

Towards a sociable work environment

Analysis of the evolution of office building infrastructures in Belgium and the influence of work organizational strategies on the comfort of workers

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1 New York Times Frontpage - What if Working From Home Goes on ... Forever?

1. INTRODUCTION

1.1. Objects of study

In 2020, the Covid-19 pandemic forced an important part of the population to stay home and to experience the telework. This context of major crisis was an opportunity for utopists and idealists to speculate about the future of the general organization of our civilization. On June 9th 2020, the New York Times wrote “*What If Working From Home Goes On... Forever?*”. In such climate of uncertainty, especially at the beginning of the crisis, this question was relevant to ask. One year later, the generalist utopia gave the floor to a more nuanced reality. The most common tendency suggests a hybrid solution between the office and the home working with one major argument: Flexibility. What is sure now is that the concept of office building will deeply change in the next years. Or did it already? In 2016, Carlo Ratti was already asking the question “*If work is digital, why do we still go to the office?*”. It is because an office space is much more than a place where employees work individually behind the screen of a computer. Otherwise, telework would be commonly used since its apparition in the 1990’s. There is a need of social interactions, of knowledge sharing.

The intention of this paper will be to take a step back in the history of workspaces in order to analyze and highlight its evolution as well as the changing consideration of the employee and therefore the investments made to increase his comfort at the office. Focusing mainly on the situation in Belgium, the intention is to precisely understand the social, economic and political dynamics that influenced the evolution of work environment. An emphasis will be made on the New Ways of Working strategy (NWoW), a recent approach of the office space mainly developed in Belgium and the Netherlands. This aspect will be illustrated via the analysis of the AGC Headquarters. The final part of this thesis will put in perspective the acquired knowledge in order to discuss with Renaud Chevalier, CEO ASSAR Architects, the actual consideration of an office space and its future tendency, taking into account the consequences of the Covid-19 pandemic.

The research question structuring this paper is the following: How much did the evolution of managerial strategies and the consideration of worker’s comfort influenced the organizational structure of work environments in Belgium? What can be expect for the futur regarding the uncertainty brought by the Coronavirus crisis?

1.2. Academic context

The initiative of this thesis responds to a lack of studies showing a general overview of the evolution of work environment through time, especially in Belgium. The purpose of this paper is mainly to consider the impact of the different managerial strategies on the architecture and the spatial organization. In the academic literature, such approach does not exist in a such global way. However, several studies illustrate the spatial consequences of the scientific management, the development of the open space as well as the impact of the NWoW. The comparison of them permits to have a more global view over the evolution of the office building; also, by integrating the societal parameters (political, economic and social) that influenced it. In the end, this paper aims to recollect pieces of different studies, compare them and illustrate them via specific archives of the Belgian industrial past and tertian present.



2 Cubicles - 1980's office space

1.3. Methodology

This paper is articulated in three phases. The first one will retrace an historical analysis of the early development of management strategies through the industrial process. Later on, an emphasis will be made on the evolution of office building organizations considering the increasing importance of the comfort leading to the appearance of actual management strategies and their spatial consequences. Finally, a discussion with Renaud Chevalier is ment to understand the visible tendencies in the office building market as well as to speculate about the potential consequences of the Covid-19 crisis on future approaches in the design of work environment. In order to understand the dynamics influencing the reconsideration of office spaces today, a historical comparison of the different managerial strategies and their consequences on the worker's condition is intended. The structure of the historical thesis is based on an American study written by Sanford M. Jacoby "Employing Bureaucracy" retracing the evolution of bureaucracy during the last century. Considering this principal timeline, the situation in Belgium has been compared using the work of several academic authors and illustrated via several examples taken from the archives of the Fédération Wallonie-Bruxelles and Les Archives de la Banque Nationale de Belgique. Furthermore, the theoretical support for the actual organizational strategies is based on a conference given by Grégoire Jemine at ULiège in 2016 "Un chantier de modernisation des contextes de travail : le « new way of working » dans une compagnie d'assurances" and the study of Mario Roy and Madeleine Audet "la transformation vers de nouvelles formes d'organisation plus flexibles : un cadre de reference". Finally, an interview with Renaud Chevalier, CEO of ASSAR Architects, Belgian leading architecture office in the design of office spaces, will bring speculations about potential consequences of the Covid-19 crisis and the future tendency towards which the office building market will orient itself.



3 Innovative office space organization



2.1 Panoramic view over the La Houillère's coal extraction site, before the rationalization - 1904



2.2 Picture of the Sorting area before the rationalization - La Houillère's coal extraction site - 1904.

2. INDUSTRIAL RATIONALIZATION: A FRAGILE BALANCE BETWEEN RENTABILITY AND COMPENSATION

2.1. Process-based organizational strategy

2.1.1. Situation before the Great War

In Belgium, the XIXth century is characterized by an important industrial prosperity and growth, at least between the period 1848-1873 during which the economy is mainly focused on exportations. The production is concentrated around the sectors of steel, coal and textile production. In these industrial contexts, the traditionalist leadership of qualified workers is still widely operated, offering them trust, autonomy and a decent salary (Jacoby, 2004). The presence of foremen, responsible of the productivity, did not interfere in the manner workers were working. The great depression that followed the Franco-Prussian War created an increasing demand which drastically influenced the price of the final production. This context forced industrials to invest in their own industrialization with new machines and tools (Gas and electrical motors, turbines, etc) which was accompanied with an important reduction of the workers conditions (reduction of salaries, less qualification required, increase of working hours) favorized by a disorganized and weak syndical representation. The disqualification of workers strongly reinforced the power of foremen who were now in charge of the rentability and the production by meaning of threats of being fired (Jacoby, 2004).

