

MAN & MACHINE

Man-machine's changing relationship and
its effects in the past and present

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"It may well be that what we have hitherto understand as architecture, and what we are beginning to understand of technology are incompatible disciplines. The architect who proposes to run with technology knows now that he will be in fast company, and that, in order to keep up, he may have to emulate the Futurists and discard his whole cultural load, including the professional garments by which he is recognized as an architect."

In this closing paragraph from the book *Theory and Design in the First Machine Age* (1960), Peter Reyner Banham expresses a continuous struggle for architects to consider technology as a dominant discipline on the one hand, and social, cultural as design elements on the other hand. Technology (representing material culture, engineering and technical details) from the beginning has a mutual relationship with architecture, until the late nineteenth Century when technology referred merely to set of tools and device. The fast development and the shifting meaning of technology has made itself and its product – “the machines” – widely used without questioning.

Looking from a distance, human is tiny and insignificant when compared to the giant man-made structure (Fig. 1). During the economic crisis in the 1960s, coal mines were forced to close and left behind the massive industrial infrastructures in Liège. These infrastructures take up large spaces in the city while people have nothing to do with the leftovers. It strikes my attention by the fact that there is a special kind of rapid built architecture: *industrial building*, which are excessively designed and built for machines instead of human.

Within the industrial building, as illustrated in Charlie Chaplin's movie *Modern Times* (1936), people were slaves to technology after the industrial revolution. Participating into part of the industrial process, the workers had no idea on the overall production. People were adjusted to fit to machines rather than the other way round. Eventually, man had maneuvered himself through his own creation. Some questions were asked: what was the relationship between man and the machine? How do people work with their machines? Do they live with their tools? Are we becoming more human by inventing the machines, or dehumanized by the objects that we created? As such, this research wishes to explore the tangible entanglement between *man and machine* in the urban built environment.

Fig.1
Scale difference
between human,
machine and factory,
Searing, by author



EXAMPL ES	PHILOSOPHICAL					
	OBJECT					
	BIOLOGICAL					
	TECHNICAL					
	SOCIAL					
	SPATIAL					

Fig.2 (rotated) Summary of different ideas on "machine", by author

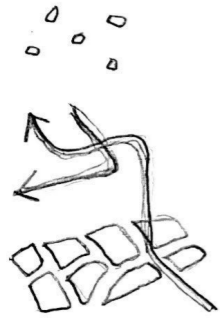
“Machines” as the product of fast-growing technology, refers to “*devices for producing useful work*” (Fischbeck, 1994). To grasp the essence of this term, interesting examples are found in relation to express machine with their own interpretations. From the nineteenth century, labor was a major due issue to the arise of industrialization that had changed the nature of work in the city. As a result, artists started to address the subject of labors and their tools and reflect on their *social or environmental impacts*. In The Work of Art in the Age of Mechanical Reproduction, Benjamin (1935) questioned the problem of modernity; modernity was about mass, mass democracy, mass media, mass culture, mass transport, and mass welfare. His essay starts by exploring what has been lost as a result of reproduction, primarily *an artistic objects authenticity*. As a similar approach and understanding the art of work as an object, photographers Bernd and Hilla Becher considered industrial structure such as water towers, gas tanks, coal bunkers and factories as purely objects, without the presence of human in their works.

The other idea is to consider machine as a *systematic technical design*, while architect Le Corbusier (1927) referred a house as a machine for live, physician Fritz Kahn explained explicitly on the drawing paper how human’s body parts biologically

function as machine parts. Frances Hollis, director of the Workhome project, researched on the spatial qualities beyond the people’s working environments with their tools to work. To conclude, artworks and papers examined the ideas of man-machine are summarized in a table (shelf) according to the different fields (fig. 2).

In this research, focus is put not only the machine object itself, but also the *man and machine relationship*. The notion of man-machine traverses across strategic and critical position as the consequences of different disciplines and traditions: in neurophysiology and psychology it is a fecund empirical hypothesis; in philosophy, it is first thoroughly discussed by La Mettrie (1748) in his publication L’homme machine (Man a Machine), taking a position that man’s body function as an organic machine, but our mind makes us different from animals; in technology, it describes a computing communication between human users and machines in a dynamic environment through several interfaces (Nardo, M., Forino, D., & Murino, T., 2020); in sociology and the humanities, it often conveys the malaise of dehumanization in modern culture (Vartanian, 1953), which unconsciously equivalent to the Greek intellect term “enslavement”, someone who proposed such an idea of mechanization have been the salve himself.

