The potential and shortcomings of strategic ambiguity as management practice in design labs: An ethnographic study of MIT SENSEable City Lab

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This paper explores the role of strategic ambiguity (Eisenberg, 2007; March & Olsen, 1976) as a management practice, as used in SENSEable City Lab - a design-oriented lab located at Massachusetts Institute of Technology in Cambridge, MA.

The paper reports on an ethnographic study conducted by the author in 2011 and reflects on both the potential of strategic ambiguity as an effective dialogic strategy to appreciate differences among organization members and its shortcomings, such as the level of anxiety reported by some members of the lab.

AIMS

The notion of strategic ambiguity was introduced in organizational studies by March and Olsen and later elaborated by Eisenberg. Strategic ambiguity is a “strategy for suspending rational imperatives toward consistency [that helps organization] explore alternative ideas of possible purposes and alternative concepts of behavioural consistency” (March & Olsen, 1976, p. 77). Eisenberg describes strategic ambiguity as a managerial approach where people in organizations deliberately use communication strategies that are not consistent over time or omit important contextual cues thus leaving space for multiple interpretations by others; people within organizations are thus freer to interpret and act according to their own viewpoint (Eisenberg, 2007). Ambiguity does not replace accurate information and efficient processes, but can be used as an effective dialogic, plurivocal strategy to appreciate differences among organization members.
This paper explores the role of strategic ambiguity as a management practice, as used in SENSEable City Lab - a design-oriented lab located at Massachusetts Institute of Technology in Cambridge, MA.

SENSEable City Lab's projects span from architectural interventions, such as The Cloud, a responsive building in London, to innovative product design, such as The Copenhagen Wheel, a system that transforms ordinary bicycles into hybrid sensors/actuators that provide feedback on pollution, traffic congestion and road conditions in real-time, or to future sensing technologies, such as TrashTrack, an initiative that used hundreds of small location aware tags to track different types of trash to reveal the final destination of our everyday objects.

SENSEable City Lab is organized through a hybrid structure: most of the activities are carried out by small teams with a large degree of autonomy, whilst some management positions (the lab’s directors and senior members) still keep a close oversight of the organization. Within this structure, the role of the lab's directors is delicate, as they want to drive the organization and at the same time leave space for the self-organizing dynamics of the teams. The organization is paradoxically controlled by a top-down vertical reporting system and by emergent, horizontal mechanisms.

Strategic ambiguity is an important component of the management practice of the lab as it helps the coexistence of hierarchical organizational processes and team-based horizontal dynamics. Strategic ambiguity is a resourceful management practice, as it creates organizational dynamics where team members can more freely position themselves, but it also poses some threats, as it renders organizational communication more unclear, inconsistent and indefinite.

This paper draws upon an ethnographic research conducted by the author at SENSEable City Lab in 2011 and presents some critical reflections on the potential and the shortcomings of strategic ambiguity as management practice within the lab.

THE NOTION OF STRATEGIC AMBIGUITY IN LITERATURE

The role of ambiguity as strategy to regulate and align collaboration between different parties within and beyond the organization has been explored in several studies, such as the already cited March and Olsen (1976) and Eisenberg (2007).

Meyerson conducted a study with social workers in hospital and she found that social workers usually shared a common orientation and faced similar problems, but they used different methods and approaches to solve these problems (Meyerson, 1991). Meyerson found that when the hospital’s culture was open to support these multiple approaches and the different and conflicting meanings behind them, social workers experienced less burnout. Heller studied how the ambiguity related to code-switching - the use of more than one language in the course of a single conversation - is a crucial element to aggravate or mitigate acts such as requests, denials, comments and, as such, to manage social interactions and collaboration (Heller, 1988). Bernheim and Whinston argue that ambiguity and
incompleteness are essential features of well-designed contracts in those conditions when some aspects of performance are not verifiable (Bernheim & Whinston, 1998). Contracts are seen as the crucial component that disciplines relationship between different parties and ambiguity is an important element that allows the involved parties to more freely perform their duties.