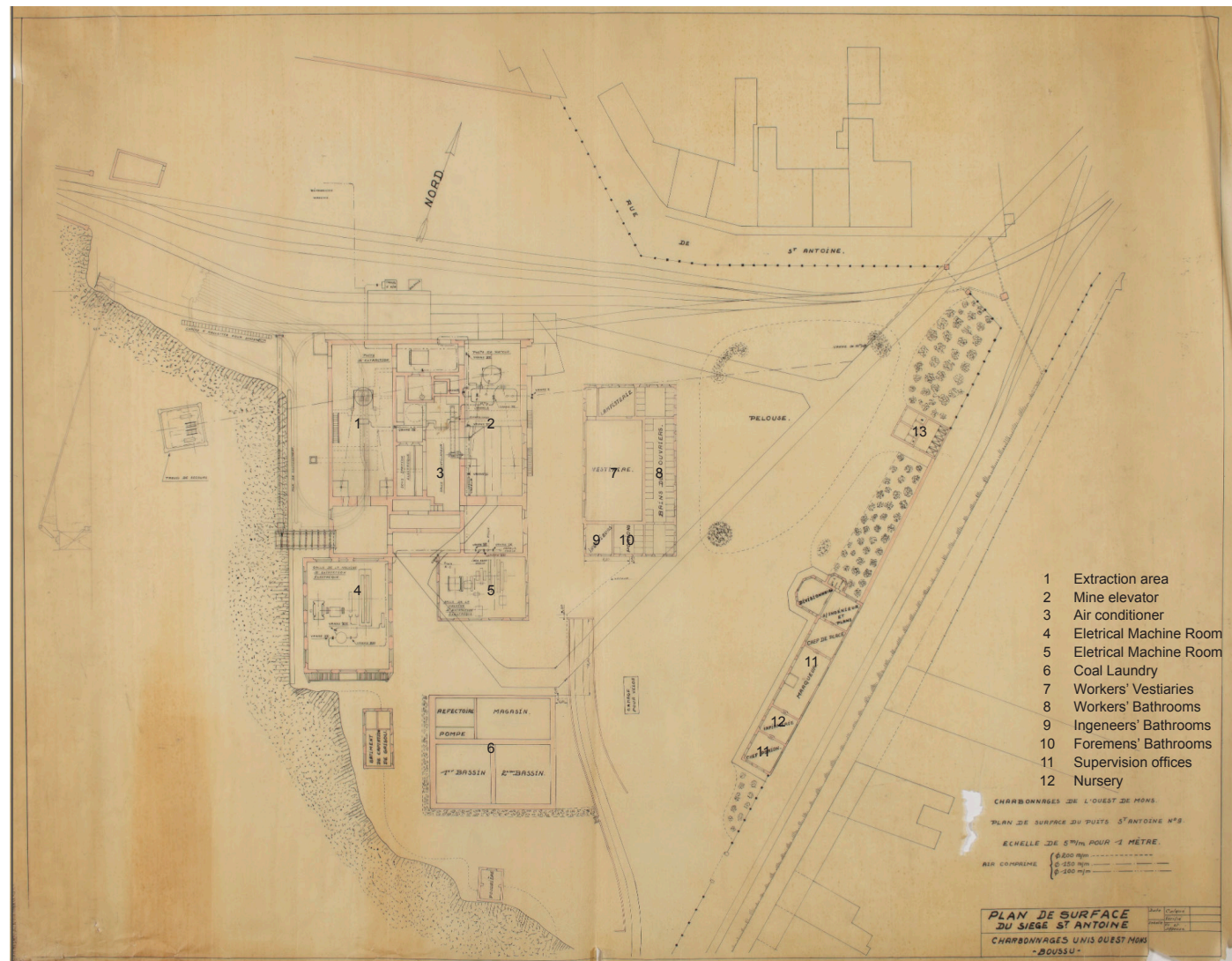
At the beginning of the XXth century, the economic situation in Belgium is slowly recuperating its competitive position in industrial sectors from the first revolution (coal extraction, steel and textile fabrication) made possible by an important investment in the modernization of the tools and machines, ensuring both a reduction of production costs and a better final product (Leboutte, Puissant, Scuto, 1998). At that time, the country is at a critical moment of its industrial history with the pressing necessity to combine industrial and financial interests. Since the last quarter of the XIXth century, a triple dynamic initiated this convergence:

- The fusion of smaller industries to better respond to the European/American industrial competition by creating economies of scale.
- The merge of industrial and banking interests through large financial groups and holdings.
- The replacement of a capitalist management by a technician one in companies business strategy.

