Social Aspects of Cognition and Computing Symposium
2015 Annual Convention of the Society for the Study of Artificial Intelligence and Simulation of Behaviour (SSAISB)

INTRODUCTION

This Symposium falls into the relatively new area of the intersection of computer science and social sciences. Known as social computing, this intersection has far reaching consequences for many fields including AI and philosophy. In order to have a fruitful discussion we intend social computing in a broad sense to explore different levels of social behavior in computational systems, both natural and artifactual. The following topics are considered:

I. Social computing in relation to cognitive computing and affective computing;

II. Strategies for analyzing the problem of representation from a philosophical perspective that implies the comparison between human and machine capacities and skills;

III. The relations between knowledge and categorization, and the promotion of communication among experts and users;

IV. Social computing and online relationships;

V. The rise of social computing and ethical issues.

Danielle MacBeth discusses the problem of mathematical logic and mechanical reasoning, which have turned out to be largely irrelevant to the practice of mathematics, and to our philosophical understanding of the nature of that practice. Her aim is to understand how this can be. We will see that the problem is not merely that the logician formalizes. Nor even is it, as Poincaré argues, that logicians replace all distinctively mathematical steps of reasoning with strictly logical ones. Instead, as will be shown by way of a variety of examples, the problem lies in the way the symbolic language of mathematical logic has been read. Rodger Kibble explores the idea that human cognition essentially involves symbolic reasoning and the manipulation of representations, which is central to cognitivistic approaches to AI and cognitive sciences. The very idea of representation has been problematized by philosophers such as Davidson, McDowell and Rorty. Along this line, the paper discusses Robert Brandom's thesis that the representational function of language is a derivative outcome of social practices rather than a primary factor in mentation and communication. The philosophical approach of Analytic Pragmatism (introduced by Robert Brandom) is at the center of Raffaela Giovagnoli's contribution. It represents a fruitful point of view to isolate what capacities and abilities are common to human and nonhuman and what capacities and abilities are typical of human beings. They give rise to different sorts of autonomous discursive practices (ADPs) which offer a new conception of AI and open interesting spaces for new forms of computation. One fundamental issue in social computing is the question of "digital identity" analyzed by Yasemin J. Erden. Identity is neither simple nor static, and in many ways the multiplicity of identity that this paper will consider is not in itself either novel or controversial. Our everyday roles and experiences contribute to the complex nature of our identity, and we are both defined by (and define ourselves according to) the actions, choices, beliefs and emotions that we either choose or deny. In these respects it seems likely that what we might call a *digital identity* would merely add to the multiplicity of our otherwise complex picture of ourselves. Colette Faucher moves from the observation that in modern asymmetric military conflicts the Armed Forces generally have to intervene in countries where the internal piece is in danger. They must make the local population an ally in order to be able to deploy the necessary military actions with its support. The paper focuses on the Intergroup Emotion Theory that determines from characteristics of the conveyed message the emotions likely to be triggered on info-targets.

It also simulates the propagation of the message on indirect info-targets that are connected to direct info-targets through the social networks that structure the population. Gaurav Misra and Jose Such notice that social computing revolutionized interpersonal communication. However, the major Online Social Networks (OSNs) have been found falling short of appropriately accommodating their relationships in their privacy controls, which leads to undesirable consequences for the users. The authors highlight some of the shortcomings of the OSNs with respect to their handlings of social relationships and present challenges to promote truly social experience. Another very interesting topic is related to the theory of social action. Leon Homeyer and Giacomo Lini concentrate on behaviourism and materialism in AI and agency in general. They analyze a specific utility-based agent, the ps model presented first in (Briegel and De Las Cuevas 2012) which has in its capability to perform projections its key feature. This analysis allow the authors to present a feature-driven concept of agency that allows a comparison of different agents which is richer than solely behaviouristic or materialistic approaches in virtue of the shift from a theory-driven stance to a process-driven one. Giles Oatley, Tom Crick and Mohamed Mostafa introduce the goal of their long-term research on the development of complex (and adaptive) behavioural modeling and profiling a multitude of online datasets. They look at suitable tools for use in big social data, on how to "envisage" this complex information. They present a novel way of representing personality traits (using the Five Factor Model) with behavioural features (fantasy and profanity).

Searching for the fundamental mechanisms of rationality of social behaviour, Andrew Schumann offers an analysis of a remarkable organism, cellular slime mould which spends parts of its life as unicellular eukaryotic microorganism, but under specific circumstances of scarcity of food, it communicates chemical signals among its cells, and they gather into a cluster that acts as one single social organism. The interesting phenomenon discussed by Schumann is the behaviour of *Physarum polycephalum* as the individual-collective duality.

Another kind of duality, that Daniel Kahneman characterizes as *fast vs. slow thinking* is in focus of David C. Moffat's contribution. The author argues that the essential difference between the two is that the emotions (fast thinking) are unplanned and that rational/slow thinking requires planning. Immediateness of emotive response brings unpredictability, which is considered irrational. The priority of the emotional thinking comes as a result of it preceding the other cognitive processes.

The third dual aspect approach is taken by Judith Simon based on individual human agents perspective and the societal one used in political decision-making with regard to emerging big data. The governance of big data require, as Simon aptly emphasizes, taking into account not only political but equally importantly epistemological and ethical and aspects and preventing widespread and unjustified "trust in numbers".

Alexander Almér, Gordana Dodig-Crnkovic and Rickard von Haugwitz describe collective cognition as distributed information processing, taking the view that all living organisms posses certain level of cognition, the idea first proposed by Humberto Maturana and Francisco Varela. Authors argue, looking at social networks from bacteria to humans that social cognition brings new emergent properties that cannot be found on the individual level. Information processing range from transduction of chemical signals such as "quorum sensing" in bacteria, simple local rules of behaviour that insects follow leading to "swarm intelligence", up to human-level cognition based on human languages and other communication means.

In the search for distributed computational intelligence, Joseph Corneli and Ewen Maclean focus on computational blending that represents distributed development of ideas in social settings, which they modeled by cellular automata. Authors define and explore by simulation a large-scale system dynamics that emerges driven by local behavior, where local rules, unlike in standard cellular automata, are adaptive. This research anticipates a future computational search for rules that may lead to "intelligent" behavior of a distributed computational system.

One of the interesting questions is the character of social coordination. Taking cognitive agents to be humans, Tom Froese presents the enactive theory of social cognition describing the steps from theory to experiment. In the enactive approach to social cognition, which is the recent variety of embodied and extended theories of social cognition, it is possible to make specific predictions of behavior that can be experimentally evaluated. Understanding another person is studied as primarily as a direct perceptual interactive engagement. A second-person perspective is seen as co-constituted by the mutual coordination of

bodily interactions. Preliminary results of this study show the social awareness increase over time, notwithstanding the lack of explicit feedback about task performance.

With thanks to all our authors for their contributions, we are convinced that our symposium provides a valuable contribution to the understanding of social aspects of cognition and its relation to computing.

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