Some other scholars have problematized the concept of strategic ambiguity. In one of these critical accounts, Markham recounts the difficulties experienced by the members of a small design company in a work environment where the management firmly believes in freeing designers from rules, standards, directives, an environment “riddled with ambiguous communication” (Markham, 1996, p. 389). Markham is not entirely convinced that strategic ambiguity can allow the members of an organization to freely express their viewpoints because they might not be able to overcome the context of hierarchy and authority of the organization and feel free to have the critical stance to re-interpret ambiguous messages and instantiate their own positioning. Her conclusion is that the potential of strategic ambiguity has to be re-evaluated in a more critical light.

**APPROACH**

Ambiguity is tied to the cultural and communication spheres of the organizations, where multiple, competing, conflicting meanings emerge and come in contact\(^1\). In the last few decades, the investigation of the cultural and communication dimension of organizations has been an important element in organizational studies (Dandridge, Mitroff, & Joyce, 1980; Hatch, 2006; Jones, 1996; Schein, 1985; Schultz, 1995). The application of an ethnographic approach with the direct involvement of researchers in the field has proven to be a common method of a good number of these organizational studies (Czarniawska, 2012).

Based on this literature, I decided to use an ethnographic approach that allowed me to get in touch with the organizational life of SENSEable City Lab and to explore some of its dimensions, such as its organizational structure, its process of engagement for new members, its communication flows. The next paragraph will illustrate how in my analysis these three dimensions constitute organizational areas where ambiguity plays an important role.

I followed the daily activities of SENSEable City Lab's members in Cambridge MA (USA) across a period of 4 months (from February to May 2011), observing and interacting with its members, both at workplace and during face-to-face conversations. I participated to meetings, brainstorming sessions, events and dinners organized by the lab's members. The findings

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\(^1\) This paper draws upon the symbolic-interpretive theoretical notion of organizational culture as presented by Hatch: the main focus of organizational culture studies is the investigation of “how people give meaning and order to their experience within specific contexts, through interpretive and symbolic acts, forms and processes” (Hatch, 2006, p. 14).
reported here draw upon data collected through direct observation, my experience as participant, unstructured conversations, email exchanges with members.

I already knew SENSEable City Lab and was aware of its prolific design and scientific production. In summer 2010, I wrote to SENSEable City Lab's board, sending my research proposal and they invited me in Cambridge as a research affiliate across the winter and spring 2011. In this period, I met several times Carlo Ratti and Assaf Biderman, the lab's founders and directors, to discuss the initial thematic orientation of my research project. Nashid Nabian, a senior researcher from the lab, and Bettina M. Urcuioli, the lab's senior administrative manager, have greatly helped me during my study. Across the entire period I have always been granted the freedom to observe the lab and participate to its daily activities.

The lab's members knew about my presence in the lab, since I was asked to give a pecha kucha\(^2\) presentation of my work immediately after my arrival at the lab. Following an important organizational ritual, all the new members of the lab have to introduce themselves through a pecha kucha presentation in the Tuesday lunch meetings. In February 2011, during my pecha kucha presentation I introduced myself trying to give some (but not too many) details on my research project. Nonetheless, after my presentation all the lab's members were fully aware of my presence and of my research goal. Therefore my situated observation influenced the behaviour of the members during my staying at the lab and subsequently the final outcome.

Field source data mainly consisted of photographs, sketches and to a lesser extent of a collection of artefacts. This source data was edited and organized in a single profile document; photographs were positioned in sequence with relative caption (data, caption). Notes from direct observation were placed in a loose thematic narrative structure. Photographs were organized accordingly to coincide with this narrative. All this resulted in a concise textual and visual documentation of all source data. This source data was then elaborated to write the draft of the final report.

As situated anthropologist (Clifford & Marcus, 1986; Clifford, 2003), I have studied myself while conducting the fieldwork through a kind of meta-observation that allowed me to be (somehow) aware of how my personal, emotional and cognitive involvement affected the results of the research project.