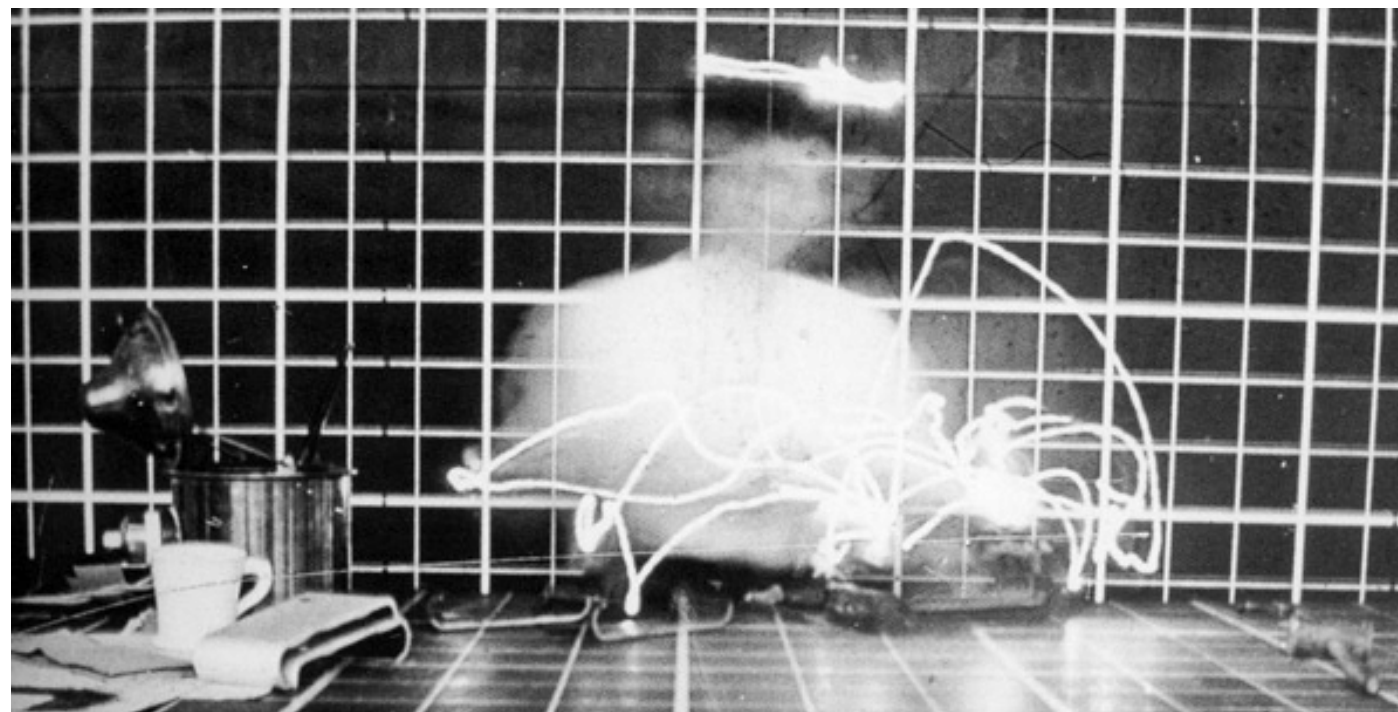
All these parameters are parts of the new economic dynamics that will characterize the trend taken by the Belgian economy after the end of the Great War.

2.1.2. The rationalization of work

At the signature of the Armistice in 1918, the country was partially destroyed due to an important campaign of sabotage initiated by the Germans during the conflict to impeach the logistical support of the allies. To restart the economy, an important gap was restored and deepened between the sectors of the first and second industrial revolutions. On one hand, a positive consequence of the bombing of industries during the war was actually the forced investment in new technologies, improving the rentability. Large financial groups such as "La Société Générale de Belgique" along with smaller ones invested in the replacement of industrial tools to relaunch the production of steel, coal and textile, employing unqualified workers and immigrants as well as a reinforced control processed by foremen.



2.3 Ground Floor Plan - West Mons' coal extraction site after the rationalisation. The supervision department is separated from the industry.



2.4 Frank Gilbreth's motion study using a chronocyclograph to identify unnecessary movements. 1937.

These uneducated supervisors created a climate of fear, threatening workers to enhance their submissiveness and rentability. On the other hand, the sectors of the second industrial revolution (chemical, electricity, etc) were asking for more qualified workers reducing the self-empowerment of foremen. However, countries such as France or the United States, which benefited from the war production necessities, more frequently initiated new forms of work organization using the principle of rationalization to improve the production process even though managerial principles inherited from the XIXth century were still used (Geerkens, Moutet, 2007):

- Paycheck based on rentability
- Foremen domination over workers

The rationalization is a movement responsible of the transformation of companies' organization and production management to increase their rentability. It brought several spatial consequences in the organization of companies. In coal extraction factories, the implementation of machines as well as the separation between production and supervision departments reorganized the industrial site leading to a more efficient space organization (fig. 2.3).