URBAN FABRIC OF THE SITE



Machine can be read from merely a tool for useful work, to the long changing relationship with human and the spatial, social, environmental and technical impacts behind. It could be an abstract concept about body-mind interaction or phenomenon on dehumanization, but also a socio-spatial idea that still having its visible, physical impacts on the city's urban fabric. Remnants of the making activities and productions have shaped both the economy and the neighborhood (concluded from group research).

Liège has a long history as manufacturing centers. Today, whilst new technologies offer chances for innovative making in the urban

centers, manufacturing faces challenges to thrive in the city. Deindustrialization has seen as a common phenomenon in post-industrial cities (Xian & Chen, 2015). Over the last 50-70 years, low-skilled jobs, technical and industrial innovation capacity has been pushed away from industrialized cities. When asked about the current industry conditions in Droixhe, "There is no industry in Droixhe," or "I heard some noises, but I don't know what is happening" are the responses. Production does not have any traces in the city and becomes a closed chapter in the Liège's long manufacturing history.

However, findings from our group research have proven that it might not the case in Bressoux. There are some Unidentifiable Possibly Industrial Complexes (U.P.I.C.) hidden behind the residential building blocks. These hidden structures, interweaved into the current urban fabric, are seen as new opportunities to bring industry and production back to the city. How will the urban fabric be shaped after bringing in machines for working and living? What type of built environment is needed for industries to thrive in the city?

MANUFACTURING ACTIVITIES IN DROIXHE



Perhaps it is the time to bring human scale back to industrial buildings, or on the other way round to bring back machines and production to the city with the people who are already there.



Fig. 3

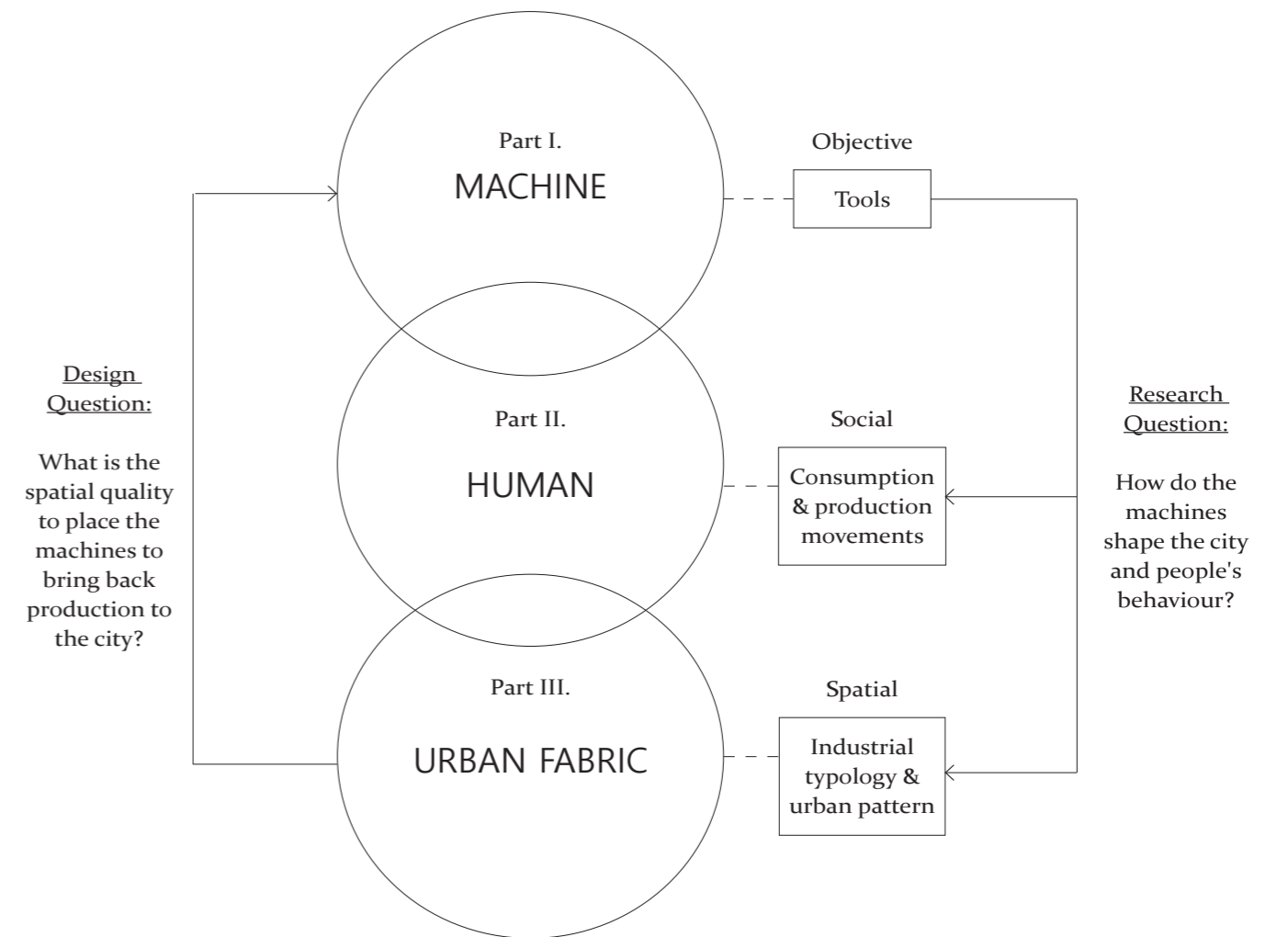
Manufacturing activities in Droixhe, photos taken by author



