GIRLS16@LUND Conference
University of Lund, LUX, Department of Philosophy

Program

	Wednesday (April 27) room B240	Thursday (April 28) room B336
09:00-09:30	Welcome and coffee	Coffee
09:30-10:30	Erik Olsson (invited speaker)	Antonina Kolokolova (invited speaker)
10:30-10:45	Coffee break	Coffee break
10:45-11:30	Sille Obelitz Søe	Erik Mohlin and Yuval Heller
11:30-12:15	Emmanuel Genot and Justine Jacot	S. Rosenstock, C. O'Connor and J. Bruner
12:15-13:30	Lunch	Lunch
13:30-14:30	Liane Gabora (invited speaker)	Cornelius Puschmann (invited speaker)
14:30-14:45	Coffee break	Coffee break
14:45-15:30	S. Banuri and K. Dankova	Francesca Zaffora Blando
15:30-16:15	Tamas David-Barrett	
19:00-21:00	Conference dinner	

Abstracts

Sheheryar Banuri and Katarina Dankova: It's All Fun and Games: Using Game Design Elements to Generate Effort

Gamification is a relatively new phenomenon which refers to adding game-like elements to an existing activity with the aim of inducing desired motivational and possibly behavioural effects (Asquer, 2014). Private sector service providers use gaming elements (for example: badges for providing reviews) to engage users in significant amounts of effort at low costs. Apart from badges, points, leaderboards and context are used in games and in non-game contexts to affect user retention. We investigate the effectiveness of game design elements on generating effort in a laboratory experiment. Using a contemporary "real-effort" task common to the economics literature (solving mazes), we introduce four classic design elements of gamification (Hamari et al, 2014) and study their effects on effort. These elements vary in the type of feedback that is provided to players. In the baseline treatment, players are asked to undertake a real-effort task without any incentives. The gamification treatments add points (numerical scores); badges (recognition of particular achievements); leaderboards (player rankings); and context (i.e. a storyline) to player actions in the effort task. Two additional treatments (i) combine all gamification elements, and (ii) introduce a piece rate, in order to generate benchmarks. The effort task measures both the quantity and quality of effort generated under each treatment. In addition to this, we measure social and competitive preferences in order to study the mechanisms by which gaming incentives operate. We find that points and leaderboards have the highest impact on effort, followed by badges and context. These results are driven (in part) by the effects of the treatment on players with high competitive preferences.

Tamas David-Barrett: Here-And-Now Social Cognition

This paper tackles the problem of how to achieve collective action among large groups necessary to exploit multi-dimensional environments. Inclusive fitness theory of collective action have highlighted the role of kin-based relationships in achieving cooperation, but empirical evidence suggests that primates can manage this only in small groups. This paper hypothesizes that human social cognition has developed a coping strategy whereby individuals assume that those with whom there is a meaningful cooperative exchange in the recent past or present – the 'here and now' – are also those with whom exchange will take place in the future, ie., those with whom there will be a repeated game. This social cognition shortcut facilitates cooperation. The paper first presents empirical evidence from performing art performances which suggests (a) that this shortcut exists and limits social cognition to a certain number of 'characters' and (b) that drama and music provide emotional cues which facilitate

and expand social cognition to allow a greater number of characters to be perceived. Second the paper present an agent-based model of the evolution of social cognition to show one possible path in which such a cognitive focus might have evolved.