2.1.3. Taylorism

When it comes to discuss the beginning of the scientific organization of labor, the name "Taylor" can express contrasted reactions. On one side, he can be perceived as a saint who tried to increase the comfort of workers through the increasement of the productivity and the reduction of the fatigue. On the other side, he is at the origins of the ultra-specialization and dehumanization of work leading industrials to earn more money (Linhart, 2015).

In 1911, Frederick W. Taylor, an American Engineer, published "Principles of Scientific Management" in which he describes a rational procedure he thinks capable of increasing the productivity and of reconciling employer and worker. This strategy rationalizes the principle of work division introduced by Adam Smith in 1776 and synthesizes numerous other scientific approaches already tested in the industrial sector.

The reconfiguration of work is based on the division of a task in every step necessary to accomplish it. It clearly distinguishes two main departments into a company: the "brain work" and the "manual work". The former is in charge of the control and the analysis of the production by the use of timing methods to optimize the rentability. The latter is in charge of the manufacturing and to do so, workers have to abandon their previously acquired or traditional skills to be part of a group in which each of them has a specific mission that has to be done in a certain time in a certain manner.

In his quest to promote "the one best way" to complete a mission, Taylor is asking workers to renounce to their personal competences by letting engineers prepare and explain their tasks. In such a way, he suggests that workers will increase their productivity which will positively affect their salary and at the same time, he promises a diminution of the fatigue induced by the energy-saving rational procedure. With this win-win situation, Taylor expects improving the image of the employer and the mutual respect as well as restoring the feeling that everyone is working for the same purpose.

Taylor insists also on the important aspect of the individualization of the work expressing that a person works according to his ambition and self-esteem whereas a group pushes the workers to reduce the yield according to the slowest person among them (Linhart, 2015).

However, these improvements hide a darkest goal: inverting the power balance between workers and employer in a context of social revendications (Linhart, 2015):

- By dispossessing workers from their unique leverage, - their knowledge and experience- Taylor transfers the power to the engineers who will precisely guide the workers in their monotone and dehumanizing tasks independently of their personal or political revendications. The worker became replaceable, disposable.
- The individualization of the worker is also intended to bring a certain notion of rivalry between the work force, limiting the appearance of revendication groups.

Frank and Lilian Gilbreth, an American couple of engineers, improved the procedure of Taylor in a period during which the fascination for the process replaced a fascination for the production itself (Giedion, 1948). The new procedure investigated by the Gilbreth's was mainly concentrated on the elimination of unnecessary movements when doing a task. Using photographs and a light attached to the hand of a worker, the couple used the motion study of workers movements to reduce the time taken to complete each task (fig. 2.4).



2.5 Production line of the Citroën's factory - Forest, Belgium.

2.1.4. Fordism

The work of Taylor inspired enormously Henry Ford, important American car manufacturer who, in 1913, reorganized the production line of his company. The step further initiated by Ford was actually to drastically reduce the number of movements such as supported by the scientific rationalization, by bringing the product to the worker. He founded the principle of the **assembly line** (fig. 2.5). Though it permitted to incredibly raise the productivity and yield of the factory, hiring unqualified workers, the process impacted the well-being of the workers to who the pace and the timing to accomplish a task were determined by the employer and the speed of the chain. The degradation of working conditions led to the appearance of a disease "Fordite", called "Stress" today. Furthermore, the workers turn-over was so important, estimated at 1300-1400 workers per day in 1913, that Ford increased the minimum salary to five dollar (the double of what competitors were offering) to invite workers to accept the miserable dehumanizing conditions of their job (Linhart, 2015).

Similarly to Taylor, the hidden ambition was to get a better control over the working force by reducing their knowledge-based leverage as well as enhancing the individualism for which Ford increased the salary and prohibited corporations and unions. A new aspect he promoted was the creation of a psychological department created to improve the private management of the workers household thanks to dietetical, sparing and medical advices, leading to an improvement of their working efficiency (Linhart, 2015).

Finally, his socialist ideas and ambitions to forge the ideal worker led him to use a certain form of propaganda via an industrial newspaper exacerbating the importance of communication in management strategies (Linhart, 2015).

The intervention into the private life of workers, as well as information control sound particularly familiar nowadays as Danièle Linhart suggests. She underlines the similarities identified in the actual managerial literature in which, though an important vision is dedicated to the comfort of employees, the principal goal remains the rentability improvement by all means.

In Belgium, the application of mass production principles after the Great War is slightly different. Occupied by the Germans, the country could not take advantage of the war production to experiment Taylorian principles. Instead, large financial groups intensively reinvested in traditional industries, though using new available technologies. To maintain the peace between employer and workers, a large campaign of social investment was initiated with the support of the State offering different services through unions and cooperatives. These investments reinforced the unionization of workers from competitive sectors (coal, steel, textile) in which the rate oscillates between 45% and 73,8% during the period 1920-1937 (Geerkens, Moutet, 2007). Even though innovative industrial sectors and large mechanical manufacturers experienced scientific management since the beginning of the 1920's, it is only from the 1930's, during a recessionary period, that it was widely used and paradoxically reinforced to calm down the syndical revendications of 1932 and 1936.

