that logic was way cooler than linguistics. So, I wrote a logic-based dissertation. Then I applied for philosophy tenure track jobs around year 2000. The job market was quite bad even then. But I got lucky. After doing my Post Doc with David Chalmers at the Centre for Consciousness at the ANU in Australia, I started my lab, and the rest is history. I still write poetry but only very recently in English.

LM: This is really interesting. I didn't know anything about your studies in neurosciences. But this explains a few things-in particular, your research about synaesthesia and autism. When I think of synaesthesia I think of Rimbaud or Wagner. I never suspected that this phenomenon could be related to autism. Could you tell us something about your findings?

BB: It's relatively recent that scientists have discovered a connection between autism and synaesthesia. Recently a family link study showed that one of the genes involved in autism is also implicated in synaesthesia, at least in that particular family. A population study furthermore showed that there is a greater number of synaesthetes in the autistic population compared to the general population.

LM: I think the meaning of 'autism' is sufficiently familiar. But what do you mean by 'synaesthetes'?

BB: Synaesthesia is an extraordinary way of perceiving the world, involving experiences of connections between seemingly unrelated sensations. For example, the number 3 may lead to a perception of copper green, the word 'kiss' may flood the mouth with the flavour of bread soaked in tomato soup and the key of C# minor may elicit a bright purple spiral radiating from the centre of the visual field. By 'synaesthetes' I simply mean the subjects who have this condition: synaesthesia.

LM: It's clear now. So what has your lab proposed to explain the observed connection between autism and synaesthesia?

BB: My lab has proposed that abnormal serotonin levels may be involved in autism and synaesthesia. We know that serotonin levels tend to be abnormally high in children with autism and then they typically drop later in life. We also know that serotonin agonists—i.e. compounds that activate serotonin receptors in a manner similar to serotonin—such as LSD, psilocybin and mescaline, can trigger of synaesthesia. On the model we proposed for psilocybin-induced synaesthesia, psilocybin (or, in fact, the chemical it turns into) binds to layer-V pyramidal cells in the visual cortex. This leads to hyperexcitability of the visual cortex but it also leads to an inhibition of the thalamus. The thalamus is implicated in restricting the information that enters the visual cortex. When it is inhibited, an overload of random information enters the visual cortex, yielding hallucinatory experience. This random information also gets bound together with auditory or other visual information, which triggers—for example—sound-colour synaesthesia is also triggered in children with autism. Over time hyper-excitability can lead to local hyper-connectivity and abnormal binding of features. This would explain why there are more synaesthetes in the autistic population compared to the general population.

LM: So this ground-breaking investigation is still going on. Has the fact that you have recently accepted the position at the University of Miami yielded any practical difficulty to it? For example, have you taken your research group with you to Miami?

BB: My lab is in the process of moving to University of Miami. The research facilities and support there will likely mean that my lab will expand but the core research done will be the same.

LM: In Miami you have a joint appointment at the Department of Psychology and the Department of Philosophy. So you are still a philosopher. Let's switch to philosophy. As you said, you started as a logician. But I recall that I invited you to present a paper on ontological commitment some years ago and, more recently, one on phenomenal conservatism and scepticism. Could you say a bit about you work in philosophy?

BB: After I got my degree in philosophy I was mostly doing logic-based stuff. I did quite a bit of work on the knowability paradox. In fact, the majority of my first publications were in this area. So, I continued doing mostly logic-based philosophy for a while. My work on ontological commitment was also heavily grounded in logic. But I eventually returned to the areas I had worked on previously, namely language and philosophy of mind. The majority of my current papers and books are now in those areas.

LM: When you say 'knowability paradox' do you refer to what others call 'Fitch's paradox'?

BB: Yes, the knowability paradox is also known as 'Fitch's paradox'.

LM: Did you arrive at interesting results?

BB: I have provided a number of solutions to Fitch's paradox that rely on modal logic. I have also demonstrated some limitations of the so-called restriction strategy to the paradox.

LM: Interesting. Actually, I recall that I used the *Stanford Encyclopedia* entry on Fitch's paradox that you have co-authored with Joe Salerno for my teaching. Actually, the first paper by you (and Joe) I read was just a logic-based paper. It was about, not Fitch's paradox, but alethic antirealism and the conditional fallacy objection. You claimed you had a working formal proof that a popular antirealist definition of truth entails an absurd consequence. That paper intrigued me so much that I decided to write a replay to defend antirealism. And not just one reply: I recently co-authored another paper with Patrick Girard that could be seen as a continuation of my response. But let's go back to your story. You said that after working on logic for a while, you went back to philosophy of language and mind. I guess your first book, *Transient Truths: An Essay in the Metaphysics of Propositions* (OUP 2012), is one of your major publications in these areas. What is the central thesis of the book?

BB: *Transient Truths* is an extended defense of temporalism, the view that propositions can have different truth-values at different times. For some reason this thesis has been rather unpopular in the last few decades. The turning point was Mark Richard (1981)'s paper arguing that temporalism has absurd consequences. I think he is wrong about that, of course.

LM: Some of the tiles of your new papers in philosophy of mind have also drawn my attention. For instance: 'Color Synesthesia and its Philosophical Implications' or 'Synesthesia as a Challenge for Representationalism'. It would seem to me that you are trying to cast a bridge from your scientific investigation to your activity as a philosopher. The second paper intrigues me particularly: how can synesthesia challenge representationalism?

BB: The paper argues on the basis of research in my lab that some forms of projector synesthesia do not represent the colors projected out into the world as instantiated by mind-independent, physical objects.

LM: What do you mean by 'projector synesthesia'?

BB: Projector synesthesia is a form of synesthesia in which the synesthetic experiences are projected out into the world. It contrasts with associator synesthesia in which the synesthetic experiences are presented internally, like visual imagery, for example. In the paper argue that since some forms of projector synesthesia do not represent the colors projected out into the world as instantiated by mind-independent, physical objects, this shows that the phenomenology of visual experience does not flow from the representational content. In other words, there are qualia–or phenomenal properties–that are not determined by a representational content of experience. So, representationalism is false. My own view is actually a more extreme version of the qualia view. I hold that experience does not have content in any meaningful sense but that it is nonetheless representational. I also point out that the qualia view doesn't entail a rejection of physicalism. That is apparently not obvious to everyone.

LM: Another interesting title of a new paper of yours is 'What Can Neuroscience Tell Us About Reference?' So what can it tell us?

BB: Well, it cannot yet tell us that much about external-world reference but it can shed light on anaphoric reference and on how we update and revise internal semantic representation structures more generally. Electroencephalogram-based studies also seem to confirm many of basic tenets of discourse representation theory and other dynamic semantic frameworks.

LM: I would like to ask much more about this, but I have to wrap up. This is my last question. I noticed that your have a forthcoming book that is quite surprisingly titled: *On Romantic Love: Simple Truths about a Complex Emotion*. What sort of work is this? Is it cognitive neurosciences? Philosophy?

BB: This is an OUP trade book. It defends the view that love is a complex emotion that admits of degrees, can be unconscious, can be rationally justified and can be rationally controlled. It will be out January 2015. Most of the evidence I provide is from neuroscience, psychology and philosophy.

LM: I would like to thank Berit for this stimulating interview.

BB: Thanks so much, Luca!