RESEARCH QUESTIONS & FRAMEWORK

Regarding to the notion of man-machine in varies angles and learning from different ideologies and examples, this research develops an own framework to investigate man-machine in three levels: the object itself, human's movements, and the urban fabric. By looking at machines as the starting point, and thus unfolding man and machines changing relationships, this research mainly questions ***how, and through what means, will the machines shape the form of urban fabric and people's living habits of today?***

- o. How people live with their machine (tools), in the past and present?
- I. What are the machines in Droixhe today?
- II. How do the machines appear and in the urban setting?
- III. By considering people's living habits as movements, how people live with their machines nowadays?



METHODOLOGY

Part o. **Timeline** on the man-machine's changing relationships

To provide background information on the notion of man-machine, this research starts with an overview on man-machine's changing relationships and the spatial impacts in the format of an exposed timeline (fig. 5). This part looks at how people, industry and cities are interconnected, and how they shaped one each other from the 18th century to date. The timeline begins with the year 1849 while a young and an old stonebreaker were using hammers breaking apart stones to make gravel, to contrast with the later nineteenth century when machines replaced hand tools for works.

Then, this research will be divided into three parts in responding to the three layers framework. It will first focus on the machine (the object itself), then the urban fabric by the result of using and placing the machine in the city, and finally human's interactions and movements with their tools.

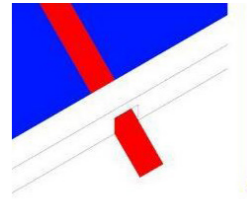
Part I. **Catalogue** with the current machine objects

As explained in the Man-Machine chapter, machines are devices for producing useful works. In the nineteenth century it was the giant iron milling or roll bending machine in the factories, and later becomes the computers. With the changes on the industry and the shifted focus on city's economy, what are the tools for people to work in the context of Droixhe (fig. 4)? Manufacturing in the city could be divided into urban services, creative, production, utility and distribution with storage (Hatuka & Ben, 2022). Through identifying tools for production, the catalogue (Fig. x) contributes to a useful archive of the current making industry on site.

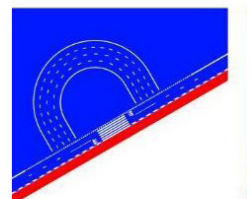
METHODOLOGY

Part II. **Morphology Studies** on the urban fabric in Droixhe

How is the urban fabric related to the machine making and production? By the end of the twentieth century, disciplines with those who were concerned with the cultural, social and economic effects on industrialization, have placed emphasis on the changing industry's effects on urban settings (Aitchison, 2016). Urban settings/urban fabric, meaning the systematical linkage between different urban elements such as plot, street, constructed space, and open space (Levy, A., 1999). This part will be delicate to a continue research from the Unidentifiable Possibly Industrial Complexes (U.P.I.C.) typology study from the P1 presentation. Apart from identifying the existence of current industries, a more in-depth analysis on the UPIC's positionings within the neighborhoods will be conducted.



