Reverse engineering Love. And Physics.

The fictions and the simulated both confront us with traces of something that could be real but actually is not to the last consequence. Fiction and Simulation reverse engineer events up to an evidence that even trained experts are not able to distinguish from the so called »real«.

One of the latest examples of such a strategy is a reverse engineering of love. It is an online service anyone could subscribe to for just 24,99 $ a month called »The Invisible Boyfriend«[1] or »The Invisible Girlfriend« respectively. It alludes to the novel by Susie Day »My Invisible Boyfriend« from 2010 and actually provides what the heroine in the novel did for herself: faking a boyfriend, including online communication, for the sake of showing off. You and me, we all could do so now for just 24,99$ a month. We would then receive text messages, phone calls, one hand written card per and, for some extra money, also presents and flowers. This all could be shown to others who are then convinced that there is an actual relationship.

Behind this are real people doing the communications. I would call them »affect workers«. They write the messages and call their customers at the phone.

What deeply stirs me up are the reasons for which people do it. It is reported that they just want to get rid of questions. Maybe they want to hide their homosexuality from others by the sign of a so called »normal« relationship. People payed for a fake lover for their partner to have a reason for jealousness to be able to abandon him or her because of evidence of infedility. Well, this is all not hard to understand. But the company tells us and the press does so as well, that people subscribe because they just broke up or were left by their lover. It is a sort of emotional bridge between two relationships. They feel better receiving messages as if there were somebody there caring for them.

What does it tell us about ourselves, about love in general, if there are people that can't tell the difference between such an invisible boy- or girlfriend and a one of flesh and blood? What would it tell me about myself if I really would like to receive paid for messages that look – and then even feel – like love? Is there any essence behind a so called »true« love and lover in contrast to a one that is indistinguishable from a »fake« one even by critical judges like the family gathered around the dinner table?

Since, following Luhmann, we have to learn how to love from reading romantic literature[2] - that is now replaced by Hollywood productions and social media – we possibly have to suspect that the Invisible Lover is nothing else than any visible one. Having learned from literature, e. g. from Fontane's *Effie Briest*, that love letters could be taken for love proper, what, then, is the difference between »real« and »fake«? Does it need referees who examine the material? What if they cannot tell the difference? What is the »essence« of love if nobody but its simulationist, the affect workers, could know any difference?

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[1] invisibleboyfriend.com

[2] Luhmann, Niklas: Liebe als Passion – Zur Codierung von Intimität. Frankfurt am Main: Suhrkamp, 1998.

Certainly the scholars from the faculty of literary studies could help me on this issue. And I hope to be able to learn from that about the field I am actually in, that is computer simulations and physics.

In the domain of quantum physics strange things are going on. Cats supposedly could be dead and alive at the same time – if their owner is called by the name of Erwin Schrödinger –, particles could interfere with themselves by passing through a slit at the left and another at the right simultaneously, entangled particles know about each other even if they are too far apart to actually exchange messages in an Einstein compatible way.

There are people recently that are able to describe all this within computer simulations that yield results that nobody could distinguish from laboratory data. And they are sober like affect workers, not assuming anything miraculous like wave functions existing everywhere in space and time, they do not force Schrödinger's cat into life and death in superposition, they do not even expatriate us from classical domains into a special quantum land. Let us call these people not affect put protocol or theory workers. They refrain from grand theories, do not need Schrödinger's Equation but exclusively strive to arrive at data that nobody could distinguish from those of so called »nature«. The only essence they actually need is a certain measure of uncertainty, the one Werner Heisenberg quantified in his Uncertainty Principle.

These physicists, located at the Jülich Supercomputer Centre, Kristen Michielsen and Hans de Raedt, publish[3] in the »Annals of Physics«, but their work is still not accepted as physics proper by the majority of the scientific community. They call their simulations »theory« and they are able to draw far reaching theoretical consequences from it, too.

It seems possible to me that their approach and methodology some time will be accepted as a new »Denkstil« in the sense of Ludwik Fleck or a new »paradigm« in the way of Thomas Kuhn put it, who learned everything from Fleck, by the way. This new Denkstil or paradigm could be condensed into the strategy of the least possible metaphysical assumptions – Occham's rasor, if you like –, and of a strictly local and plausible way of reasoning yielding simulation data that are indistinguishable from experimental ones.

I like the idea of calling this a Turing Test for physical simulations and theories. And along this line of thought, that is the discussion on artificial intelligence with all its epistemological turbulences, I would like to put forward the problem: even if nothing is »real« in a tangible sense within such an event based computer simulation, it obviously catches so much about so called »nature« that it could not just be turned down as mere fake. It is at least very intelligent fiction.

What is the epistemic status of a knowledge that emerges from such a work? It certainly is different from a knowledge obtained by the traditional methodology, that is the solution of differential equations like the one by Schrödinger that have to assume something like a wave function existing everywhere in space an time and additionally collapsing when put to an experimental test in the course of a measurement. This knowledge could be

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[3] H. De Raedt et al.: Quantum theory as the most robust description of reproducible experiments. Annals of Physics 347 (2014) 45–73. H. De Raedt and K. Michielsen: Event-by-event simulation of quantum phenomena. Annalen der Physik, 14 August 2012, 3-22.

called inferential. Are computer simulations possibly »evidential«, »occasional« or »episodical«?

Computer simulations could reproduce the outer communicative signs of so called natural phenomena as The Invisible Boyfriend produces the evidence of a love affair. They could reverse engineer nature. As The Invisible Boyfriend produce all the traces of a fictional love affair, reverse engineering love.

How »real« is all of that? What does it tell us about ourselves if we could not resist of taking fictional work on affect and simulative work on protocols or theory very seriously?

And what does it tell us that fiction and simulation share so many aspects: convincingness, evidence, and uncertainty?

I would be grateful to receive hints.

Thank you very much for your attention.