2.1.5. Unions

The development of syndical unions exploded at the beginning of the 1920's when the cooperatives expended the offer of unemployment allowance fund, offering a security for workers against the risks of being fired (Leboutte, Puissant, Scuto, 1998). However, this increasement did not impeach the application of scientific rationalization, exactly because their power, associated with a positive conjuncture of the economic recovery, led them think they could negotiate something in return. But the great union strikes initiated in response of the economic crisis of 1932 accompanied with a loss of wages, paradoxically reinforced the necessity of rationalizing the management. This situation led to a preservation of salaries but also to the implementation of work timing and the increase of working hours (Geerkens, Moutet, 2007).

In 1936, a giant movement of protest exploded, taking advantage of a positive economic situation to revendicate a paid compensation corresponding to the yield increasement induced by the timing. Beyond accepting the terms of the claimants, the companies started to reconsider the role of foremen in their organizational strategy whose supervising role decreased with the implementation of scientific management and the development of job protections. Their mission progressively evolved towards the personnel management in order to prevent further conflicts with workers.



2.6 Picture of the Grand Hornu's workers district composed of 422 modern houses and several collective facilities.



2.7 Implantation plan of the Grand Hornu's workers district. The circular building is the heart of the community.

Although there were already material or social advantages offered to workers to keep them still (principally in the extractive sector), this social protest initiated a new approach to manage employees using an intermediary department replacing threats by the dialogue in a generally more human management in industries (Geerkens, Moutet, 2007). A department that will later evolve to become Human Resources.

2.2. Human-based organizational strategy

2.2.1. Human Relations Movement

2.2.1.1. Paternalism

The paternalism describes the socially oriented role of a company leader who acts as a protective father with his employees. It also describes an important attempt to interfere in all aspects of the worker life, professional and private ones. Though Henry Ford wrote and developed the cult of the perfect workers using newspapers and personal advises, he was not the initiator of such interventionist approach. The creation of workers neighborhoods and cities had already been worked out during the first half of the XIXth century.

Nevertheless, it exists different forms of interventions. Françoise de Bry (2003, p.1078-1079) identifies three forms of paternalism:

- Material Paternalism: Investment in institutions supporting workers in both their private and professional lives (workers city, houses, cooperatives, etc)
- Moral Paternalism: Investment in activities considered healthy for the workers (instead of drinking at the pub)
- Political paternalism: involved in community councils, notion of responsibility (rare in Belgium).

Both in France and in Belgium, Material and Moral paternalisms were more common, especially in the extractive sector (coal). It had the purpose to improve the psychological and physical conditions of workers in a perspective of rentability improvement. Their usual activities were considered degrading and dangerous for their own health. Employers were worried about the increasing consumption of alcohol in laborer environment.

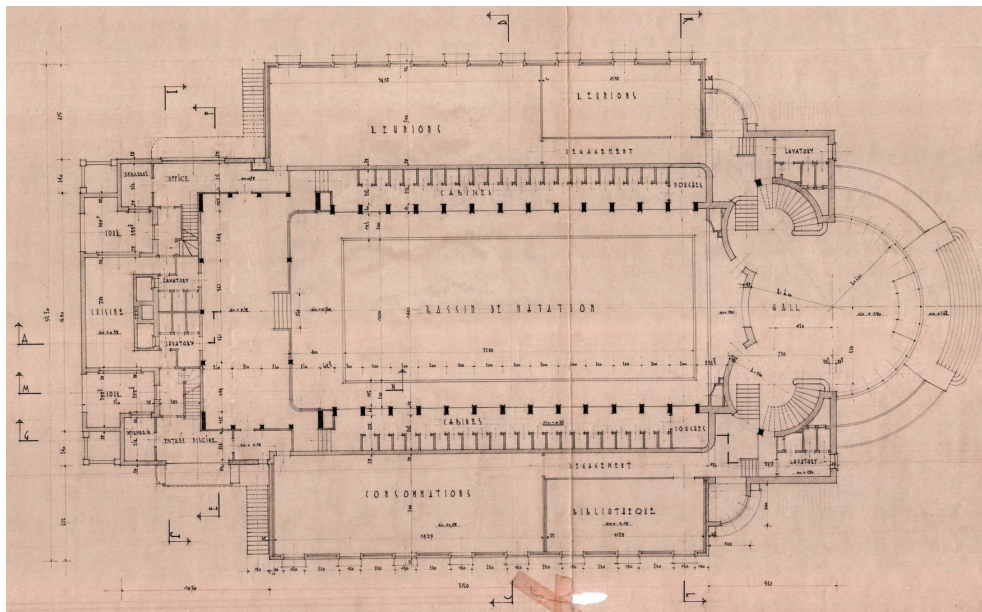
2.2.1.1.1. Material Paternalism

The main contribution offered by companies to improve the household of workers was the building of modern houses with usually more equipment and comfort than what they could afford. The first example of such investment, and also one of the biggest is the "Grand Hornu" site (fig. 2.7) in the Western part of Belgium where between 1822 and 1832, Henri de George initiated a large real estate campaign to build 422 modern houses, a school, a danse hall, a hospital, a library and shops (fig. 2.6) For that period, such houses were particularly comfortable, having a spacious garden and a capacity of 5-6 people.

