WHO DESIGNS WHAT?
A DWELLING APPROACH TO THE TECHNOLOGICAL WORKPLACE AND ORGANIZATION DESIGN.

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Abstract (format of this heading: "Subtitle")

A "co-design" approach to the workplace is becoming a more and more common choice for companies, as a way for creating empowerment, fulfilment and engagement, which are the key factors that contribute to the nowadays office equation: wellbeing=productivity. Using recent case studies, the article takes the move from the Ingold's anthropological concept of "dwelling perspective" as a theoretical framework that allow us to rethink what co-design is and the relationship between technology, space and organization, underlying how a culture of technology in the workplace must be based on a culture of trust. Moving beyond a quantitative and biometrical approach, technology, as enabler of and a constraint on human actions, allows companies to create a trust-based effective structuration of the organization that uses an IoT-based workplace as a responsive, resilient and malleable environment constantly co-created by the relations of the actors on the stage.

Keywords: Dwelling perspective, co-design, technology, workplace.

1. Co-design in the technological workplace.

“Our goal was above all to change the way we are working and to project new ways of working” (Masi, 2018). This claim, that can be easily shared by most of the Human Resources (HR) managers today, was expressed by Roberto Battaglia, Intesa Sanpaolo HR Manager of the Corporate division & Investment Banking, presenting the “Copernico Smartplaces Award 2017” winning project “Hive”.
Born from what Battaglia has called “a promising problem insoluble with traditional solutions”, namely the creation of a new business unit of 120 employees coming from different branches and experiences in a binding architectonical context, Hive is a striking example of how a “co-design” approach can be an effective solution when it comes to actively educates people to new working values.

Instead of a more classical top-down “design approach”, in which the company builds a new office space and organizes some change management training session relying on the “employee adaptivity”, Intesa Sanpaolo has chosen a more dynamic bottom-up approach which has recall me what the anthropologist Tim Ingold has called “dwelling perspective”.
Even though Ingold’s theory is well-known and debated in anthropology for what concerns the relationship between culture and nature and ecological issues, it has not been applied so far to organizational studies. My attempt is therefore to try to transpose this theory to a new field, convinced that it will be a theoretical breakthrough for organizational design in an era where big data and artificial intelligence are changing “design into a collaborative undertaking” (Tan, 2018).
Hence, I will argue here that a dwelling perspective not only can deepen our understanding on how new technologies create complex practical and ethical relationships inside an organization, but, as well, that it allows us to go beyond the use of technology as just “monitoring techniques”, typical of what Marilyn Strathern (2000) has called “nowadays audit cultures”.
Contrary to what Byung-chul Han (2015) has sustained, namely that we no longer live into a Foucaultian disciplinary society, I will follow here what has been sustained by Chris Shore and Susan Wright (2000), which consider Foucault as a still valid theorical base to study the technological system of neo-liberal governamentality:

“Audit thus becomes a political technology of the self: a means through which individuals actively and freely regulate their own conduct and thereby contribute to the government’s model of social order […] The audited subject is recast as a depersonalized unit of economic resource whose productivity and performance must constantly be measured and enhanced” (p. 62).

It is, in fact, the conception of making the social transparent and measurable that turns technology into the main instrument of a new accountability “panopticon system”, capable of constant monitoring every component of the organization, namely substituting “trust with measurament” (p. 78). With if it is true what Power (1994) had already noted that “spread of audit actually creates the very distrust it is meant to address” (p. 13), so, as I will show, the development of technology as a “panopticon tool” constitutes a delicate issue for organizational management. My claim is, therefore, that the switching from a disciplinary and controlling use of technology to an empowering “dwelling perspective” is a key issue for nowadays organizations, especially for what concerns workplaces.

Starting from the Intesa Sanpaolo example I have exposed above and analyzing different case studies from the contemporary office design, I will try to build a theoretical anthropological and sociological background to sustain a new kind of co-design approach in designing technological smart organizations.
Data are collected from different scientific articles that were published in the last years as well as from firm’s publications and interviews I have run with managers and human resources of different companies that have dealt with organizational changing foster by technology. Thus, the article aims to build a strong theoretical background that will be a guide for further qualitative and quantitative investigation directly on the field.

