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**Nunzia Coco, Monica Calcagno and
Maria Lusiani**

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management practice: A
learning experiment in
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Towards design thinking as a management practice: a learning
experiment in teaching innovation

MARIA LUSIANI
nunzia.coco@unive.it
Dept. of Management
University of Venice

MONICA CALCAGNO
calc@unive.it
Dept. of Management
University of Venice

MARIA LUSIANI
maria.lusiani@unive.it
Dept. of Management
University of Venice

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Correspondence to:

Nunzia Coco

Dept. of Management, Università Ca' Foscari Venezia
San Giobbe, Cannaregio 873
30121 Venezia, Italy
E-mail: nunzia.coco@unive.it

Abstract

There is an increasing need to make management knowledge more consistent with the “messiness” and complexity of actual organizational phenomena and contexts in today’s world, calling for a refoundation of mainstream management theories. The paper focuses on the contribution of design thinking approaches in this sense, particularly addressing the question of how the predisposition for a design thinking approach can be shaped in management education. Following a qualitative inductive research design, it will report the experience of the introduction of new teaching practices inspired by design thinking in a class of students from a Master program on Innovation and Marketing in an Italian University. Based on the empirical findings, the challenges and opportunities of innovating business school teaching towards the construction of a design thinking mentality will be discussed.

Introduction

The paper addresses the issue of how design can be a driver of change in a context of management education, and how this change challenges the business logic of the actors involved in the process, asking for a radical re-formulation of norms of action and paradigms of learning.

Innovation theory searched for new sources of inspiration for management paradigms by studying design companies, like IDEO (Hargardon and Sutton 1997), which boosted a design interest in the innovation discourse (Bruce & Bessant, 2002; Feldman & Boult, 2005; Ward, Runcie & Morris, 2009; Steve ns & Moultrie, 2011), and challenged (Hatchuel et al.) the rational models of most of traditional theories re-conceptualizing strategic management as a design activity focused on innovation. Further, the open and social innovation turn (Chesbrough 2006, Laursen and Salter 2006, von Hippel 2005, Tucci et al. 2016), sought for new representations of more complex ecosystems giving evidence to the porosity of organizational boundaries.

Yet, when it comes to practice, shortcomings of design thinking approaches in firms arise. Being able to embrace a design approach within an innovative mindset and in a collaborative interdisciplinary setting has gained the greatest relevance for companies. But the implementation of design thinking in companies is poor and raises multiple challenges, such as collaboration issues and time for learning and practicing, often leading to abandoning the

design thinking approach without realizing its potential benefits (Jahnke 2009, Yoo et al. 2006).

Building on this, the general objective of this paper is to reflect on how a design thinking approach can be fostered in people's minds for it to become an effective management practice. Our claim then is that something should be done upfront, in management education and, secondly, that to teach innovation, we should first of all innovate the teaching. That's why the paper proposes to investigate the issue of the construction of a design thinking mindset before the encounter with the business world, that is from school. In particular it will explore the process of introduction of new teaching practices inspired by design thinking in a class of students attending a new Master program on Innovation and Marketing recently launched at Ca' Foscari University, from the eyes of the participants. To better understand the effects on the student's attitudes, the authors, then, compare longitudinally the behavior of the same class of students during their attendance of the subsequent module on Cultural Planning and Creative Industries (CPCP module).

The paper is structured as follows: the first section position our research in the field of innovation, reviewing perspectives on design and its dimensions of value in the management literature. Then after presenting our findings in management education, we debate regarding the need to refund it to make it more up to date and consistent with the complexities of today's business world.

Perspectives on design between theory and practice

Firms encounter many mutations regarding the management of innovation: open innovation and social innovation (Chesbrough 2006, Laursen and Salter 2006, von Hippel 2005, Tucci et al. 2016), business model innovation, platforms and ecosystems, exploration and experimentation, give evidence to the porosity of organizational boundaries, and translate directly in a call for education in preparing students to these mutations.

In particular, innovation theory searched for new sources of inspiration for management paradigms by studying design companies, like IDEO (Hargardon and Sutton 1997), which boosted a design interest in the innovation discourse (Bruce & Bessant, 2002; Feldman & Boulton, 2005; Ward, Runcie & Morris, 2009; Stevens & Moultrie, 2011), and challenged (Hatchuel et al. 2010) the rational models of most of traditional theories re-conceptualizing strategic management as a design activity focused on innovation.

The word “design” in management literature has been recognized as a central issue since the seminal work of Simon (1969). But it is in the more recent years that design has been identified as a focal point in the process of innovation, both if considered as a means of giving radically new meanings to our artifacts (Verganti 2008) or as an approach to deeply re-think the process of innovation (Liedtka & Mintzberg 2006). Design has been so far identified as a strategic source of innovation and competitive success in a very wide perspective (Hargadon and Sutton 1997; Dumas and Mintzberg 1989; Verganti 2003; Le Masson, Weil and Hautchel 2010).

Despite the growing interest towards the concept of design and its supposed positive influence on innovation strategies, the analysis of design as a dimension of value in the management literature is still ambiguous while its impact on innovation theory is undefined. Just to focus on the main and more interesting contributions, two main approaches can be identified.