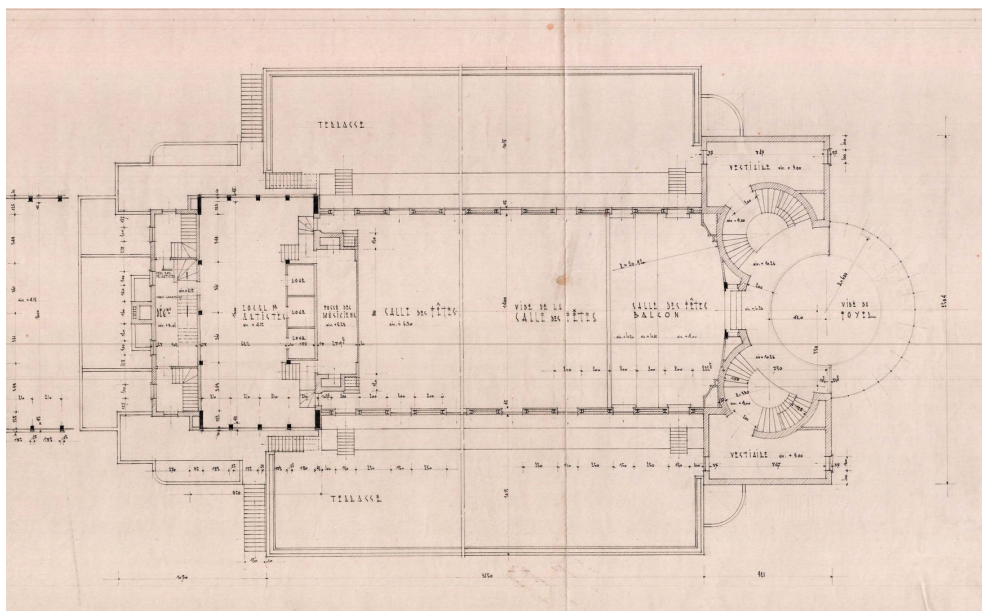
The material paternalism can also be perceived in the construction of hygiene facilities directly integrated to the company campus: showers, vestiaries. An interesting remark to formulate about this specific element is the important contrasts between the difference of investments made for the hygiene based on classes of employees (fig. 2.3) and ethnical origins.



2.8 Exterior picture of the Amicale de Couillet, a community center for employees of Solvay - 1937.



2.9 Ground floor plan of the Amicale de Couillet. The swimming pool is surrounded by meeting rooms, a library and a cafeteria.



2.10 First floor plan of the Amicale de Couillet. An collective hall with a stage can be rent for private or collective events.

2.2.1.2. Moral Paternalism

Another form of patronal intervention was to intervene in the activities of workers like Ford did using his newspaper and intending to create a new generation of laborers. More often, especially in Belgium and France, this intervention took the shape of cooperative buildings, community centers or the construction of churches to reinforce the cult. A great example of moral paternalism can be perceived in the efforts putted in the conception of local association buildings for Solvay's workers and employees: Les amicales de Solvay. One particularly impressive remaining example is the *Amicale of Couillet*, near Charleroi (fig. 2.8).