2. Dwelling perspective and technology.

Starting from the phenomenological point of view that "we do not dwell because we have built, but we build and have built because we dwell" (Heiddeger, 1971), Ingold defines "dwelling perspective" in order to go beyond the dichotomy nature/culture, in the context of a long debated philosophical and anthropological theoretical discussion. Although, as I wanted to demonstrate in this article, this definition can be really useful when it comes to think the organizational culture in a new perspective, especially in the era of Internet of Things (IoT):

"Dwelling is not merely the occupation of structures already built: it does not stand to building as consumption to production. It rather signifies that immersion of beings in the currents of the lifeworld without which such activities as designing, building and occupation could not take place at all". (Ingold 2011, p. 10)

So, following Ingold, "the forms people build, whether in the imagination or on the ground", did not come from a manufactured action on an empty space, but "arise within the current of their involved activity, in the specific relational contexts of their practical engagement with their surroundings". (Ingold, 2002)
This quote recalls the Intesa Sanpaolo Human Resource (HR)'s strategy I told in the introduction. In order to work on some aspects of employees' behavior and attitude that the company considered strategically fundamental for the new business division (namely, see restriction as a creative opportunity, valuing the intellectual capital as a company's asset, fostering smart and activity-based ways of working based on flexibility, mobility and team working), Intesa Sanpaolo has started with a collaborative design project, based on three main steps: the employees' self-analysis of habits and needs to better perform their job, the definition of the physical platform of the workspace, and an open-ended third phase which we can call "living office" (Herman Miller, 2017), where the office is and will be constantly modified in order to better correspond to the everyday working needs, also thanks to the use of data collected through technological devices.
Eventually, creating empowerment and engagement, through giving to workers the responsibility of the space, and fulfilment (JLL, 2017), through the pride of having built something that will be used as a model for all the company, Hive also have fostered employees' motivation and productivity, as Roberto Battaglia claimed after an internal survey.
That is why Hive appears as an insightful example of how a contemporary approach to "co-design" can be an effective tool for organizational change management.
As Sanders and Stappers (2008) had already underlined defining co-design as a collective creativity process, co-design turns the "event" top-down conception of design, into a process-like way of dealing with workplace, where all the actors are actively involved and considered equally important.
Nevertheless, nowadays technology allows us to bring the concept of co-design a step forward: the innovation that the development of wearable and mobile technological devices as long as the Internet of Things brought in the contemporary ways of working open up new ways for an interactive relationship between people and space that makes the "design process" a never-ending living performance that follows situational and cultural specific rules, as well as the actors' effort to face unknown situations and issues.
Regarding this, it is possible to underline three main impacts of technology on a working organization.
Firstly, the use of IoT and sensors to collect data about the habits of every employee allows us to create a more precise and adaptable "self-learning workplace" (Masi, 2017a) that uses data to generate algorithms for creating more effective team works and arrange them in a working environment that is made not in the boss's or in the designer's head, but in the everyday performance of daily working life.
Secondly, technology becomes so pervasive, also at a linguistic level, that we can talk nowadays of "user experience" not only in programming technological device for the workplace, but also in designing the workplace as a physical and psychological experience.
As it has been pointed out by Wanda Orlikowski's "Structural model of technology" (1992), the implementation of technology is linked to a new way of thinking "the reciprocal interaction of human actors and structural features" in the organization. While creating a living kind of office, technology is also changing the actors' role of the "office and organizational design arena", raising the question "who designs what?", not only through a process of "democratization" and "prosumerization" of the design, but also creating the need for a new kind of digital and managerial knowledge capable of understanding and making productive the interpretative flexibility that is proper to actor-technology relationship. In other words, technology enhances the always present human faculty to re-design the world through the experience of it.
The third effect is the spatiotemporal change that technology has brought in the workplace as well as in the broad society. As Harmut Rose (2013) has convincingly demonstrated, in a modernity that is about the acceleration of time, the main problem is synchronization. As the need for speed of response in a constantly

accelerated worldwide business becomes source of pressure for companies and workers, technology becomes a way to restructure our perception and use of time. On a subjective perspective, it leads to a more permeable "work-life balance" (Guest, 2002): portable and wearable devices, mail boxes and cloud systems are just examples of how private and working life are becoming more intertwined, also physically speaking. This, as Rose pointed out, has a main consequence:

"Here it is enough to observe that the (ongoing) acceleration of even one social subsystem can raise problematic temporal side effects for the other systems, and the individuals acting within them, in virtue of the temporal aspects of the "structural coupling" of social systems and the need for synchronization that results from it." (2000, p. 18)

On the other hand, for organization the main issue becomes to synchronize not only the information richness and the adequate responses to it, but also to "re-temporalize" subjects and actions accordingly to everchanging needs.
In order to make this difficult task, considering the problem from an actor's "dwelling perspective" appears to be useful, as Ingold's following words shows:

"I argued that production, in the sense implied here, must 'be understood *intransitively,* not as a transitive relation of image to object. The transitive relation may be expressed by verbs like 'to make' and 'to build'. Thus, every particular act of making or building begins with an end in mind and ends with a material object that one can then begin to use. Life, however, does not begin or end anywhere, but is rather carried on *through* the successive acts that punctuate its flow. Producing their life, human beings effectively produce themselves. The intransitive verb 'to dwell' aptly conveys this conception of the production of life as *a task* that has continually to be worked at. […]
Fundamental to the dwelling perspective, however, is the thesis that the pro-duction of life involves the unfolding of a field of relations that *crosscuts* the boundary between human and non-human". (Ingold, 2005, p. 505-506)

3. Meaning, Power and Norms: how technologies work in the office space.

Before continuing, it is worth to talk about how technology works in an organizational context. Wanda Orlikowski (1992), using Gidden's three fundamental elements of social interaction, has shown three different aspects.
Primarily, technology acts as a structure of signification, meaning that "knowledge embedded in them (in the form of concepts and procedures) directs the manner in which problems are interpreted and work is conducted" (1992, p. 417). Secondly, it acts as a structure of domination, a form of power that allows controlling the work of subordinates. Thirdly, technological tools create a structure of legitimation, developing a set of norms that practically defines whether a behavior is professionally acceptable or not.
The use of an app to book different rooms in the context of a smart organization can be a good example of Gidden's theory. In fact, in order to foster mobility and an activity-based use of the space, key elements of the smart working trends, apps and other kinds of software were created to allow people to book their needed environment. Although, while creating a new collaborative and dynamic way to relate with the task an employee has to do, these apps also constantly trace employees' movements, producing, at the same time, a stigma on behaviors that are not aligned to the expected working attitude.
Designed as well to help managers and employees to better use the space in a smart working context, 'se:connects' Sedus[1] is a clear example. The app is based on a software that not only allows the employee to find and book a free workstation using their smartphone, but also, registering their position in the office, it permits workers to find their colleagues and to organize with them quick and informal meetings. Eventually, the app produces a set of data that are elaborated into a report, that is constantly available to the company in order to help the optimization of the usage of the space, accordingly to the effective usage of the spaces.

[1] Sedus, se:connects, URL: https://www.sedus.com/en/solutions/seconnects/seconnects/, (visited on 2019/05/10)