On one side, design is meant as a driver of strategic value and innovation performance through the model of design driven innovation (Verganti 2003, 2006, 2009, 2011; Landoni et al. 2016). Here design produces innovation boosting the process of meaning construction, and overcoming the duality of market and technology as unique sources of innovation. On the other side, coming back to the idea of design as a process (Simon 1969), a new approach emerges from the practice of consultancy. IDEO, with the experience of the D.School of Stanford and a large group of professionals (Brown 2008; 2009; Kelley 2001; Martin 2009) proposes a concept of design, which is meant as a new approach to coping with complex and ill-defined problems (Glen, Suci, Baughn 2014). Here design is proposed as a method of explorative learning, an alternative state of mind, a reflection in action (Schon 1983; Glen, Suci, Baughn 2014) in opposition to the analytic model of decision-making typically promoted in the field of management scholarship.

The two approaches seem to be distant in both their origin and their aims. Whether on one side the design driven model (Verganti 2006) tries to refund the theory of innovation on a three dimensional model of strategic action, on the other side the design thinking approach (Brown 2008, 2009; Carlgren, Raut and Elmquist 2016) focuses on the creative process and the learning of practices, extending design to the general world of human life. The first stream of research is then theoretically grounded on the idea that a new kind of innovation is generated through the adoption of design as a language used by the entrepreneur to reshape the meaning of a product. The second stream of research is empirically based on a number of practices developed in field, where the designer is an interpreter giving voice to the human needs. Nevertheless, in both the approaches the theory and practice of design face a common

problem: its definition as an organizational competence. If design is considered under this point of view, the strategic question becomes how to use design as a booster of dynamic capabilities that go well beyond the voice of the entrepreneur to reshape the market or just a set of good tools to be deployed to help users in different contexts. Design is then a source of change that takes the shape of a set of practices of interpretation and meaning construction, but has also an impact on the processes through which innovation is conceived and managed. More specifically, both scholarly and practitioner literature have exhibited widespread interest in the application of design methods for competitive advantage by leading through innovation, in particular in the use of “design thinking” methodology. Management scholars have been increasingly interested in how design methods are applied to innovation challenges (Beckman and Barry, 2007; Ravasi and Lojcono, 2005; Verganti, 2008; Veryzer, 2005), and design practitioners advocate the application of design thinking across many areas of business (Brown, 2009; Lockwood, 2010; Martin, 2009) entering more deeply in the strategic management of organizations. The activities and knowledge required for successful innovation are strewn across multiple parties, and when they have to be integrated and their respective needs have to be taken into account, the overall process increases complexity manifold. Bridging the tensions that arise along the innovation process, and creating adequate organizational responses require a new way of thinking and working, which introduces design as a promising driver of value

However, the role of design within innovation studies is still underestimated and still viewed as a technical activity or as a sub-function in the firm (Tether 2005). Therefore, notwithstanding a growing interest to manage tensions and changes in innovation (Martin 2007), the business world does not seem very well equipped to embrace a design, system-oriented, way of thinking (Porter and Heppelmann 2014; Holze et al 2015), which could represent a possible strategic answer. Our claim then is that something should be done upfront, in management education and, secondly, that to teach innovation, we should first of all innovate the teaching. Perhaps (e.g. Glen, Suciu, Baughn 2014) the answer could reside in the reshape of management education, even though the how still remains an open question. This paper intends to address this very question, exploring the challenges and opportunities of innovating business school teaching towards the construction of a design thinking mentality.

Research Method

This paper addresses the question of how to teach innovation to management students while preparing them to cope with the tensions and the increasing complexity of real-world problems. In particular, it explores what happens when a design thinking approach is introduced in a class of traditional business school teaching, by reconstructing the process from the eyes of the participants. This peculiar angle provides in-depth insights on the challenges in terms of change of mindset that introducing a design thinking approach entails.

Consistently with such explorative nature, the study follows a qualitative inductive research design, i.e. the most useful when there is a need to develop a rich understanding of specific phenomena (Langley, 1999). No a priori theory therefore guides our analysis, and context and social action become themselves object of analysis and potential explanatory factors of the phenomena under study. On the contrary, the theorizing process emerged gradually and systematically from the observation of facts and interpretations (Glaser and Strauss, 1967; Charmaz, 2006) and within a continuous sensemaking process through activities of analysis, coding and interpretation of the data as they were collected (Czarniawska, 2014).

The setting is a Design and Innovation Management (D&IM) module within the newly launched Master program in Innovation and Marketing at Ca' Foscari University of Venice. The module combined theoretical lectures with hands-on group work to experiment design thinking approach in practice, as it will be explained below. The study encompasses both students' and instructors' points of view and partly relies on participant observation (Barley 1990, Reason and Bradbury 2001) and auto-ethnographic material (Boler and Zembylas 2003; Agar 1986, Van Maanen 1988).

The first author has a professional background in design and is currently a doctoral candidate in Management. Her role in the field was one of teaching assistant in the D&IM module, with tasks related to practical training and tutoring of participants in the development of design thinking skills. The second author is Professor of innovation management and was the instructor of the D&IM module in the field. These two researchers took fieldnotes and kept a research diary to note their observations and reflections along the course. The third author was involved as a management researcher in subsequent rounds of data collection (formal and informal interviews with students) and analysis.

Description of the setting

The D&IM module was an intensive 30-hour course of five weeks, aimed at lecturing students on the theoretical principles of innovation, with a focus on design thinking as a means to develop capacities to tackle wicked problems (Buchanan 1992; Lindberg et al. 2012). The class was composed by 43 first-year graduate management students, around 25 years old, with a background of undergraduate studies in business administration.