Liane Gabora: Theories of Creativity and Applications to Technological Innovation

Technological innovation requires new, creative ideas. But how do we come up with new ideas? It is widely believed that creative thought involves haphazardly generating a set of distinct, predefined candidate ideas, and selecting amongst them. I will introduce a theory of creativity according to which creativity need not involve multiple distinct candidate ideas, nor selection. According to the honing theory of creativity, (1) Creative individuals wrestle with issues or ideas that are ill-formed, or in a state of potentiality, which take shape by considering them from different perspectives or contexts, (2) Intuition has a scientific explanation, and (3) Creative outputs are the external manifestation of the process by which an individual's internal model of the world, or worldview, self-organizes into a more stable structure. Just as a body heals itself when wounded, elements of a body of knowledge modify each other to solve problems, reduce dissonance, or accommodate unexpected events. Most thoughts have little effect on the worldview, but occasionally one thought triggers another, which triggers an avalanche of conceptual change resulting in insight. I will present converging evidence for honing theory from neuroscience, studies of analogy formation and creative style, and an agent-based model of the emergence of cultural evolution through creative transformation and social interaction. I will conclude by discussing applications of creativity research to technological innovation.

Emmanuel Genot and Justine Jacot: The Logic of Online Discovery

The consensus, among information scholars, is that online search behavior exhibits at the same time goal-directedness, and randomness. More specifically, when trying to access information about a topic of which one has a limited understanding, one may try to obtain answer to one's questions and gain insights on how reformulate these questions more precisely. In the absence of specific knowledge, one has to rely on lucky accidents. Information scholars often appeal to the notion of serendipity to capture this dual nature of search strategies (Foster & Ellis, 2014).

Conversely, formal models of inquiry describe strategies for selecting hypotheses, either from projections based on the available evidence (Simon, 1973; Martin & Osherson, 1998), or through selection of instrumental questions whose answers eventually tell apart rival hypotheses (Hintikka & Hintikka, 1983; Hintikka J. , 1999). These hypotheses are typically conceived of as mutually exclusive sets of scenarios (or "possible worlds") compatible with one's initial theory, whose union exhausts the scenarios compatible with this initial theory. Hence they are ill-suited to capture cases where one's strategy is also aimed at changing one's theory, which incurs a change in the space of hypotheses.

We argue that the main limitation of these models, relative to modeling such cases, is to describe inquiry as 2-player game between Inquirer (Hintikka) or Scientist (Martin & Osherson) and Nature. This is, in all effect, equivalent to a single-agent decision problem in extensive form. By contrast, real-life inquiry (and online search in particular) is better modeled as n-player games, where one player is the "inquirer", and the others are not Nature, but "sources" or "oracles", which provide not only with answers, but also possibly with feedback about one's theory. Logical and algorithmic models of discovery do have the resources to model inquiry as a n-player game, but "idealize away" sources other than Nature, so as to obtain stronger representation theorems for optimal strategies.

If inquiry is understood as a n-player game, inquiry strategies become harder to characterize formally, but real-life search behavior, including online search, become less puzzling. It can indeed be seen as special case of game where the inquiring agent partially "outsources" her strategy selection to more knowledgeable sources, and expects her sources not only to answer her queries, but also to interpret them in the light of their (more extended) knowledge. In the case of online search, the agent may rely on the input of others either directly (through social networks or forums), or by proxy (through functionalities of search engines features).

The paper will discuss how the aforementioned models apply to multi-agent inquiry with three examples from popular literature (Sherlock Holmes), history of science (the discovery of the microwave background radiation) and empirical educational science (the study of collaborative

inquiry learning of school children in controlled environment). From these examples, we will obtain a formal characterization of serendipitous strategies that captures online search as a special case of collaborative inquiry.

Antonina Kolokolova : Complexity of Proofs: in Theory and in the World.

There are problems that are theoretically solvable, but computationally infeasible in our world. As the amount of data grows, feasibility of computation is becoming more and more relevant. And reasoning about the data brings us squarely to the subject of proof complexity.

In this talk, I will give an overview of what is known about complexity of proofs in common (mainly propositional) proof systems, discussing in particular what kinds of reasoning is hard for the simpler and better understood systems such as resolution. I will also talk about stronger systems, closer to natural deduction. Much is unknown about these systems; it is still open whether there is anything hard for them (or even whether there exists a set of rules and axioms in which there is always a proof of size comparable to the input tautology).