**KEY FINDINGS**

In her book *Leadership and the New Science: Discovering Order in a Chaotic World*, Wheatley borrows some concepts from quantum physics to describe the complexity of

\(^2\) Pecha kucha is a presentation format where 20 images are shown each for 20 seconds. The images forward automatically and presenters talk along to the images (http://www.pecha-kucha.org/).
organizations: “Each organism maintains a clear sense of its individual identity within a larger network of relationships that helps shape its identity. Each being is noticeable as a separate entity, yet it is simultaneously part of a whole system”, and she continues saying: “For years I had struggled conceptually with a question I thought important: In organizations, which is the more important influence on behavior—the system or the individual? The quantum world answered that question for me with a resounding 'Both.”’ (Wheatley, 2006, p. 26). Wheatley clearly illustrates the complex agency that takes place in organizations: individuals', teams' and organization's visions and needs are interconnected “like a vast network of interference patterns” (Schwartz & Ogilvy, 1979, p. 14).

How does SENSEable City Lab tune these multivocal agencies together in order to reach its institutional goals?

This is a particularly important question, since SENSEable City Lab lives within an institution (MIT) that clearly defines high standards for its labs. The viability of the lab depends on the results obtained both at an academic level and with its external (and funding) partners. There is the need to carry out projects that set new standards in terms of scientific production, innovation, scale of architectural (and societal) intervention.

What organizational strategies allow SENSEable City Lab to meet these high standards but maintaining the flexible dimension of a self-adjusting organism? What kind of paradoxical organizational approach allows to maintain some control and at the same time to get shaped by self-emergent processes?

**Ambiguity across the organizational structures**

Two conflicting organizational structures co-exist in SENSEable City Lab.

On one side, the lab is not structured as a bureaucratic pyramid with a traditional vertical reporting system. Small teams are the key elements of a more flexible organizational order. Each team is in charge of one or more projects. Some of the projects have a pre-set outcome and a clearly specified deadline. Others start as ideas that get shaped along the way and therefore are initially oriented towards less defined outcomes. Projects' lifetimes span from few weeks (e.g. the preparation for a TED talk) to several months or years (e.g. *The Copenhagen Wheel, Live Singapore!*). The number of members per team varies from few people for smaller projects (e.g. *The wireless city, Spacebook, GEOblog*) to several dozens (e.g. the *Digital Water Pavilion, TrashTrack*). In the past 5 years, more than 300 people have worked with one of these teams on SENSEable City Lab's projects.

A vertical organizational chart would probably be too rigid to respond to complex, transdisciplinary problems that need to be addressed with different, specific strategies and competences. Teams can be easily configured or reshuffled to quickly respond to opportunity-based changes (Malone, Laubacher, & Morton, 2003).

Within this kind of decentralized organization, power originates at lower structures and each team can move within its own sphere of independence. A network of authority and control
based on knowledge of the task replaces the traditional hierarchical structure. Within the team, tasks and responsibilities are distributed depending on the available personal expertise and the operational context. Mutual adjustment and redefinition of tasks are common within and across teams.

At the same time, this decentralization is highly moderated by the management. The lab is structured to have some clear some management roles (Carlo Ratti, Assaf Biderman, Kristian Kloeckl, Bettina M. Urcuioli) that are transversal to the entire group. In a highly dynamic environment, with new lab members joining at a regular basis and team members frequently reshuffling, the role of the management is important in order to make sure that all the efforts have a common orientation. It is necessary that the lab fulfils both the expectations from external partners that provide funding and the institutional expectations from MIT. The role of the management is also important as it provides some sort of historical memory of the lab and as it decides how the lab should be externally communicated in order to create a consistent presentation of its vision and activities.

Within this organizational domain the role of the lab's directors is crucial but also potentially dangerous, as highlighted by a senior member of the lab: “At times, the oversight that Carlo and Assaf choose to have over projects significantly limits the progress of our work”. The scale is one of the biggest challenges for this organizational structure. In SENSEable City Lab the number and the dimension of projects continue to increase over time and this multiplies the amount of messages and feedbacks requested to the directors from the teams and the team leaders.