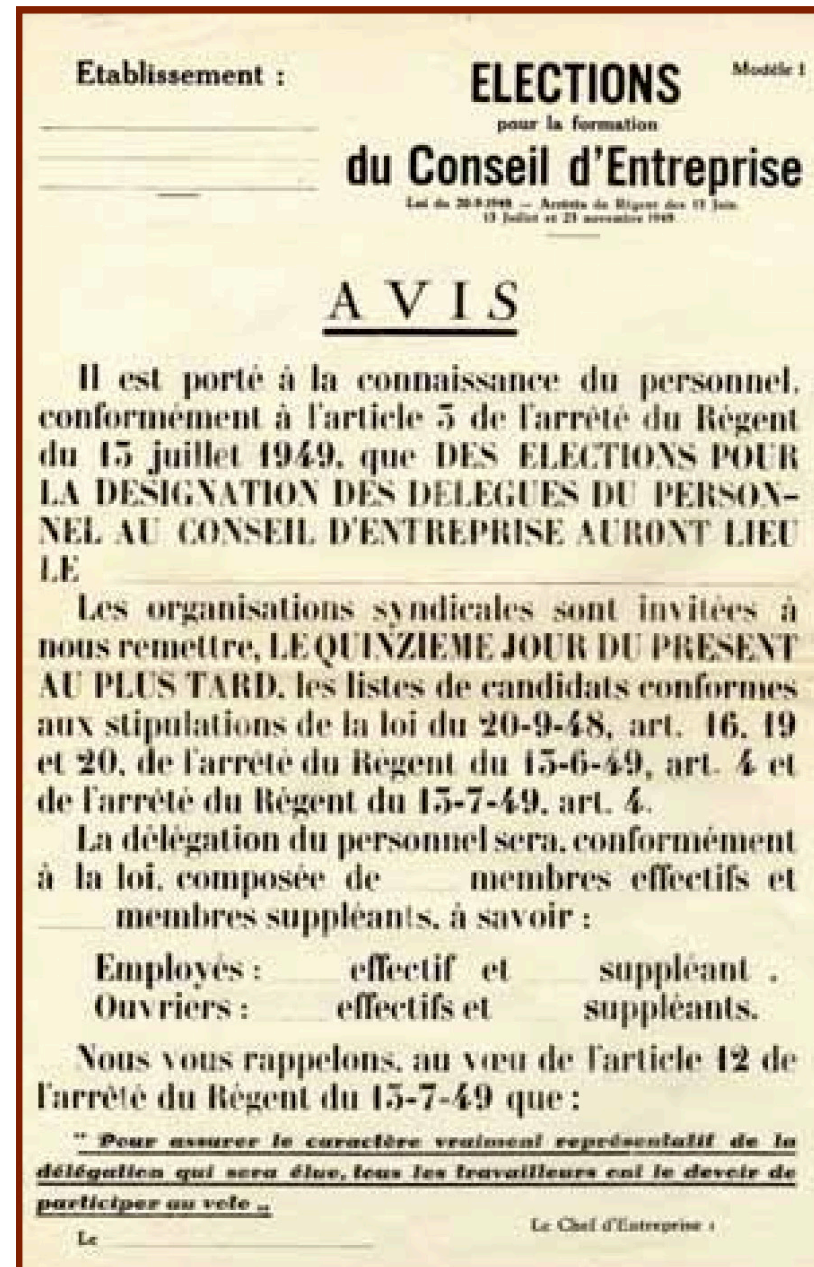
The building was erected in 1937, following the social revendications of 1932 and 1936. The complex was composed of a swimming pool, a library, a dance hall and several rooms for association meetings (fig. 2.10 & 2.11). The idea underlining this initiative was to regroup workers and employees around productive and healthy activities. It was also an answer to social revendications, satisfying the material and moral aspirations of laborers. The investment in infrastructures was followed by the creation of sport associations as well as other collective initiatives. Though it might seem as an attempt to increase the social control of the labor class, it was usually perceived by those people as a real improvement of their conditions, having access to privileges they could not afford under other circumstances.

2.2.1.2. Participative Management

Facing the limits of the Taylorian and Fordist rationalization models, which were expressed by important social movements during the 1930's, the reconsideration of the managerial structure was initiated right after the strikes of 1936 to make workers back to work. In a context previously dominated by engineers on unqualified workers, the situation changed with the increasing power of unions. A paradoxical situation emerged with on one side the quest for the individualization of workers through scientific management and on the other side the explosion of the syndicated effectiveness supported by both companies and the State to attract laborers with collective advantages.

At the turn of WWII, industries had no choice than starting to listen to workers revendications. The general idea was to create a sustainable peace with their employers. The role of foremen evolved to become an important pivot between white and blue collars to prevent conflicts. In Belgium, more than elsewhere, the State decided a series of new measures: Week of 40 hours, salaries increasement, recognition of unions in the company and paid holidays (6 days per year). Then, "Joint Committee" emerged to let unions be part of negotiations though this innovation turned into law in 1948 with the establishment of the "Work Council", a committee involving elected Unions Representatives and the same number of Managerial Members (fig. 2.11). On paper, it had a decisional power on the elaboration of annual vacation periods, the gestion of collective social funds, the modification of the Organization Regalement, the hiring and firing procedures and the application of industrial and social legislations. It had also a consultative power on work organization and comfort as well as the rentability of the company. This law calmed down the frictions by increasing the collaboration between workers and employers, though their expectations of it where different. Unions saw in this committee the chance to enter in the restricted area of the company leadership and develop the ground of a transparent socialist management meanwhile employers were expecting an efficient discussion free of any political revendication (Sloover, 1976).

The end of the war marks also the beginning of the "Glorious Thirty" (1945-1973) during which the production of industrial goods exploded due to the important demand for the restart of the economy. Relatively spared during WWII, industries rapidly recovered their productivity of the 30's (Leboutte, Puissant, Scuto, 1998). The induced pressure on rentability and the low working force available increased fatigue and stress among workers even if it had a positive impact on their revenues made possible via continuous negotiations during joint committees. Actually, the higher incomes allowed them to start looking for material possession, hobbies and comfort. In this logic, the housing takes an important part in the evolution of the living conditions of workers. It is also considered as a factor of social peace which will be favorized by the State, now considered as the Providence State, through a series of legislations facilitating its access as well as an important investment made in infrastructures. This last aspect partially explains the important peri-urbanization of Brussels, as well as the urban exodus initiated at the end of the War (Dubois, 2005). These investments will have important consequences on future employees' expectations as well as the direction taken by companies to improve their comfort.