Using Orlikowski's structurational model of technology point of view, it is easy to see how software like 'se:connects' can be analyzed as a medium of social interaction that facilitate and, at the same time, constraint human action, giving a new interpretative scheme to work activity through a transformative capacity towards an appropriate conduct (collaborative and dynamic ways of working).
From this point of view, as I discussed before, it is impossible to hide the fact that technology in the workspace recalls Michael Foucault's discourses on the neoliberal governmentality as intended by recent studies on accountability (Strathern, 2000): technology allows to constantly turn actions into numbers and behaviors into statistics, namely it allows us to "govern by numbers" (Rose, 1991) free, enterprising and autonomous subject in an that acts in an "accountable regime".
If it is true what John Roberts says that the "peculiar power of accounting information lay in its capacity to realize control at a distance" (Roberts, 2017) technology offers, at least in potential, a "panopticon" device through which "freedom may well appear as the condition for the exercise of power".
This way of controlling-at-distance can be seen, for instance, in the focus that the new practices of management are putting on body and physical and psychological wellbeing (Masi, 2016). "Healthism", as defined by Rose (1999) as the desire created in the individuals of seeking out their own health and wellbeing in a particular way, has become a main Foucaultian pedagogical issue in transforming the workplace in something we can literally call "a new school of wellbeing". Literally, taking care of his own health becomes part of the morality of the good employee.
Through the last five years I have spent writing for a specialized office design magazine, I have written about several projects that have been realized with this intent.
Among them, the Technogym Wellness Campus in Cesena offers a good example of the effort of making workers embody the company's mission, namely spreading a wellness lifestyle, through physical activity, correct nutrition and a positive mindset: an indoor gym and an outdoor running track where design to foster employees' physical activities, as well motivational sentences were written on the walls to encourage the use of the stairs instead of the elevators, along with the creation of a company that offers low-fat and low-salt food, and the use of wellness balls instead of normal seats, in order to prevent workers' backache, through an ergonomic balance between abdominal and lumbar muscles.
It is clear, here, how space offers the possibility to be used as an instrument for creating a habitus in the subject. Eventually, interior design shares with the technology the characteristics of being structure of signification, domination and legitimation.
Another example can be the PwC Switzerland offices designed by Evolution Design in 2016. Here, the creation of a dedicated "relaxation room" puts the focus on the importance of resting and relaxation in order to keep the employee energetic, creative and concentrated.
"I know it sounds strange to take a nap at work, but in the future people who don't take time out to relax will be seen as irresponsible" (Masi, 2017b) were the words of Evolution Design's executive director, Stefan Camenzind, when the project was inaugurated.
Furthermore, what both cases show is how a classical approach to organization management, consisting in structuring the way people move through space and time, is based on a moral rhetoric of "desirable" behaviors, backed up, nowadays, by an increasing presence of scientific discourses.
Concerning this new scientifically approach to wellbeing, I remember that it struck me to find at the last Salone Ufficio 2017 (Salone del Mobile in Milan), a product like 'Zerobody', a water-heated mattress design by Starpool, a company specialized in saunas and wellness, to improve mental performances in the office through a "dry floating experience" that "takes the person to a meditative condition that activates and thickens important cerebral areas" (Masi, 2017c).
The interesting thing about this piece of design was the fact that was developed in collaboration with Neocogita, a company that applies neuroscience to the office world, as the company's claim states: "the brain wellness applied to your company".
Zerobody is just an example of how neurosciences are becoming the biomedical background of a scientific approach to an ideal healthy worker, ensuring the possibility of translating a qualitative dimension, such as the personal happiness or psychological wellbeing, into quantitative parameters that become the key for make the equation "wellbeing = productivity" working.
In becoming the very place of productivity, body enters the "accounting frame", namely the way in which accountability "comes to define the significance of not only what has happened – profit, loss and so on – but also what should happen" (Roberts, 2017, p. 226). Therefore, sensors and machines are also used to make body visible through quantifiable data.