Yet, even weak proof systems flourish in the real world, as a basis for solvers routinely used for a variety of tasks such as hardware and software verification. Though what exactly underlies such success is still a subject of active research, I will talk about a few features of problems occurring in practice that make them more amenable to automated proof techniques.

Erik Mohlin and Yuval Heller: Observations on Cooperation

We study environments in which agents are randomly matched to play the Prisoner's Dilemma, and each player observes a few of the partner's past actions against other opponents. We differ from the existing literature by assuming that few agents in the population may be “crazy” (commitment types). We show that this mild change destabilizes the existing mechanisms to sustain cooperation, and we present a novel behavior (which is essentially unique) that sustains stable cooperation when players observe at least two past actions, and when the bonus of defection in the underlying Prisoner’s Dilemma is larger when the partner defects. In the opposite case, we show that defection is the unique perfect equilibrim. Finally, we study environments in which players observe information that depends also on the behavior of the past opponents against the current partner.

Sille Obelitz Søe: Non-Misleading Information

We live in the age of information. We speak of the information society, the digital information society. The Internet has become an important mean for communication, news, and information sharing in large parts of the world. Further, the information is often processed by algorithms for decision-making and as such our societies are increa-singly run by algorithms. Algorithms developed on the basis of current information with the purpose of processing and controlling other information in order to ‘make decisions’ (Pasquale, 2015).

Information comes in many varieties spanning from good to bad, useful to harmful, and sincere to deceptive. All these varieties of ‘information’, which include misinformation and disinformation, are spread through online networks at rapid speed with potential harmful outcomes and undesired consequences – e.g. panic and irrational actions caused by rapid spread of false rumors, fraud, and lies.

Therefore, projects such as the PHEME-project (the online ‘lie-detector’) have set out to develop algorithms to automatically detect information, misinformation, and disinformation in online social networks (e.g. Facebook and Twitter). PHEME (2014) deals with veracity as the fourth challenge of Big Data, wherefore the focus for detection is on truth and falsity within specified spatio-temporal contexts.

Furthermore, the truth-requirement for information is one of the main issues when notions of information are discussed within Philosophy of Information. Some philo-sophers argue that information is veridical and need to be in order to secure knowledge (Budd, 2011; Dretske, 1981; Floridi, 2005, 2011) whereas others argue that information is alethically neutral and that misinformation and disinformation are kinds of informa-tion (Fallis, 2014, 2015; Fox, 1983; Long, 2014).

My current research on the interconnections between information, misinformation, and

disinformation, conducted as conceptual and philosophical analyses of the three notions within philosophy of information, shows that truth in itself is not enough to guard against misinformation and disinformation in order to avoid the undesired consequences of their spread (Author, 2016). Derived from the philosophical literature on lying, misleading, and deceiving (Adler, 1997; Fallis, 2010; Mahon, 2008; Stokke, 2013; and Webber, 2013) Fallis (2015) develops a notion of disinformation which encompasses a true variety. Fallis' analysis can be extended such that misinformation also can encompass a true variety. Hence, information, misinformation, and disinformation can all be truthful and, if a notion of information as alethically neutral is endorsed, they can all be false as well (Author, 2016).

Therefore, truth and falsity are not sufficient conditions in order to differentiate be-tween information on the one hand, and misinformation and disinformation on the other hand. That is, the mere detection of truth and falsity is not sufficient in order to detect information, misinformation, and disinformation online. It does not capture 'non-misleadingness' and 'misleadingness', which seems to be the features that most clearly distinguish information from misinformation and disinformation (Author, 2016).

Erik Olsson: Linking as Voting: Condorcet-style Theorems for the World Wide Web

A webmaster's decision to link to a webpage can be interpreted as a "vote" for that webpage. But how far does the parallel between linking and voting extend? In the talk I will provide several "linking theorems" showing that link-based ranking tracks importance on the web in the limit as the number of webpages grows, given independence and minimal linking competence. The theorems are similar in spirit to the voting, or jury, theorem famously attributed to the 18th century mathematician Nicolas de Condorcet. I will argue that the linking theorems provide a fundamental epistemological justification for link-based ranking on the web, analogous to the justification that Condorcet's theorems bestow on majority voting as a basic democratic procedure. I will also look at various ways of incorporating a bias for linking to what other people link to into the model.