The module was structured as follows: each week two lectures of theoretical background (conducted by the second author) were followed by one-day laboratory activities with a designer (the first author). Both the lectures and the lab activities revolved around the three formal stages of the classical process of design thinking innovation: *inspiration*, *ideation* and *action* (Brown 2009, Lockwood 2010, Martin 2009).

At the beginning of the module, within the laboratory activities a challenge was launched: students were asked to develop an idea for how citizens and visitors could live, coexist, and thrive in a highly touristic city like Venice, where the university is based. As a starting point, the instructors offered four stereotyped points of view: students, commuters, tourists, and inhabitants. Each one represented a classical vision of the city in terms of services required, desires and critiques. The main challenge was to overcome the stereotypes.

Students formed nine teams of four to five people and were invited to choose a target stereotype and work on the suggested design challenge for the selected target. The design thinking approach was intended as a means to abandon stereotypes and start acknowledging the target “for real”, i.e. as just people whose deepest needs had to be explored, understood and responded to. In other terms, the instructors induced students to understand a complex system, like the city of Venice, and to apply a human-centred approach in order to design an intervention that would address the specific needs and experiences of certain people.

The instructors mentored the groups along the processes of inspiration, ideation and action (Brown 2009, Lockwood 2010, Martin 2009); students produced three corresponding partial stage deliveries (innovation training - 1st assignment: research, 2nd assignment: concept, 3rd assignment: scenario) and they concluded their group project with a final presentation (and a prototype) to receive feedback on their ideas from a panel of professors and professionals. Such approach was therefore quite disruptive compared to the traditional, formalized business administration learning environment students were familiar with.

Data Collection

Capturing the introduction of a design thinking approach in action requires close observation of everyday activities and a deep engagement in the field, observing and interacting with the students in action. It also requires finding means to access participants' cognitions and emotions as the process unfolds. This led us to rely on a number of data sources, which were collected intensively over four months during the module, from September to December 2015 with few follow-ups until May 2016, after the module:

- instructors' field-notes and diaries from direct participant observation: the two first authors observed the course activities and wrote their own notes throughout the five weeks. This allowed us to keep track of our own views of students' actions, reactions and interactions as they progressively engaged with the practice and produced deliveries while the project unfolded.
- Students' individual process books: to obtain granularity on the learning process details, we encouraged students to keep a personal diary, called process book, along the duration of the course. No format for the process book was provided: participants autonomously chose length, size and style; teachers suggested to have it hand written, as a disposal note taker, but also digital formats were accepted. Students thus crafted 41 heterogeneous process books that were collected by the researchers at the end of the module. This allowed us not only to track the unfolding of ideas and project developments, but also the particular point of view of each student (often including their feelings and cognitions) in the process.
- Groups' partial and final deliveries: these artefacts can be seen as temporary reifications of the groups' collective and emerging ideas; in combination with the individual process books these allowed us to make sense of the students' progressive experience. All in all, we collected 35 group deliveries, for each one of the three main stages of the process (inspiration, ideation, action).
- Focus group at the end of the module, in the form of a feedback session (November 2015): in order to have comparable feedbacks and to structure the discussion, researchers provided students with a reflection-template in the form of a timeline, where each participant could sketch his/her own experience, thus reflecting over the ups and downs of the learning journey. On top of the focus group discussion, we therefore also collected 25 feedback timelines from the students.
- Formal and informal interviews with the students during, right after (November 2015) and well after the course (May 2016): interviews were conducted to access students'

current views about the process that they were living (November interviews) and retrospective sensemaking about it once some distance was put in between (interview round in May 2016). Interviews alone are not the most important source of insight in this study, yet they were useful to better anchor and better substantiate our emerging interpretations about the change and the challenges that the course entailed, for example in terms of assumptions held by the students, team dynamics, their evolving interpretations and generation of ideas.

All in all, we believe that engaging in the collection of these rich data allowed us to get close to the students' experience, both individually and collectively.

Data analysis

Iterating among in-depth analysis of field-notes, transcriptions of interviews, and documentary materials, in particular the process books, supplemented with students' timelines and group deliveries, we reconstructed the experience of each group and of each individual student along the three design thinking steps in developing the final group project over the five weeks. The analytical process was highly iterative, involving several rounds of coding and connection to the innovation and design thinking literature.

A first round of exploratory open coding, by cross-referencing the instructors' observations, the informal students interviews in class and the group deliveries, revealed several on-going struggles of participants. Students attempted to fit a design thinking approach – that is typically inductive, creative, collective and addressing ill-defined problems – with their traditional business problem solving attitude – that is rather deductive, analytical, individualistic and addressing well-defined problems in search for the best solution.

This led us to take in deeper consideration each individual process book, in order to better understand how students perceived this new learning experience. This step involved two rounds of coding on the process books, specifically. From the first round, some characteristics emerged around the format (use of colours, photos, size); around time (sequentially in the information deployment, data, presence of quotes from lectures); around the process steps (contextual observations, notes on interviews, quotes from interviews); around personal attitude (answer anticipation, personal reflections, back and forward research of information, analytical graph and drawing and sketching). Comparing and organizing these characteristics, we proceeded with a second round of coding of the process books. In this round we developed categories regarding students' cognitive approach (for example: deductive versus inductive

and analytical versus creative), and regarding the struggles that emerged in every stage of the process (namely, struggling with destabilization, struggling with abstraction, struggling with ‘non-deciding’).