The organizational structure of SENSEable City Lab therefore literally emerges from the interweaving of processes carried out by these distributed teams and by the top down interventions of the management board. This emergent process carries some ambiguity as it sees the contextual presence of overlapping, conflicting and competing horizontal and vertical dynamics of power and authority. In some cases, it is not clear how to synchronize the power and authority of the management with the power and authority granted to and originating from teams and team members. As I will illustrate in the following paragraphs, the lab has a low formalization or rules, positions, standard, processes and therefore this complex horizontal and vertical integration is constantly reshaped as a relational configuration drawn together by conflicting top-down and emergent behaviours.

**Ambiguity in engagement roles**

Teams are usually managed by a team leader. This is not a rule that applies to all the projects, though bigger projects tend to have a project leader. Team leaders are generally not professionals specifically trained in project management techniques, but members of the lab who have knowledge and competencies for the task. Since some projects have a longer lifespan, there are cases where different project leaders have been in charge during different phases of the project. Teams are usually started and initially shaped by lab's senior members, but the distribution of roles is flexible: during my stay several new projects were introduced
to the lab's members at the Tuesday lunch meetings and people were invited to nominate themselves if they thought that they could contribute to them.

Below is an email sent by a senior member to the internal mailing list where he introduces a new project and asks if anyone is interested in joining the team:

Subject: trash track moma
Sent: 26 March 2011 18:33
To: SENSEable City Lab Mailing List

hello everyone,

you might have heard that the lab got invited by MOMA to participate in a new exhibition called "talk2me", dealing with communication between humans and objects.

we have proposed a global ewaste tracking project, based on the notion that the discarded objects continue their life even after they get thrown away and send images, sounds and coordinates from their afterlife in the e-waste chain. we hope to get some interesting material from overseas.

as usual, time is quite short - the opening is in july, but everything should be ready by june. if you are interested in joining the team, let me know. it should be a very nice project with high visibility.

we are looking for help with the following tasks

- tracking technology (based on commercial trackers / phones, but we also need to find ways to record images / sounds)

- server backend stuff (collecting data from the trackers and preparing it for the visualization)

- visualization development (this time we will not just render the traces, but also pull in additional data such as satellite images and other location specific data, possibly routes of cargoships / planes that match the sensed location)

- deployment team (3-4 ppl), who attach the trackers to ewaste (deployment in new york)

- webdesign / video

- exhibition design

let me know, & please forward also to UROPs in the lab

d.

Membership within the lab and among the teams is extremely fluid. Short and part-time engagements with flexible roles over time are rather common. The lab's current members reflect a combination of academic and professional competences. Some people collaborate at a distance, while others from the lab in Cambridge. In some projects, SENSEable City Lab extensively collaborates with external partners, such as in The Cloud that has witnessed the involvement of artists, research centres, and design and architectural studios geographically distributed over three continents (Atmos, Arup, Schaich Bergemann und Partner, Agence Ter, Studio FM Milano and Tomas Saraceno among others).
In these situations, it is quite common that - within the length of a single project - researchers from SENSEable City Lab, personnel from other organizations, external collaborators, artists travel across different geographic locations and frequently reshuffle their position: officials from the Municipality of Copenhagen are offered temporary positions at the lab in Cambridge; researchers from SENSEable City Lab are relocated in Singapore to work on some programming activities with local coders; personnel from BMW joins forces with lab’s motion graphic designers at Berlin’s Guggenheim Lab.

In some of these cases, even though some people are not formally affiliated with SENSEable City Lab, they are still a crucial component of the projects and as such - at the end of the project - are credited as members of the SENSEable City Lab team.

