

Sending all the right signals

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Chapter 6

Valorization Addendum

I am a sociologist by training and at heart. I have been fascinated by how we, humans, interact with each other and how our interactions drive what we collectively create. During the first half of 2013 I became a deputy project leader at the Service Science Factory, where I extended my hands-on knowledge on service innovation. While at the Service Science Factory, I became fascinated about how teams work in project-based settings, characterized by multidisciplinary teams and service co-development with customers. I carried this enthusiasm over to my research and decided to further investigate how we come together to develop and deliver market-focused creative solutions to commercial challenges via new services.

The purpose of this dissertation is to shed light on how the way individuals interact and communicate with each other influence their creative endeavors and how businesses work to bring about innovation through in-group communication. When it comes to creativity, there is little theoretical consensus on its drivers. Some scholars argue it is an individual trait, others consider it a group/ team outcome. What if it is neither? A growing literature stream talks about “*the social side of creativity*”, namely creative output as a result of a dynamic interaction process. I synthesize this process with perspectives from signaling theory in the context of organizational behavior, as well as research into so-called “*honest signals*”. These signals are nonverbal behavioral indicators humans knowingly and unknowingly exhibit in social interactions such as tone of voice, posture, amount of body movement, face-to-face interaction time among others.

1. The LEGO Light Bulb Metaphor

Picture a team in a meeting room. They’re tasked with solving a novel problem. Each individual has a set of ideas on how to approach and solve the issue. Picture these ideas as Lego bricks in message bubbles above their heads. Each team member’s “ideas” are of different shapes and sizes, but of only one color. As they start interacting, each of them decides what idea (read “size and shape of brick”) would fit best at every moment in time. If we imagine the solution to that novel problem as, say, a light bulb, the size, shape, and color pattern of this Lego light bulb depends consistently on how the team members communicate and interact with each other in the process.

2. Social Signals

Human social interaction mechanisms are quite ancient; signaling (nonverbal) behavior outdates language but yet still remains inextricable to communicative processes (that is why we are still talking about “dominance”, “introversion”, and other behavioral traits of such nature). Researchers have long studied how these signals we give away and perceive influence our interactions, but their endeavors have mostly been limited to traditional means of collecting data such as self-assessments, and potentially biased observations. In 2007, researchers at MIT Media Lab developed purpose-designed wearable sensor devices, with high measurement accuracy, making them suitable for the rigorous academic data collection and analysis in organizational behavior contexts. By means of this technology, it is now possible to collect objective, second-by-second streams of data about human behavior that help us to begin to understand patterns of human interaction in ways that weren’t before

possible. Thus, we now have appropriate means by which to capture and assess objective behaviors and improve our understanding of to what extent nonverbal communication actually influences other actors within an interactive setting, as well as how much it affects the quality of our relationships, and how much it influences our (creative) performance when we collaborate.

Through my project, I managed to bring to European academia the first 45 Sociometric badges to be utilized in social science research. I deployed these devices in real-life innovation projects involving four industrial partners in the professional services, veterinary pharmaceuticals, educational, and medical technology sectors. I developed several research designs that accommodate the use of these new sensors and identified the appropriate analytical approaches across disciplines to collect and analyze this special type of data. This involves insights from domains as diverse as computer science, sociology and psychology, as well as business domains such as service research, marketing, innovation and organizational behavior.

Through my studies I carefully followed the actual nonverbal behavior of innovation teams in their creative problem solving processes, second-by-second. So, can honest signals predict creative problem solving? We found that up to 20% of teams' creativity can in fact be explained by their members' interaction patterns alone (e.g., who talks when [turn-taking], the time spent in other's proximity, the time individuals spent face-to-face, the ways they mirrored the posture and activity levels, etc.). Thanks to this newly available technology, we are now able to quantify and understand human interactions in a way not previously possible, thus contributing to development of the pervasive and ubiquitous computing via computational social science, as well as theorizing around new service development, innovation, and organizational behavior.

3. Implications for Practice

In line with the business literature and drawing from recent developments in computational social science, the field of 'quantified team members' will soon have the technological tools to measure focal dependent variables such as creativity. Even though self-reports represent the best to-date meeting assessment, future research will draw upon developments such as ecological momentary assessment to capture such soft features *in actu* and over time. Future project teams will be able to learn from physiological and psychological measures that correspond with manifestations of focal dependent variables. Looking forward we can only assume that this will have substantially broader implications for the management of workplace dynamics, knowledge sharing, organizational learning, and innovation.

The main obstacle to overcome in achieving this new perspective on team science concerns the logistical aspects of data collection, namely the management of deployments, the resources required for data collection and manipulation, and challenges concerning the establishment of ground-truths. Another challenge is to do this in a way that respects user privacy and does not risk compromising user uptake and the benefits derived from such analysis.

To summarize, this thesis employs environmentally-aware sensor devices within a series of field studies, to capture real-time markers of team dynamics and demonstrates the value of this data to support theorizing. Here, this pertains specifically to supporting the growing body of literature around unlocking the creative and innovative potential of teams (Elsbach & Hargadon, 2006; Sonenshein, 2016). Put simply, a number of distinct research fields (i.e., computer science and engineering, organizational behavior, team research, marketing, etc.) are converging towards employing tools that measure objective behaviors but, without a multidisciplinary approach to developing and testing said tools, they fall short due to the blind spots (i.e., lack of know-how) in either the theoretical foundation or the technological complexity of the collected measures (Chaffin, Heidl, Hollenbeck et al., 2017; Maglio, Kwan, & Spohrer, 2015).

The opportunities provided by these new data collection tools are in relative terms, only just beginning to become apparent. Given the potential for high-rate frequency sampling we are able to run quasi-simulations even on small teams to further supplement primary empirical investigation. For instance, future research will be able to predict and causally assess the effect of removing one team member from a particular timeframe. This opens the door to researching with modern tools yet another fundamental theoretical avenue that of social permutations where individuals' activities are shaped by their sense of self, relationships with others, and social roles (Fiske, 1991).

To conclude, beyond all the right signals, and in line with Brown (2016), creativity may not be of interest to every individual, team, or organization, and it may not always be deemed the most critical competitive focal point. However, creativity definitely is the practice on which all other practices ultimately depend as it is indispensable to innovation; the lifeblood of commercial continuity. It should be noted though that creativity can only flourish when leadership shifts from treating new ideas as performance checks (i.e., operational competitiveness) to fostering true creative competitiveness, managed via a detailed understanding of the interaction between engaged actors and beneficiaries.

