Guest Editorial

Developing ergonomic practices: From companies to territories

Pascal Béguin[a,*] and Marianne Cerf[b]

[a]*Institute of Work and Labour Studies of Lyon, UMR 5600 EVS-LabEX IMU, Université Lumière Lyon 2, Lyon, France*
[b]*INRAE, AgroParisTech, UMR SAD-APT, 91120, Université Paris-Saclay, Palaiseau, France*

The six articles published in this special section of WORK stem from a symposium held during the International Ergonomics Association (IEA) 2021 conference, titled '*Developing ergonomic practices to address sustainability issues: From companies to territories*'[1]. All authors are therefore concerned with sustainability and sustainable development issues. However, we have chosen to focus this section on the links between work and '*territory*'. The symposium papers and the ensuing debates demonstrated the relevance of '*territory*' as a scale of analysis and action, given its links with human work. Nevertheless, the conceptualization of this scale, the ways in which it should be analysed, and the forms of action associated with it are far from being stabilized and taken into account in the discipline.

Let us begin with this idea of *the territory* as the scale of analysis and action. Ergonomics has overwhelmingly developed within companies. The analyses carried out in the discipline, just like the methods of action implemented, are to a very large extent anchored within productive organizations: their workstations, spaces, rhythms, technologies, and forms of organization. Several factors justify focusing on the scale of the company, which is more or less implicitly mobilized in the discipline. Salaried employment and the associated relationships of subordination, human resources functions, and the organization of work, all of which play a major role in structuring work activities, operate on the scale of a particular company. Technology also define the boundaries of the company. Hatchuel and colleagues refer to this as '*confinement*' [1]. A nuclear power plant or an oil refinery, for example, are extremely confined spaces, with a whole set of boundaries that can only be crossed under certain conditions, and which have an impact on work activity.

Limiting ergonomists' analysis and action to the boundaries of companies, however, seems like a questionable choice for at least three reasons.

- First, the porosity between companies and their environments varies greatly from one production sector to another, and confinement (to borrow the term) is never fully achieved. The porosity of a nuclear power plant, for instance, differs significantly from that of a farm[2]. The work of a crop or livestock farmer is highly dependent on both their 'natural' environment

---

*Address for correspondence: Pascal Béguin, Institute of Work and Labour Studies of Lyon, UMR 5600 EVS-LabEX IMU, Université Lumière Lyon 2, Lyon, France. E-mail: pascal.daniel.beguin@gmail.com.

[1]The symposium was organized by the ATWAD Technical Committee, which invited the HFSD Technical Committee to take part.

[2]With the possible exception of 'soilless' farming, which seeks to strictly control growing conditions (but which seems to be used for certain crops only, such as in horticulture).

(e.g. weather or climate) and their social environment. For example, agricultural production activities have to contend with decisions made by local authorities (municipal councils or multiple administrations). The administrative divisions of space that these authorities draw up (e.g. for urban planning, tourism, or protected areas) determine which areas are dedicated to agricultural production. This not only has an impact on the land itself, but it also shapes the configuration of neighbours with whom farmers have to contend. The type of production at stake is not the only relevant variable. The size of the business is also very important. Small businesses are far more dependent on their environment than large companies, firstly because they do not have the same resources to control and master the parameters of their work system, and secondly because their survival hinges on their ability to coordinate with other actors in their immediate vicinity [2]. In fact, there is always a degree of porosity between an enterprise and its environment. A nuclear power plant relies on access to sufficiently cold water to cool its reactors. And nuclear safety is in reality largely dependent on water management institutions and the regulatory frameworks that govern the use of water [3]. In other words, the company is not the only space where the conditions under which work is performed are prescribed, defined and negotiated. A more or less significant proportion of working conditions are defined outside the entity, prescribed by external actors. The articles published in this special section provide many illustrations of this reality, such as in the case of bus driving discussed by Cunha and Lacomblez, or the upkeep of municipal gardens examined by Heddad and Biquand.