A short conversation recorded during my observation captures the fluidity of the membership processes. A senior member of the lab was collecting biographies from all the current lab's members for a publication on SENSEable City Lab. During a plenary meeting in Cambridge she then asked all the lab's members to send her a 250-word biographical text. A few days later, I recorded this dialogue:

Senior member: “Hey, I’m collecting biographies from all the members of the lab. Did you send me your bio?”

Researcher 2: “Should I? Am I part of the lab? I’ve only been working here for a few weeks!”

The answer from the researcher 2 clearly describes a situation of ambiguity, where he is unsure of his position in the lab.

Within this fluid context, what defines the membership with the lab? Is membership defined by the boundaries of the lab (if I am inside these boundaries, then I am part of the lab)? If so, what happens when the lab has ambiguous, not clearly defined and continuously reshuffling boundaries?
Communication flows as regulatory mechanisms

When I arrived at the lab, I was given a PDF leaflet describing the basic administrative steps required for visiting students and scholars and the most important operational rules of the lab (e.g. how to access the lab, how to get travel reimbursements, …), some of which are inherited from MIT procedures. This leaflet is clear and helpful and is the main source where lab's rules and procedures have actually been formalized. The leaflet is usually given to new members of the lab at their arrival by the senior administrative manager.

Some organizational areas such as functions, departments, organizational charts, work processes are not illustrated in the PDF. In general, in SENSEable City Lab position descriptions, job classifications and individual goals are not set in a standard hierarchical process and formalized in an official way. Along the same line, there are no centralized to-do-lists or project management tools (PERT, GANTT) shared by the entire lab as a group.

When I asked two senior members what they thought about the formalized rules at the lab, they answered:

Researcher 1, asking to the other: “Are there rules in the lab?”

Researcher 2: “Not in a strict sense. But I guess there are unspoken rules…”

Again, the relatively low formalization seems to be a necessary element to allow the organizational system to perform in a flexible way. The team leaders and the team members are granted some independence and autonomy and then the coordination mechanisms have to be loose enough to allow them to operate within their discretionary margins.

Established upon this philosophy, some control mechanisms based on information exchange and communication among members constitute a quite common management practice in the lab. Common coordination mechanisms are quick meetings, brainstorming sessions and pecha kucha presentations (often given during Tuesday lunch meetings).
Meetings among team members and with the board are periodically held in order to create feedback loops to control teams self-organizing activity and emergent behaviours.

Other less frequent coordination mechanisms are individual meetings between the lab's directors and researchers. During these meetings researchers are asked to give their own evaluation of the lab and to share their expectations for the future.

These feedback loops give both some regulatory feedback when they signal deviations from the established goal and some positive feedback when they notice something new and amplify it disseminating information to wider groups within the lab.

Communication and information flows across these feedback loops are common coordination strategies for the lab. The definition of rules, responsibilities, instructions and job methods is therefore quite loose, variable and depending on the situation, the resources available and the operational context. Communication exchanges and flows instead play a big role as organizing mechanism.

It is interesting here to notice that a coordination mechanism that highly relies on communication flows presents some elements of openness and, potentially, ambiguity. For example, in several cases during my stay at the lab discussions among the team members arise in order to interpret what was said in some previous meetings with the board directors. These discussions allowed the team members to enter into a dialogic mode, express their own viewpoints and act based on their own interpretation of the ideas of the board directors.
DISCUSSION

The findings from the ethnographic study show how ambiguity plays a strategic role within the daily management practice of SENSEable City Lab, across its organizational structure and processes. During my stay at the lab, I had several conversations with the lab’s director Carlo Ratti. In our conversations, he never used the term ‘strategic ambiguity’ to describe his management practice. Nevertheless, what I described in the previous pages in terms of ambiguity across the organizational structures, ambiguity in engagement roles and ambiguity in communication flows is the outcome of a deliberate management strategy. In this sense, I argue that strategic ambiguity plays an important role in harmonizing the tensions resulting from a hybrid vertical and horizontal organizational structure. Strategic ambiguity helps the coexistence of the overlapping, competing, conflicting power and authority positions generated by the vertical, top-down management processes and the team-based horizontal dynamics. This ambiguity is at the same time a resource, as it generates more open organizational structures where the members of the lab can more freely position themselves and express their differences, and a threat, as it does not clearly present a unified organizational meaning.