From A to C passing through B



A and B

Reference:
The Next Economy,
Architecture
Workroom, 2016

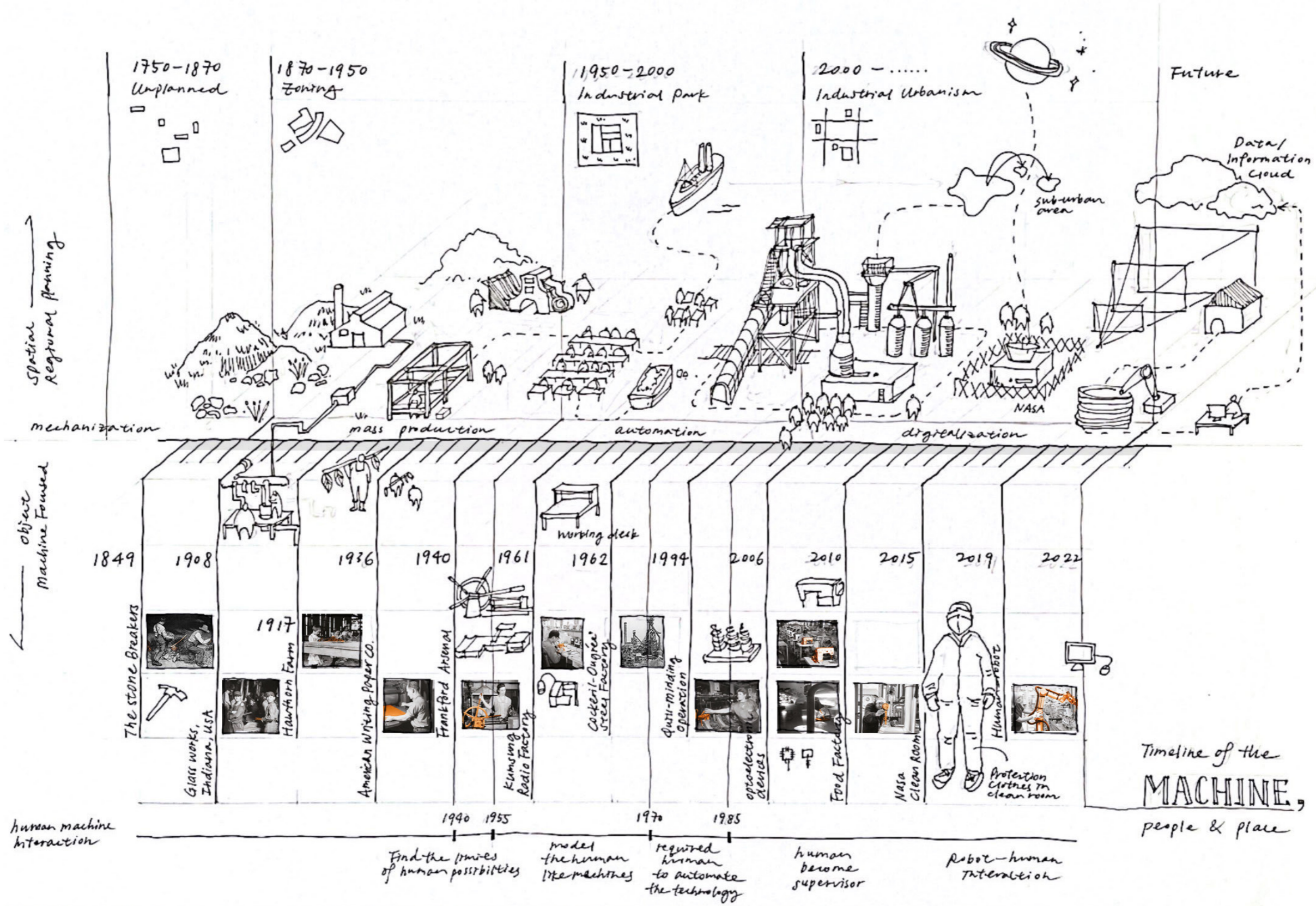
Part III. **Praxeology**, movements on the human scale

It is difficult to conceive a history of industrial architecture without taking into account the contributions and impact of industrial urban and regional planning. In many nineteenth and twentieth century projects for industry, architects and planners were required not only to house machines in factories, but their workers in nearby housing developments. In current ages, when industrial architecture for only housing the machines is no longer a popular trend, and even facing sad truth of being abandoned, it is unrealistic to consider production without the involvement of the human scale. This part will focus on people's everyday life in terms of movements of living, working, transitioning and consuming in Droixhe, to understand people's living habits and relationship to the machines and the places for production.



Reference:
Architrectal
Ethnography,
2018

Fig. 5
Draft version of the
timeline analysis,
by author



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