Cornelius Puschmann: Rage Against the Elites? Polarisation and Counter-publics in Online Discourse on Immigration and Climate Change

When Manuel Castells wrote of 'networks of outrage and hope' in a 2012 book, he referred to grassroots movements such as Occupy Wallstreet, which were enabled at least in part by new digital tools for communication amd collaboration. It has since then become evident that the first aspect he highlighted, outrage, may play a greater role in online mobilization than has so far been anticipated in formative utopian visions of the internet. What then is the role of digital media for nascent movements that form around a shared antipathy for (perceived) liberal stances on issues such as immigration and climate change? In my talk, I will explore this question though two recent studies, one on Twitter discourse surrounding Pegida, a right-wing populist movement based in Germany that is opposed to what its supporters regard as islamization, cultural marginalization and political correctness, and secondly through debates on climate change in the German-language blogosphere. I rely on a combination of network analysis and content analyis to calculate the overlap of sources across audiences on Twitter and the degree of polarization in the blogroll link network. Affinities by language, nationality, region and politics emerge, showing the distinction between different groups. These tentative findings have implications for research on the public sphere and its possible fragmentation in online discourse. By combining the theoretical frameworks of discursive polarization and counter-publics, I describe the relation between mainstream and agonistic publics and discuss the role of hyperlinks and shared sources in delineating online communities.

Sarita Rosenstock, Cailin O'Connor and Justin Bruner: In Epistemic Networks, Is Less Connectivity Really More?

We show that previous results from network epistemology models (Zollman, 2007, 2010; Kummerfeld and Zollman, 2015) are not robust across changes in parameter values. We use these results to argue that this branch of modeling cannot provide prescriptive advice to real world epistemic communities as to what sorts of epistemic networks will be most successful.

Francesca Zaffora Blando: The Learning Power of Belief-revision Policies for Non-omniscient Agents

Belief revision theory encompasses various formal frameworks for modelling rational belief change in the light of new evidence. Formal learning theory, on the other hand, is concerned with the question of which methods for acquiring new information lead, reliably and efficiently, to correct beliefs about one's environment. Although these two paradigms hinge on rather dissimilar methodologies, it has been shown that belief-revision policies, when viewed as learning methods, can be assessed on the basis of their reliability or learning power (Kelly et al., 1995; Kelly, 1998a,b; Baltag et al., 2011). In this paper, we further this line of research by gauging the reliability of certain belief-revision policies cut out for non-omniscient agents: i.e., agents who are not required to know all logical validities, and whose knowledge and beliefs need not be closed under logical consequence. We do so in the setting of plausibility acknowledgement logic (Velazquez-Quesada, 2013, 2014), a modal calculus that combines dynamic doxastic logic with Fagin and Halpern's awareness logic (1988). We first define several belief-revision policies that are suitable for agents who lack logical omniscience—which we respectively call bold explicit conditioning, cautious explicit conditioning, minimal explicit lexicographic revision, sandwich explicit lexicographic revision and explicit minimal revision. Then, using the machinery of formal learning theory, we investigate the extent to which these new belief-revision methods, when appropriately reinterpreted as learning methods, are conducive to true beliefs. More precisely, we show that cautious explicit conditioning is universal (i.e., it can identify any environment that is identifiable by some learning method), and that minimal explicit lexicographic revision and sandwich explicit lexicographic revision are almost universal: that is, they are universal given certain intuitive restrictions. Our results may be seen as a first step towards a methodological assessment of more realistic rationality norms, insofar as they take into account some of the cognitive and epistemic limitations of actual reasoners.