To reinforce the analyses, other two informal processes of observation and evaluation took place. Authors analysed and compared longitudinally the behaviour of the same class of students during their attendance of the subsequent module on Cultural Planning and Creative Industries (CPCP module) and they also run a set of interviews at the end of the school semester to compare previous rashly impressions with more conscious reflections after six months from the course. This analysis helped to better picture the correlation within a curriculum of innovation skills for students.

Findings

We will organize our findings as follows. First, we will report our findings in a processual manner, using the three main stages of the design thinking process – *inspiration*, *ideation* and *action* (Brown, 2008) – as a bracketing device. For each stage we will provide a short description of what it is about in relation to design thinking, the tasks that were given by the instructors and field evidence of how students coped with it. Second, drawing on these, we will derive some general findings on the outcomes and on the tensions that informed the whole process.

Inspiration... or searching for solutions?

The inspiration stage in design thinking consists of understanding the problem, doing field research, and organizing information synthetically. This includes one of the core principles of design thinking: engaging with real people – particularly the users of the innovation project. In principle, such grounded understanding should lead to new perspectives that, in turn, may spawn novel solutions.

In relation to the challenge that instructors launched to D&IM students (to design an intervention that would address the specific needs and experiences of certain “users” of the city of Venice), once the groups chose their main “target” (recall: tourists, commuters, students, inhabitants), the instructors invited the groups to engage with the *inspiration* practice. This implied that students understand the people for whom they were designing. In order to design for them, the instructors asked students to build empathy and approach the

issue without assumptions (Instructor 02 Diary, 29/09/15). Students were invited to make contact with the real users (not target anymore – first change of language), observe them in their daily life, interview them and synthesize group findings to discover meaningful needs and insights (other new words). At the end of the inspiration phase (2 weeks duration) each group was expected to have run at least three different observations of places and people in Venice and have conducted at least three different interviews with their users.

To introduce this completely new task, the instructors designed a preparatory 30 minutes activity (Instructor 01 and 02 Diary, 02/10/15). During one lecture, the students were split in two teams and asked to rethink their university workspace as an environment to support collaboration. The instructors asked to half of the class to use a traditional analytical approach to problem solving: this team stayed in the classroom to formalize, analyse, and address the problem. Instead, the other half of the class was invited to use an intuitive approach to problem solving, going into the world (outside of the classroom, into the campus) to address the problem by observing. Then, after 30 minutes they re-gathered and shared what they had encountered. This small experience was meant to sensitize the students about how to proceed in the inspiration phase for their group work on Venice.

During this inspiration phase evidence of destabilization, of a somewhat passive attitude and, at the same time, of a decision attitude emerged. We will illustrate these in the form of the following three struggles.

Struggling with destabilization. Students were destabilized. For example, even in the 30 minutes preparatory activity, when instructor 02 invited the students to leave the classroom for observing the campus spaces, students suspiciously asked: “*Now?? Out??*” (Instructor 02 Diary, Sept 25th). Immediately after they reacted by expecting higher constraints, and there was a demand to re-establish a clear and stable environment: “*What do we have to observe exactly? How should we report it?*” (Instructor 02 Diary, Sept 25th). Similar requests about frames and guidelines were raised as the groups started their own fieldwork for inspiration. One student motivated their destabilization in one of the retrospective interviews: “*this design, from our point of view, had little to do with marketing. We were there to study marketing!*” (Int. retrospective S30, 27/05/2016).

Students’ process books are punctuated with comments about discomfort or confusion about what to do in the inspiration phase. For example, a student reported: “*we learn how to interview a person without judging! It is so difficult*”. This same student, after running an observation in Venice, noted in her process book: “*long way home, I couldn’t find the way back! Too many tourists. We missed time and...the bus!!!*” (PB S18, 07/10/15) – which

reflects, in our view, a feeling of loss of reference points or comfort on multiple dimensions (getting lost in the task, in the city, in time, in transportation). Another student well expressed this destabilization in his own process book, while valuing it at the same time: *“big cultural shock as previous academic experiences seldom encourage you to take action. Maybe a small step for others but a big leap for me”* (PB S24, November).

Struggling with abstraction. Also, in the inspiration phase, students overall demonstrated a quite passive attitude in terms of ability to go beyond the immediate surface of things. They would not challenge what the problem was. For example, no one of the nine groups was really challenging the target stereotypes we gave them, even though they were expected to get rid of stereotypes and explore “real people” in the field. All of the nine groups uncritically declared to work for “tourists” (Group 6 and 7) or “inhabitants” (Group 4 and 8) or “students” (Group 2,3 and 5) or “commuting workers” (Group 1 and 9).

The challenge was broad on purpose and it required students to explore and understand before having the problem solved. However, in the process books students’ observations tend to remain on very specific and precise micro issues reported by specific interviewees (*“Venice is far more crowded now than a few years ago”* interviews from 2nd delivery - group 7; *“How to find a small vaporetto station?”* – observation from 1st assignments – group 6) or presupposed stereotypes (*“we kind of expected to explore how tourists with a specific budget go around Venice”* - 1st assignment - group 7; *“our assumption about(workers) being not motivated(to visit Venice) was correct. So, being not motivated, workers don’t find the time to walk around Venice* – 1st assignment - group1) without the effort of abstracting and exploring a possible domain of the problem. Students claim great difficulty in observing reality with a magnifying lens and then abstracting a meaning from this observation, and they remained attached to the ground: *“ideas emerged from our own experience as students”* (Int. S31, October – member of a group working for the student “target”):

“we don’t know the problem enough and we are not really interested in it (directly). [...] The group is not really interested in this topic and prefers to focus on problems it knows better” (PB: S31, October)

This lack of a proactive effort and the fact that students tended to remain attached to the ground, to previous assumptions, or to what is known, made us label this a somewhat passive attitude in inspiration.