This ambiguity renders the organizational communications more complex and uncertain, thus arising the anxiety level for some members of the lab. As a researcher told me: "The lab desperately needs a hierarchical system so that group leaders are the only ones reporting to the directors and the rest of the team can focus on their work under direction of project leaders". Along a similar line, another researcher praised the importance of "leading figures through a project development". Another one simply commented: "Make it less chaotic".

In line with Markham (1996), I also argue that the level of anxiety in some members of the lab is related to how these members are positioned within the dynamics of power and authority at play in SENSEable City Lab. In some cases, some members of the lab might not be able to freely express their viewpoint, for example because they do not feel to have the power and authority to do so in the complex and ambiguous vertical-horizontal structure of the lab.

This study therefore suggests that strategic ambiguity as a management practice can play a positive role in creating an environment where multiple viewpoints can co-exist, sometimes conflicting and some other times getting harmonized in the organizational life. This comes with a price, as this multiplicity can also lead to ambiguous communication within the organization and thus to a lack of unified meanings. This can be a stressful situation for some members of the organization. Strategic ambiguity should therefore be used in a critical way as an effective dialogic strategy to appreciate differences among organization members, but also with the idea of the potential shortcomings of its application.

A witty comment left by a researcher of the lab gives what could be a short summary of the potential and the shortcomings of strategic ambiguity in SENSEable City Lab: “Potential cross-pollination = potential misunderstanding”.

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FINAL REMARKS

Exploring new territories means crossing the mood of maybe, a somehow uncanny no-man's land. Complex real-world problems call for truly transdisciplinary adventures. This needs coordinated action from a wide range of stakeholders (academia, industry, government, NGOs, activists, …) in order to reshape the way research is carried out and to tackle crucial ethical and societal challenges.

Organizations operate in complex environments, constantly referring to the stakeholders' dynamically and historically situated imaginings. Within this complicated, labile and interchangeable array of economic, political, social and cultural negotiations, strategic ambiguity could constitute a management practice to create spaces where multiple meanings from different stakeholders can co-exist yet maintaining the possibility of a coordinated action.

Within these multiple points of view, there will be surely positions that will highlight the shortcomings of strategic ambiguity, for example as a management practice that leads to a lack of clarity or to stressful situations.

The potential of strategic ambiguity as a management practice will therefore rely on the ability of organizations to apply it in a critical way, carefully reflecting upon the frictions and tensions elicited in the process.

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BIBLIOGRAPHY


**AUTHOR BIOGRAPHY**

**Luca Simeone**

Luca Simeone's trajectory crosses design management, interaction design and design anthropology.

He has published some 50 academic papers on organizational models behind constructive design research and participatory innovation and on strategies and technologies for publishing, especially within smart cities models. He co-edited the books *Beyond Ethnographic Writing* (Armando, 2010) and *REFF* (DeriveApprodi, 2010) exploring new narratives that combine traditional writing with augmented reality technologies.

In 2009 he founded FakePress, a think tank exploring new publishing models and editorial projects and in 2011 he was a research affiliate with the SENSEable City Lab at Massachusetts Institute of Technology (MIT) in Cambridge MA.

He is also the founder and managing partner of Vianet, a digital design agency focused on delivering advanced technology and design solutions based on ethnographic research methods. Vianet has created more than 500 high-impact and award-winning products for Clients such as big corporations, NGOs, public institutions and SMEs all over the world.

Luca also works as consultant for public and private institutions (European Commission, German Federal Ministry of Education and Research) in order to help defining strategies, policies and funding schemes to support strategic design approaches targeted to innovation.

As from 2011, he is PhD candidate in Interaction Design at Malmö University in Sweden.

Over time, Luca's work has acquired a socio-political perspective aimed at using design as a tool to foster participation and dialogic processes.