

Towards Expertise-based Intuition Sharing

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Abstract. Expertise-based intuition is a form of 'knowing' where experience is translated into action through non-deliberative solutions. This cognitive process provides opportunities for sharing and learning in the social context of communities of practice. To address this opportunity, we suggested computational artifacts and promoted a discussion about the implications of expertise-based intuition sharing. This study concludes that the subconscious patterns where intuition relies on are charged with social-cultural context generating both potentials and barriers to encourage the sharing practice. For one side, it can contribute to positive transformations in the communities. For the other side, it can reinforce the *status quo* and aggravates social inequalities being imperative the commitment with a design imbued with sensitivity to social aspects.

Introduction

The role of information in organizational settings has been one of the significant streams within CSCW (Ackerman et al., 2013). Based on the information, organizations and their experts can make decisions, and these decisions are heavily based on intuition (Akinci and Sadler-Smith, 2018; Okoli et al., 2018). In this way, it is reasonable to consider the role of intuition in organizations through a CSCW perspective. Intuition is fast and requires unconscious processing of information (minimal mental effort) and while the outcomes are accessible to conscious thinking (and hence are articulable), how one arrives at them is usually challenging to describe (Akinci and Sadler-Smith, 2018). The outcome is holistic, and information is processed based on the analysis of previously unconnected elements (Okoli et al., 2018). In the case of experts, they developed a deep and

rich information base from extensive experience within a domain. These primarily unconnected elements that are abundant in experts can be related to the patterns discussed in Ross et al. (2004), they state that experts can identify and access subconscious patterns very quickly. Some examples of specific situations of expertise-based intuition use can be found in (Akinci and Sadler-Smith, 2018) about police organizations, in (Okoli et al., 2018) about firefighters and in (Ross et al., 2004) about the army.

Once expertise-based intuition involves a kind of knowledge that is usually mystified, it is essential to state that we agree with (Schmidt, 2012) about the need to explore methodologies for making intuition explicit as well, how to describe, understand and learn it, both through a knowledge sharing perspective and expertise sharing perspective. We present a description of artifacts that a system for supporting expert based intuition needs to consider aiming to address opportunities of sharing and learning in the social context of communities of practice. Concomitantly, we promote a discussion about the implications of expertise-based intuition sharing enhanced through these artifacts.

Expertise-based Intuition Sharing

Regarding CSCW, we are also interested in the social practices involved in expertise-based intuition sharing, as well as the system that could support it.

To understand these social practices, we observed and interviewed four decision-makers experts from a public company with more than 500 thousand students that have dozens of courses in Higher Education.

Based on this study, we identified that patterns could not be separated from the social-cultural context that generated them and which they are inserted. Pattern recognition enables the expertise-based intuition to emerge (Ross et al., 2004). In a simplified way, we can say that experts have a repertoire of patterns stored in mind, and pattern recognition is a cognitive process that matches information received with a stored pattern retrieved. Once these patterns are social-cultural related, they influence and are influenced by personal beliefs. Moreover, considering the collectivity of personal beliefs, it can influence and be influenced by the beliefs of a community of practice. For example, imagine a decision maker selecting a candidate for a high position in an engineering company. Regarding social-cultural aspects, the patterns of the decision maker were likely influenced by a society with gender gaps that even without deliberation has crystallized the recurrence of men as successful leaders which can lead to a gut feeling that is biased to hire a man.

Although intuition arises without consciously processing, the decision makers are frequently able to think after and deliberate about the patterns used. In analogy, think about a pianist that may find difficult to pay attention to the music and the movements of his fingers at the same time, but it does not exclude that the

pianist, at another time, can give an account of how he was using his fingers (Schmidt, 2012, apud Harré, 1977). However, once social-cultural aspects influence these patterns, the decision maker experts can feel threatening to expose them. We analyzed this context and proposed its understanding through the dynamics we represented in Figure 1. We consider it relevant when designing a system to support the expertise-based sharing. Ollinger and von Muller (2017) stated that intuition influence insights, which corroborates with our representation (Figure 1). While intuition arises from the recognition of patterns, insights arise from a restructured pattern. That means that intuition evaluates the coherence of the given information, whereas insight evaluates the result of restructuring. It is essential to consider the potential to expertise-based intuition to trigger insights to disrupt organizations and to change patterns that will also affect personal and community beliefs. By blindly sharing expertise-based intuition without questioning it, it can contribute to reinforcing the *status quo* and aggravates social inequalities. By conscientious sharing it, it can contribute to positive transformations.

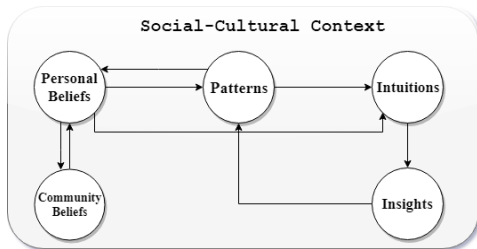


Figure 1. Expertise-based Intuition and Social-Cultural Context. The arrows indicate the influence direction between elements.

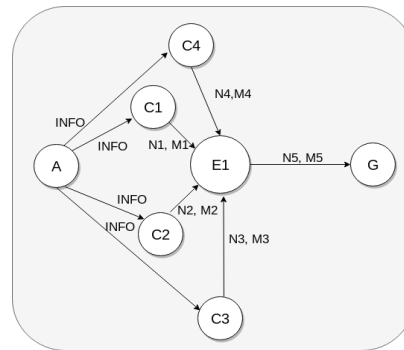


Figure 2. Decision-making support graph.

After we proposed the representation and interpretation of the dynamics of the context related to expertise-based intuition, one of the things needed to share it, is to define how to represent it, especially in terms of computational artifacts. Patterns are relationships between the most important cues that in conjugation generate an expectancy linked to a goal, which suggests a particular action (Ross et al., 2004). For instance, a firefighter heard the noise of the fire and felt the temperature of the walls, and these cues related triggered a pattern that generated an expectancy that the building would collapse.

Based on what we assessed in our interviews and literature review, we suggest representing this situation as a graph (Figure 2) targeting the further development of a system that supports expert-intuition knowledge sharing. In this graph that we proposed, the nodes represent the important cues (C1, C2 ...) for a given expectancy be satisfied (E1). As observed during the conducted study, cues do not have the same weight to address an expectancy. In other words, some cues are

more important than others. We can have cues that are associated with more than one expectancy, with edge weights to each relation. We can have more cues merging in a more significant cue transforming itself in a new expectancy. The cues can be compared with filters that receive information from the environment and let only the chunks of information related to a particular cue passing. Information flows through the proposed artifact as resources flowing through pipes, each pipe with its capacity, from a source to a sink (destination). In Figure 2, the node A represents the environment from which all the information is retrieved and the (N, M) pairs at the edges that connect the nodes, respectively representing the maximum flow rate and the incoming flow. The incoming flow is how much a cue was perceived concerning the weight (maximum flow) of this cue regarding an expectancy.

Conclusion

This study creates possibilities for the sharing of expertise-based intuition research within a CSCW perspective. Once we treat expert-based intuition as a form of knowledge, the graph-based solution is a possible path to support the management of the complexity presented in sharing it, and also, enables the translation of unstructured data into a structured form of actionable knowledge for decision support. The discussion presented in this paper generated a broader understanding of the sharing of expertise-based intuition and its social-cultural implications. As further work, we will improve and implement the proposed artifacts in a system designed with sensitivity to social aspects.

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