Struggling with ‘non-deciding’. Related to this, also a strong decision attitude toward a problem solving, instead of a more explorative one, emerged from our data. As a general tendency, in the inspiration phase virtually all students proceeded by listing what they assumed as options and processed them in search of the best one. This practice is very evident in the following passage, where a student reported in her process book: *“I divided all my questions into 5 macro areas”*. Then she added the following note to herself: *“choose the right one!”* (PB S48, October). Similarly, some students already launched a definitive idea at the beginning of their process book, i.e. at the very beginning of the inspiration phase. For example a student of a group working on the tourist “target” divided tourists into ten categories and scribbled: *“for each category insert a 24 hours guide about what to do in Venice (path to follow where to eat breakfast and so on...)”* (PB S29, 22/09/2015, note: page one, first entry in the process book).

Another student listed some questions in his process book about workers in Venice (his group’s “target”) and wrote the following sentence, in capital letters: *“HOW TO CHANGE THEIR MIND”* (PB S30, 6/10/15), reflecting the tendency to immediately jump to a solution for the target, implicitly assuming the observer’s superiority, by the way, rather than a deep immersion in the observed. Few students themselves critically recognized this strong decision attitude, as a student noted to herself at the beginning of the process (6th day): *“STOP SEARCHING A SOLUTION RIGHT NOW!”* (PB S40, October), written in red, capital letters. *“We were really focused on the objectives”* explained a student in one of the retrospective interviews *“then we noticed that we were going the wrong way”* (Int. retrospective S30, 27/05/2016).

Overall, the emergence of these struggles when engaging with the inspiration practice suggests that there is a strong dominance of the analytical and deductive approach of more traditional business school learning (looking for stability, processing a given set of alternatives, finding *the* solution), as opposed to the more creative and inductive approach that should inform design thinking inspiration.

Ideation... or the stereotype of the genius invention?

The ideation stage in design thinking consists of brainstorming on the evidence gathered in the inspiration stage, progressively specifying the challenge, and crafting a potential idea.

At the beginning of this stage the instructors asked each group to identify peculiar and meaningful insights from the inspiration phase and to run three brainstorming sessions to generate solution concepts, using the guiding question “*how might we?*” to respond to the emerging insights from the field.

To facilitate this process, the instructors took the class to visit a Venetian cultural institution, Querini Stampalia, a renowned library and historical museum. During the visit students had the possibility to observe and run interviews with the people they met and, back to the groups, to brainstorm about the main challenges emerging from the insights and about how they could be addressed. After this class exercise, they were invited to do the same in their groups for their project on Venice.

Struggling with destabilization:

Students were asked to reflect on the insights but as reported on a retrospective interview:

“it was a very new process. We needed more structure, more explanations, a clear direction. This is the way I am, but I need to know precisely, where I am, what I need to do and what is the objective and then I can work with a challenge” (Int, retrospective, S31 27/05/16).

Groups felt destabilized and unable to recollect the information from the previous steps in the ideation. We then gave to students a template to construct the how might we questions: who/need/what. Groups, suddenly, accelerated the following brainstorming sessions in a painful rush and without a proper certainty of the path to follow. One of the students reported: *“This process is continuously destabilizing me”* (Int, S31, October 2015)

Struggling with abstraction. In the ideation phase the students synthesized their observations and tried to enucleate users’ insights on their experience of Venice.

The students engaged with this task in an effortful way and many process books report this phase very clearly: notes from the interviews or (very rarely) fieldnotes from observation of tourists’ behaviour or commuters’ behaviour, for example, are transcribed in the process books. Next to them, several students reported a table with the main insights. However, in many of the cases these insights are a repetition of what was stated in the interviews. The following two examples are illustrative in this sense:

Example from group 1: *“when I’m inside the train I think about what I need to do the day after or I surf the Web”*- translated in: *“How can we improve workers’ stay in the trains?”* (1st assignment delivery- group1)

Example from group 7: *“Venice can be a very expensive city but it has a very long tradition about food and can offer a great gastronomic opportunity, avoiding touristic places- interv.tourist”*- translated in: *“How might we warn tourists and incoming foreign workers about Venice’s prices?”* (1st assignment delivery-group7)

In other cases the link between the insight and the interview/data was not clear at all. For example, one student whose group was working on the “target” of inhabitants reported a generic observation about the crowdedness of the streets of Venice because of tourists’ flows (BP S. S36). Then, in the ideation process, he asked himself *“how might we create private calli [Venetian pedestrian streets] for inhabitants?”* thus giving a precise answer to the observed crowded places, as perceived by the student, instead of trying to identify how this observation, cross-referred with what he listened during the interviews, would lead to some more interesting insights. The same student, during the brainstorming session with his group, promoted this possible solution moving onto identifying specific ways of realizing it (Obs./Instructor 02 diary, October.). Also, none of them went back to interviews and observations at the end of the project, while they tended to interpret the data soon after their collection.

In other words, despite the effort students put in this stage, the impression is left, once again, that the groups were not able to make sense and frame the data collected in the previous phase in more abstract terms. They were not able to see what they achieved in terms of new knowledge from the interviews or observations. Students seemed to lack abstract conceptualization and reflective observation skills that are preferred requirements in the ideation phase as well (Backman and Barry 2007).