- The second reason pertains to structural changes, and in particular to the growing importance of service activities in national economies. Service activities raise questions about the articulation between companies and their environments, insofar as the quality of a service delivered is inextricably linked to the activity of the person receiving that service and the conditions in which the activity is carried out [4]. The article by Boudra and colleagues, which sheds light on this service dimension for residents of a territory in the context of waste processing (in France and in Brazil), is particularly illustrative. The work activities of the operators at the sorting centres are not independent from the activities of the citizens, insofar as the latter are expected to already perform a first round of sorting in their homes. Moreover, the solutions provided to citizens by the municipalities to store and trans-

port their waste appear to be factors that influence the working conditions of the sorting centre operators. Sorting tasks are thus embedded in extremely long and complex chains of decision-making and interaction, and the conditions in which they are carried out depend on a wide range of actors, well beyond the sorting centre itself. The tertiarization of the economy, which has become an important economic variable across all production sectors, therefore tends to increase the porosity between companies and their environment (whether economic, political or social).

- The third reason relates to a societal issue: the increasingly visible consequences of human production on the whole biosphere. The environmental impact of current modes of production inevitably extends the unit of analysis beyond the boundaries of a given company. It sometimes even takes us far beyond: intensive livestock farming on a French farm is not independent from transgenic soy farming by Brazilian or Argentine agribusiness. Inevitably, this raises the question of the right scale of analysis and action. Alongside the scale of the planet, of globalization, of the World Trade Organization and of global governance (which impact companies through the carbon market or 'Corporate Social Responsibility', for instance), a large number of studies today are focusing on the infranational level, at the scale of a particular municipality or region, investigating its governance and political choices. Not only are companies having to internalize environmental issues, due to their impact on their modes of production. They are also having to seek forms of convergence with other actors or other entities outside of their own organization, which are impacting their own work practices. The article by Xavier and colleagues on organic production and consumption on the scale of city-regions, along with the article by Cerf and colleagues on the reterritorialization of food through the prism of the activities associated with local governance, offer excellent illustrations of this challenge.

As the various articles in this special section show, the three dimensions outlined above are not mutually exclusive. Furthermore, in all cases, the authors face the same challenge: developing methods of analysis and action with a scope that exceeds the boundaries of a company, in space and time and in organizational terms. The term *territory* is used here to refer to these changes of scale.

The concept of territory, however, is far from being mainstream in ergonomics. It initially stemmed from

geography and anthropology, and is now mobilized in many scientific fields (political science, economics and sociology). While this has given rise to very rich debates[3], questions relating to human work have nevertheless not been addressed. The aim of this special section is therefore to contribute to delimiting this concept within the field of ergonomics.

The concept of territory can be delimited based on four dimensions. First, this term can be used in an extremely broad sense, almost conflating it with that of space. In this sense, the notion of territory refers to any phenomenon which must necessarily be grasped through a spatial and even cartographic prism. Several articles in this special section refer to this spatial dimension, drawing on maps as a resource to represent the territory and act on it. Two other dimensions complete this initial understanding: the political and cultural dimensions. From a political (or legal) point of view, a territory is a delimited area within which an authority or jurisdiction is exercised. The notion of territory is therefore tied in with issues of power and control – often in relation to a State. But it can also refer to infranational administrative divisions, such as regions or municipalities, the governance of which differs profoundly from that of a company and its shareholders. From a cultural (and anthropological) point of view, the notion of territory refers to the ties (most often of appropriation) that a community maintains with a space, functionally and symbolically. From this perspective, a territory is characterized by shared practices and a 'collective memory', which underpins a shared identity around which groups develop a particular representation of themselves and their own identity. We should note that both of these dimensions are present in the articles in this special section. While the articles by Boudra and colleagues, Heddad and Biquand, and Cunha and Lacomblez investigate the links between local policies and work (waste sorting, pesticide spraying in green spaces, and bus driving), Robert and Béguin explore the future of work practices that they situate as anchored in the historical and cultural depth of a 'territory', understood as the relations weaved both between the actors involved and between them and the environment they transform in order to grow lime trees. In addition to these three dimensions (spatial, political and anthropological), there is also the idea of territory as a construct: no territory pre-exists as such; it is a social production. From this perspective, the use of the concept of territory is therefore guided by a constructivist epistemology, which paves the way for the analysis of territory-construction activities, understood either as "*a strategy to control people and things by controlling area*" [6], or as "*a reordering of space, the order of which is to be sought in the information systems available to man as part of a culture*" [7]. All articles in this special section examine these territory-construction activities, which are mobilized by a diverse range of actors for any given territory (and not just within companies).