Finally, if it is true that governing by numbers has become embedded within modern organizations, then technologies offer new tools to create a quantitative field of visibility.
Is therefore technology bound to be a new panopticon and neo-governamental system? Are big data, aritifical intelligence and internet of things instruments to build a quantitative background for a dystopian foolproof "engineering of (organizational) culture"? (Kunda, 2006)
The negative answer to this questions, I think, lies on a dwelling and co-design perspective.
The very point of "co-design", in fact, is moving from "transformative HR practices" that aim to align employees' mindset and behaviors with organizational objectives through a top-down approach that relies on the workers' adaptability and the "power" of legitimation and signification of the space Boudreau and Jesuthasan, 2011), towards a new kind of computational accountability based on trust and participation, that "move beyond the narratives of resource efficiency, maximising productivity and incentivating specific behaviors" (Magill and Klein and Chapple, 2018, p. 9).
Ingold's work on dwelling perspective, as well as Wanda Orlikowski's ones on the duality of technology, shows how a theoretical framework that highlights the impossibility of using technology to improved transparency at a level to totally control "the thousand practices through which the users try to reappropriate the space organized by the techniques of the social and cultural production" (Certeau, 1980, p. 13). Instead, the application of technology in a working environment must move towards the acceptance of the technology's dialectical process, putting the focus on:

"How to stimulate curiosity and "educate" users about technology through active participation - in designing the system to meet their needs but also in becoming more consciously aware of its implications and making informed decisions about how much they let it shape their lives - and how much they will exert their own initiative to shape it". (Magill and Klein and Chapple, 2018, p. 9)

As Huseyin Yildirim Amr M.T. Ali-Eldin (2018) has shown in their model for predicting user's intention to use wearable IoT devices at the workplace, people's adaptation behavior to technology is determined by the perceived usefulness in enhancing their performance and productivity and whether they trust the management, most of all for what concerns ethical issues, such as privacy, errors of collective, secondary use or improper access. On the same level, the study conducted by Cat Magill, Ewan Klein and Simon Chapel at the University of Edinburgh (2018) has shown how, once these conditions are satisfied, people themselves have started to propose the use of technology for monitoring other parameters that they believe affect their own working practices.
Eventually, as both these two studies show, culture of technology in the workplace must be based on a culture of trust.

In order to prove my point, I wanted to use here also a brief ethnographical example relating to an interview I made to an employee of an Italian bank, regarding the importance of trust linked to technology.
As for all the other employees, Luca, an almost-thirty-years-old newly hired bank teller, was required to open a bank account with the same bank he was working in. The bank has encouraged this requirement with all sort of benefits on low-interest mortgage, loans and financial policies. I was surprise, although, when Luca clearly told me that he, as well as almost all the other employees have opened another bank account with another bank:

"The HR division can potentially have access to your bank account, controlling all your expenses, also the private ones. That's the reason why, in order to avoid any inconvenience, I have, like the others, another bank account that I use for private stuff. But if I ever buy a house, I'd definitely use the bank account of my bank…"[2]

As we can read also in Luca's words, top-down impositions of technological instruments are linked with matters of trust that triggers actors' actions which are based on their ability of dwelling the world.

4. Towards a new concept of co-design.

[2] Fieldwork interview, 27.3.2019. The name and the place of the interview are changed due to privacy concerns of the interviewed.

The increasingly use of technology in the office can be also seen in another perspective: the co-design of the user's experience or, as it is also called, the "workplace experience". A dwelling perspective in the technological era of the workplace, this way, allows us to expand the concept of co-design: it is not just about involving people through focus-groups, interviews or observation of their everyday way of working in projecting a new service or workplace, but it is mostly about an always-ongoing process in which every individual can re-design his/her own experience of the space, the ones of the colleagues and the one of the working process accordingly to his/her needs.