Struggling with ‘non-deciding’. The decision attitude noted above was even stronger during the ideation stage, whose purpose would be to move away from the original perception of the problem towards a new focus gained from the data collected in the inspiration phase. As we saw, an important passage of the ideation phase was the brainstorming sessions. The students engaged in this process and the effort that some of the groups put is clear. For example, a student reported in two passages in her process book about their brainstorming meeting:

“we discuss about the interviews and we try to analyse them. We translated every interview and tried to highlight the insights and the useful quotes” [...] “We met again and we wrote down in many many post-its our main ideas and understanding from the interviews.” (PB S42, October)

However, this process was meant to inspire the students, instead, once again, most of the groups were stuck on a solution they heard during the interviews or on their initial ideas. Some groups fell in love with their initial idea and used the inspiration phase to support and justify their initial thoughts, even against evidences suggesting a set of possible different solutions, without recognizing the need to prove the feasibility of their idea.

The following quote is exemplary in this sense: *“just because it’s complex, doesn’t mean it’s impossible! IT’S NOT IMPOSSIBLE!”* (PB S43, October – written in capital letters, stressed, at the centre of the page).

On the other extreme, some students demonstrated the opposite attitude toward ideation:

“DON’T INVENT. If something doesn’t exist yet, it means is not working” (PB S41, October).

Here the attitude toward invention seemed to acquire a negative value; in this case reality was seen as an anchor against the possibility to create something different. In other words, students seemed to swing between the heroic view of the genius inventor (recall *“It’s not impossible”*) and the conservative view of the administrator (recall: *“don’t invent”*) – both far from the view of ideation that underlies design thinking innovation.

Overall, in the ideation phase too students struggled on multiple dimensions: they were perhaps better coping with the lack of predefined frameworks and solutions (less strong destabilization struggle), and efforts of collective ideation are there, but the tendency to look for solutions close to the preconceived problem (abstraction struggle) and the tendency to stick strongly to a deduced decision (decision struggle) are still there.

Action... or inaction?

Finally, in design thinking the implementation phase is the execution of the solution, with the recognition that implementation leads to new projects or the next iteration of the current one. This involves prototyping. Prototyping is a very active phase, where a team should stop (just) discussing, and start building. Prototypes are a potential “solution so far” that is given some form and materiality, so that the designers can engage with users in a different way, in order to continue the understanding of a taken direction. Reaching an agreement on a specific concrete implementation is a great way to bring clarity.

During *Action* we asked groups to rapidly develop and build their solution concepts and to be able to test their prototypes with potential users and pitch the idea to the class.

As a final delivery, we proposed to students a scenario-based prototyping approach to visualize and communicate the intended solution. We asked them to build a scenario that answered the question “how will your idea work?”. A scenario is a story that illustrates a product or service concept: how people would use it; the context; and the action or goals involved in the activity. The scenario is typically a hypothetical view of an overall concept that is used to facilitate discussion and common understanding around the idea.

To promote this idea of “making it real”, we made students experiment an “egg drop challenge”. Egg drop is a classic team building activity, where teams of 3-5 take given materials and build something to protect a raw egg. The eggs that survive a 3 meters drop successfully complete the challenge. In a very limited time – 15 minutes, this activity allows teams to build creative thinking and implement it straight away. This was meant to let them understand what prototyping is and inspire them for how their final delivery (prototype of their idea for Venice) could be given shape and communicated. Then we asked to prepare their final presentation, with one scenario and we encouraged them to follow the same logic of make it real in order to receive multiple feedbacks.

Struggling with destabilization: The egg activity was embraced with great fun and hilarity. However, they felt the egg activity as aside of the ideation process; this was proved by the fact that no one of the process book reports a word about this specific moment. Students made videos and laugh about the fun activity, but it seems that they did not truly understood the potential of this game. However, when it comes to their challenge for Venice, three groups tried to build a physical prototype of theirs ideas (a map – group 2 , cardboard app screens – group 5, a set of cubes – group 7) to better clarify and communicate the solution. The day of the presentation, initially, all groups were sitting in the class normally. Instructor 02 entered the room and said “*I expected to see something different here!*” (Instructor 01 Diary,

23/10/15) Only then the groups started taking out their prototypes and moved in the classroom space. In other words, they had been creative, but tended to fall back in the normal formats of presentation. For example, the majority of the groups intended to present their idea using a dry power point. As soon as we encouraged them to surprise us, drawings, posters and prototypes appeared. The struggle with destabilization of the traditional class formats was therefore weakened by the end of this process, as they were engaging more actively with creativity (e.g. in presentations), yet the tendency to go back to stability emerges too here (see the fact of sitting normally in the class and the fact of timidly hiding the prototypes at first, the day of the final presentation).

Struggling with abstraction. All groups delivered just one final solution. Scenarios were rough; the majority didn't craft the settings or the activity sequences or outline emotional levels for potential users. Each group delivered a scenario, however they didn't explore the potential of the tool. They seemed to trouble to use their imagination on something that does not exist yet and it could only be imagined. Furthermore, during the presentation no iterative process was mentioned. The final presentation was enacted to show off their ideas, instead of used to receive feedback and reactions from users. We encouraged groups to take notes, but no one of the individuals reported any on the process book.