This special section thus analyses processes constructed based not only on forms of cooperation between multiple actors with heterogeneous practices, but also on configurations of humans and non-humans. Heddad and Biquand place great emphasis on this dimension in their analysis of gardening in the city. They show that the work of gardeners consists in connecting the different expectations and needs of the various life forms: human beings (with a variety of lifestyles), as well as the plants, insects and animals. Robert and Béguin also examine these configurations of humans and non-humans. From their perspective, the links forged between humans and non-humans to grow and exploit lime tree are akin to a working and living "*milieu*". The question then becomes how to design such "milieux", the development of which is determined by the ties weaved between humans and non-humans that can span a vast territory.

Given the focus on these territory-construction activities, we can speak of the territory as a project. From this perspective, a territory is defined less by the stabilized administrative boundaries that define its ontology, than by the constructed configurations of humans and non-humans. The articles by Cerf and colleagues and Xavier and colleagues analyse and endeavour to contribute to the development of these "territories as projects". Cerf and colleagues study the work of the individuals in charge of facilitating the emergence of such "territories as projects" which, in their case, is based on the implementation of a public policy instrument. They analyse the activities of these workers through the prism of the intermediation processes required for the local and territorial implementation of such an instrument. Xavier and colleagues, for their part, seek to define "*territorial solutions*" to meet the challenges of the transition to

---

[3]We should also note that some of these debates take place between European geographers (for whom the concept of territory is very broad, to the point of sometimes being considered a buzzword) and English-speaking geographers who use the terms *space* and *place* instead, even if the concept of territory is not absent from their work (see for example Delaney [5]).

a sustainable economy at the scale of a city-region. Their article, which focuses on healthy and fair local food as well as waste management, shows the importance of the "*analysis of ergonomics work to highlight the activities of the stakeholders, in order to feed the governance devices and enable the development of relationships of trust, necessary for the construction of conventions and dynamic cooperation*" (Xavier and colleagues).

This focus on cooperation between stakeholders, however, does not mean issues relating to "*territorial governance*" are overlooked. They are investigated through the prism of work activities, as Boudra and colleagues and Cunha and Lacomblez clearly show. After identifying the dimensions of the territory studied that have an impact on waste sorting activities, Boudra and colleagues show that these dimensions of waste are poorly addressed in facility design. One of the challenges is then to create interfaces and frameworks that could help better integrate human activity and the territorial anchoring of waste, based on a form of organization across multiple levels, from local communities to the global recycling chains. As for Cunha and Lacomblez, they analyse two situations (bus driving and cork production), showing how workers, through their activity, contribute to constructing the territory. Yet the territory's governance does not take this dimension into account. According to the authors, the challenge is thus to develop relevant indicators of the work carried out by the actors on the ground, in order to better inform public decision making on territorial development.

Ultimately, this special section adopts different approaches to illustrate that a territory is the result of relatively invisible territory-construction work involving a whole range of actors, from elected representatives to citizens, in addition to company workers and executives. The various articles in this special section seek to analyse, equip and support this territory-construction work at the crossroads of multiple identities, scales and timeframes. Such an approach puts into perspective the cartographic and administrative dimensions of the concept of territory – though it does not abandon them –, to give greater importance to the dynamics between actors, their relations of power or cooperation, their representations and the resources they need at the scale of the spaces they construct. Its aim is to analyse and act on the material variables (technological bus transportation capacity, waste processing chains) and immaterial variables (representations, cooperation, forms of organization, institutions) of territory in order to build sustainable territorial arrangements that are suited to human work.

References

[1] Hatchuel A, Le Masson P, Weil B. The development of science-based products: Managing by design spaces. Creativity and Innovation Management. 2005;14/4:331-442. Https://doi.org/10.1111/j.1467-8691.2005.00354.x
[2] Jaouen A, Torres O. (Ed.), Les très petites entreprises, un management de proximité. Editions Lavoisier: Paris, 2008.
[3] Evens S. A complicated way of boiling water: Nuclear safety in water History. Water History. 2020;12:331-44. https://doi.org/10.1007/s12685-020-00258-0
[4] Tertre du C. Services immatériels et relationnels: Intensité du travail et santé. Activités. 2005;2-1:37-49. Https://doi.org/10.4000/activites.1567
[5] Delaney D. Territory: A short introduction. Oxford: Blackwell, 2005.
[6] Sack R. Human Territoriality. Its Theory and History. Cambridge: Cambridge University Press, 1986.
[7] Raffestin C. Pour une géographie du pouvoir. ENS Éditions. 2019;2019.