As Anita Kamouri (2016), Iometrics's co-founder and vice-president, has stated in her speech at the IFMA's World Workplace 2016 in San Diego, a user-experience approach "leverage data to proactively understand user needs and to create an exceptional experience". Therefore, it is important, firstly, to reflect upon the kind of data we are collecting, shifting from "things" to "experience", in a more subjective way, moving, for example, from the measurement of the background noise level to how the individual is distracted and whether if he or she can still enjoy the environment and feel comfortable in it.
Accordingly to Anita Kamouri, the user-experience metrics for the workplace can be divided into three categories: usability (functional, reliable, ease of use, accessible), desirability (emotional response, aesthetics, satisfaction, the willing to use it) and utility (usefulness, valuable and whether it helps to accomplish a goal). Although, from the point of view we have assumed, this perspective can be seen as a step forward, it still risks reducing the complexity of the experience, not considering the strategies through which people constantly recreate their own space. Eventually, a new perspective can be used as a starting point: not (only) people's thoughts or opinions, but their constantly adapting effort in rethinking the space as the place they inhabit.
Two brief examples will show the kind of use of technology I am proposing here, both of them regarding the particular wellbeing issues we have discussed above: Carlo Ratti's thermal bubble[3]and Plantronics's Habitat Soundscaping[4].
The first one consists of a personalized heating, cooling and lighting system which follows each worker as he/she moves around the office. Designed by the Carlo Ratti Associates design studio for the Agnelli Foundation in Turin, the thermal bubble was thought both to balance users' needs and limiting energy waste, making the workplace sustainable also from an environmental point of view. The system is based on sensors which collect data from the environment, such as temperature, number of occupants and level of CO_2 and that process them through a BMS system automatically adjusting the level of the cooling system, of lighting and heating in each room. Every worker, although, can personalize this level, using a smartphone app that activates fan-coil units and recreates the chosen environmental conditions, as long as the person stays in the room [27].
The same principle is behind Plantronics's Habitat Soundscaping, a dynamic acoustic shield design to isolate people from the background noise, typical of the open-space. As good example of the key role that neurosciences are taking in the organizational and spatial design (the choice of the water sound is based on neuroscience's discovers about human biophilia), even Habitat Soundscaping is based on the possibility of a dynamic interaction between users, others and the surrounding environment, adjusting the volume of the speakers accordingly to the background noise level.

5 Conclusions.

As Ingold has shown in his book "Being Alive", the concept of dwelling puts the focus on three important aspects. The first is that dwelling means having to deal with the material world as long as the materiality of the space. Space, therefore, is not primarily "design-able", but "malleable", and its shape is constantly modified primarily by the actors' actions. Secondly, defining life as a constant unfolding process, the inhabited space, such our houses or offices, can be seen as a temporal series of transitions, occlusions, and vistas: a myriad of pathways from room to room and in and out of the door. The word "space", therefore, becomes too generic, and must be left apart in favor of the use of the term "place", namely a constant subjective experience delineated by movement, and "not by the outer limits to movement" (Ingold, 2011, p. 149). As Heiddeger said,

[3] Thermal Bubble, URL: https://carloratti.com/project/fondazione-agnelli/

[4] Habitat Soundscape, URL: https://habitat.poly.com/

the boundaries of the space are not "a border but a horizon, not that at which something stops but ... that from which something begins its presencing" (Heidegger, 1971, p. 154). Lastly, Ingold develops the concept of "storied knowledge" in contraposition to a vertical "classificatory knowledge". In a world of constant moving and becoming:

"we can understand the nature of things only by attending to their relations, or in other words, by telling their stories. For the things of this world are their stories, identified not by fixed attributes but by their paths of movement in an unfolding field of relations. Thus, in the storied world [...] the meaning of the 'relation' has to be understood quite literally, not as a connection between predetermined entities, but as the retracing of a path through the terrain of lived experience". (Ingold 2011, pp. 160-161)

The application of Ingold's anthropological "dwelling perspective" allows us to rethink the role of technology in the office environment: the materiality and the subjective experience of the space become central in the technological design which can be seen as a powerful tool to constantly tell the story of the myriad of paths that literally creates new organizational knowledge, to effectively adapt the constantly changing relationship between space (as a willing of objectivization and control for a productive purpose) and place (as a constant living process), in order to create a new way of "being present" and new horizons for the workplace's inhabitants, redesigning the role of the different subjects involved in the organizational arena.
In conclusion, technology, as "enabler of, and a constraint on, human action" [10], in nowadays organization can be the tool that companies can use in order to create a trust-based effective structuration of the organization that uses an IoT-based workplace as a responsive, resilient and malleable environment, constantly co-created by the relations of the actors on the stage, where creativity, as a way of finding different solutions in facing constraints and always changing conditions, is part of the everyday routine of dwelling.

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