Struggling with non-deciding. During their presentation, they presented each idea as a final concept, which needs to be sold. In order to explain the value of the idea, groups preferred to apply an analytical framework, analysing the problem in theory and not supporting their ideas through a process of visualization based on empirical experimentation. Therefore, once again, teams did not report any of the observations or quotes from the inspiration phase. Their analytical propensity (Boland and Collopy 2007) seemed to contain somehow their possibility to try something out physically.

The outcomes of the process

We reported evidence on how the process was lived in the eyes and in the words of the participants and the struggles that it entailed in each stage. But what did this all lead to? We will report here our description of what the groups reached (a brief description of the solutions that they came up with) and, especially, what was created and what remained after the process (according to the retrospective interviews and our own follow-up observations in the following courses of the degree).

| Group N° | Users | Concept title | Type of prototype |
|-----------------|--------------|---|------------------------------|
| Group 1 | workers | Lunch vaporetto: A 30-minute-Food-Experience for workers while enjoying Venice on a Boat. | |
| Group 2 | students | Whe nice: A digital Map built by students for students. | Prototype: map |
| Group 3 | students | Trust week: Try your life in Venice before choosing it | |
| Group 4 | inhabitants | Become venetian.com: a website to persuade people that living in Venice has many advantages and to get rid of all the typical stereotypes that usually make foreigners to not consider it as a possible solution. | |
| Group 5 | students | StudInVe: Create an app to facilitate all the aspects related to the students world in Venice. | Prototype: cardboard screens |
| Group 6 | tourists | Cluerist: an app in which tourists should resolve enigmas with the help of clues to be allowed to go further in our paths going to the events we want to promote. | |
| Group 7 | tourists | unwrap: choose your experience | Prototype: website |
| Group 8 | inhabitants | Boat sharing: Easier and faster way for Venetian inhabitants to move | |
| Group 9 | workers | #VenEasy: A place with a joyful, smart and modern atmosphere where having a break or to have a delicious fast meal. | |

Initially, authors noticed a strong “decision attitude” that tended to lead student to embrace the supposed “perfect” solution quickly and without criticisms. A propensity to undervalue the collective intelligence in favour of a more individualistic approach emerged. However, along the process students increased the time spent collaborating face to face in an intense and continuous interaction, using a set of practical tools to facilitate not only a one-way communication but a two-way conversation (Hooper Greenhill 1998; 2000; 2005).

At the end of the five weeks D&IM students presented a surprising variety in their deliveries. However, the majority of their feedback commented on the development process as far more complex, longer and intense than they expected. The D&IM students were in the overall process reporting a low level of confidence and high uncomfortable attitude in each phase of the innovation process. *“In particular at the beginning, the course caused me distress. It is another way of studying, there was much more interaction”* (Int. retrospective S31,27/05/16).

“We were facing doubts on what we should have to do, to deliver it is a topic that seemed not rigorous as we were use to” (Int. Rerospective S30 27/05/16)

Nonetheless:

“What design thinking gives you is another way of thinking and reasoning. It gives you the possibility to not take for granted the things around what you think you know”

“DT open your mind, it makes you reasoning...it also breaks your mind but then it helps you to rebuild it” Now whenever I am facing a problem, I am starting to think about what I know and what it is real about what I think to know” (Int. retrospective S31 27/05/16).

“It was fantastic to work in groups. We were mixed and randomized. This was a stimulus for the student’s integration. I worked with new people, which allows us to create new dynamics as colleagues and as friends too” (Int. Rerospective S30 27/05/16)

Moreover, during the following CPCP module, where they were asked to investigate a better business model for creative industries, the majority of them spontaneously used the design method learned in the Innovation and Design Management module with new autonomous confidence. As reported during one of the retrospective interviews:

“We went to conduct an interview during the CPCP module, and we knew how to deal with it. We let them speak and add information about the issue we were investigating. At the same time we also observed who was in the same space, who entered...” (Int. retrospective S31 27/05/16).

The teacher reported also a surprised dimension of creativity and playfulness to engage the class during the presentations. She also noticed a good improvement on the depth of the observations requested and the ability of diving in reality to analyse it. As she said *“ the outcomes were positive unexpected, groups were able to distance their thoughts from ready made cases provided by the literature and were able to substantiate their own analysis by meaningful observations and interesting interviews to support them”* (Int. CPCP instructor)

Aside considerations: the workplace and the role of materiality

Before concluding, we wish to pinpoint an aside consideration that might play an important role in the effectiveness of a design thinking process.

While running the laboratory we acknowledged that the space hosting the course was not adequate for such a collaborative activity. The environment – fixed desks, chairs and not disposable walls - devoted to host the courses has two main weaknesses. First of all, there is no distinction between undergraduate and post-graduate facilities, thus presuming that the teaching methods are almost the same. Secondly, physical spaces devoted to teaching activities or simply to host them in their working days, are designed to promote competitive and individual dynamics instead of collaborative ones, that is highly inconsistent with the requirements for knowledge base-activities (Becker 2007).

Students slowly reacted to the environment by seating on the desks instead on chairs in order to have the possibility to form circles for discussion. They also built a canvas of sheets to be able to discuss and trace with post-its their steps and digital presentations per each step, in order to overcome the absence of a physical space for memory.

From these observations, it appears that materiality (Carlile et al.2013) played two main roles during the laboratory activities. First, students used objects, like post-it, canvas and digital report-file to transform their acquired knowledge in order to visualize, communicate and synthesize their thoughts, what they heard and felt during the inspiration phase, to the instructors and to the group. Those objects became a form of *actionable* knowledge for the team to proceed on the next project step. Second, materiality allowed the groups to feel more in control of the slippery process they were trying to undertake. All the groups approached the innovation challenge as a decision making process and suddenly realized that they were in the need of a more stable environment to be able to go further.

Discussion and Conclusion

Management education should train to deal with the complexity of organized collective action and with a variety of organizing forms and contexts (Durand & Dameron 2011), especially, in today's fluid and post-industrial economy. Indeed, important streams of management research have developed in this sense for decades and in various disciplinary fields. For instance, in organization theory Simon's foundational contributions on heuristics, bounded rationality and

design theory as the very essence of decision making and problem solving (Simon, 1969) or Weick's works on sensemaking (Weick, 1995) have notably challenged the economic model of rational choice. Further, in strategy research the process view approach first (Pettigrew, 1985; 1987) and the strategy-as-practice turn then (Whittington, 1996; Johnson et al., 2003) have challenged the most influential model of strategy based on a narrow notion of analysis, planning and positioning, embracing instead issues of power, context and subjectivity. Similarly, in leadership theory the relational view of leadership as a process of social construction and social influence through which emergent coordination and change are produced (Dachler & Hosking, 1995; Uhl-Bien et al., 2007) has challenged the mainstream, hierarchical view of leadership as a property of individuals.

All in all, what these streams have in common is a shared general need to refound mainstream notions of decision making, organization, strategic management and innovation, that were all, implicitly or explicitly, rooted in a paradigm of rational action and rational choice, in order to "humanize" management research, and render it more consistent with the "messiness" and complexity of actual organizational phenomena and the variety and specificity of contexts. And yet, despite these advances in management thought, if we look at business schools' education we still find a dominance of rational-analytic models of action: linear models of decision making, implicit optimization paradigms, business case based approaches inducing students to find the one best solution (Gedenryd 1998, Huber 1980, Zimmerman 2001). Furthermore, large and mainly manufacturing corporations are the main settings in which mainstream management theories have been rooted. Whatever is the reason for this, some scholars have started noting a growing mismatch between the intents (to train educated individuals to deal with the complexity of leading organized collective action and to improve the practice of management for a variety of contemporary organizations and contexts) and the contents of the kind of mainstream management education that is provided. In other words, we train people who are not well prepared to deal with the complexities and specificities of contemporary modes of organizing and creating value (Durand & Dameron 2011, Glen et al. 2014).

This paper analysed an observation that took place in a school of management, where design was used to change the learning processes through which a group of students interpret complex and ill-defined contexts. Identifying the early stages through which design becomes part of a mindset, we then see design as both a process of doing things and as a way to interpret them and we reflect on the opportunity to re-imagine how to teach innovation theory in order to give design not the role of a new fad but that of a chance of real change.

The instructors, during the D&IM course challenged the way they lectured and embraced a new language and a new vocabulary that could, if trained practically, become of use for students to enlarge their mind-set when facing new challenges. We followed step by step the deployment of this process, combining instructors' direct observation with students' own notes and views as expressed in their process books and interviews. This analysis let emerge the existence of at least three intertwined tensions that may be considered typical of when a design thinking approach encounters a different terrain:

- a continuous tension between stability (the need for constraints, frameworks, guidelines) and instability (the openness of a design thinking process), as the students were struggling with destabilization in each stage of the process;
- a continuous tension between concreteness (the lived experience of 'users') and abstractedness (their underlying deep needs), that the students experimented as they struggled to abstract and go beyond the surface of things;
- a continuous tension between searching the solution (the decision attitude) and crafting the solution (the design attitude), that students experimented in each phase as they were struggling not to decide immediately, while instead launching definitive ideas from the beginning of the process.

The study revealed the stickiness of dominant business schools analytical and deductive frameworks and the struggles that it takes to embrace a different approach. As an aside finding, the study also revealed what an important role workplace and materiality can play in enabling or disabling the potential of this approach.

In the light of all this, the study concludes that design thinking lab practice activates an alternative framework that leads the participants to potentially more informed decisions, but it also has some costs. Introducing design thinking activities slowed down the process and made students less comfortable on what they were delivering during the learning process. However students, by reframing the problem to solve in particular during the CPCP course, learned slowly to be proactive problem solvers, who can work on complex problems with a more flexible and exploratory approach (Kelley & Kelley 2012). In order to do it they started to learn how to interact and embrace uncertainty and failure, which was the major counterweight to their analytic dominant approach during the learning process.

Management literature tends to embrace passively the design thinking method as positive inside of organization. On the contrary, this work highlights how hard is to make it effective when the subjects of the experiment are novice to the method and are already trained with emphasis just on analytical tools despite an attention to grow synthetic skills. By observing a

business learning environment, the paper confirmed that design thinking is not a set of methods that can be applied in isolation (Johansson-Sköldberg et al. 2013, Liedtka 2015) and it also emphasized the role of professional designers as facilitators and interpreters of the process (Lawson & Dorst, 2013). In passing, it also stressed the importance of space and materiality in coping with the struggles that design thinking approaches entail.

To conclude, this paper empirically contributes to highlight costs and benefits of the relationship between design thinking approaches and standard norms of rational actions, which are recognized insufficient as innovation puts actors in the face of unknown. By observing and analyzing the behaviors, the challenges and the cognitive logics of business students we were able to identify some characteristics and criteria that need to be considered, at first, in education if we want to raise graduates able to, lately, adapt to an increasingly complex and turbulent business environment.

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