2.11 Sample of the poster announcing the first representative elections to constitute the Joint Committee - 1949.

However, the important role played by housing was already integrated in social politics during the XIXth century. For instance, in 1870, the State promoted the use of its important railway network via a cheap subscription for workers in order to avoid the creation of Slums in congested city centers by reinforcing the densification of the countryside, cheaper (Leboutte, Puissant, Scuto, 1998). The access to a decent household was also used by industries to attract workers since the early 1820's.

In the early 1970's, tensions are important between workers and syndical delegations. There is no more dialog between them. After the events of May 68, social revendications are exacerbated due to the continuous higher demand for production and rentability and the material comfort acquired by employees. Now they have a better financial situation, they start to expect more comfort in their job itself. This period marks the transition towards an increasing involvement of representative delegations in the decision-making leadership. In 1972, Baron Beckaert, during a European congress for the metallurgic sector gave an introductory speech:

« On ne dirige plus comme il y vingt ans. Il s'agit moins d'obtenir l'exécution des ordres reçus que l'adhésion à un programme proposé et si possible discuté en commun. Ce n'est pas toujours facile à réaliser : l'entreprise ne peut pas devenir une foire, ni un marché, ni un marchandage. Mais, bien utilisée, cette nouvelle approche, où la direction autoritaire le cède à une forme de management participatif, est fructueuse. La confrontation des points de vue me paraît en effet de nature à améliorer le climat, et la productivité n'aura pas à en souffrir. »

He explains the necessity to transit from an authoritarian control to a form of participative management. It means abandoning the consideration of the Social Peace as a period without strikes, to a more dynamic model in which workers participate to the elaboration of objectives and start belonging to the company development itself (Sloover, 1978).

2.2.2. Quality of Working Life (QWL)

The Quality of Working Life is the formalization of several humanist principles already introduced via the Human Relations Movement that look for a higher work satisfaction. To do so, the structure and the organization of the work itself is modified, especially in industrial environments employing ordinary workers (de Montmollin, 1982). Such principles were already used in the tertian sector (bank, insurance, consulting) employing more educated workers.

In Belgium, several principles of the QWL were already implemented before the 1970's:

- Rationalization of working time

The children work is prohibited since 1914 meanwhile the limit to 8 hours per day as well as paid vacations after WWII.

- A decent salary for the job done

The important power of unions guaranteed the decency of workers' salaries. The beginning of syndical representation in companies' committee as well as the important economic growth during the Glorious Thirty confirmed this orientation towards a fair compensation, even though the necessity for rentability was more and more important.

At the turn of the 1970's, six new principles were defined to enhance the increasing demand for a better quality of life at work which were described by Sanford M. Jacoby (Jacoby, 2004):

- The reconsideration of workers skills and involvement in the company

This principle implied the consultation of representatives for the elaboration of objectives as well as plannings. There was also the idea of informing workers about the growth of the company and increase their autonomy at work, reducing the constant supervision.

- Promotions and formations

Companies invested in the formation of their workers, making them expect a future evolution of their job. This contributes also to their comfort by insuring their values for the company and a certain security for their job.

- Social consideration at work

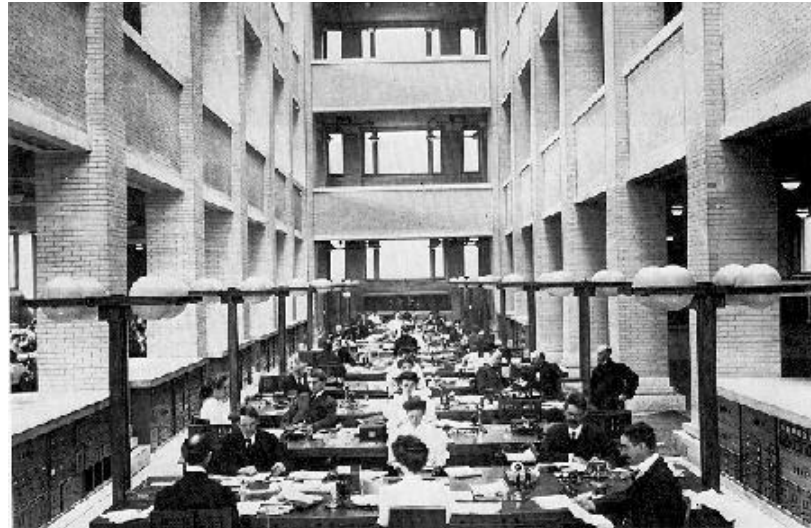
This aspect refers to the notion of respect ensuring the same treatment to all workers, no matter the race, the physiognomy (even though we know that the equality of chances for women is still not entirely respected nowadays). There is also the development of the mental comfort consideration with the creation of supporting groups, team building activities.

- Protection conventions

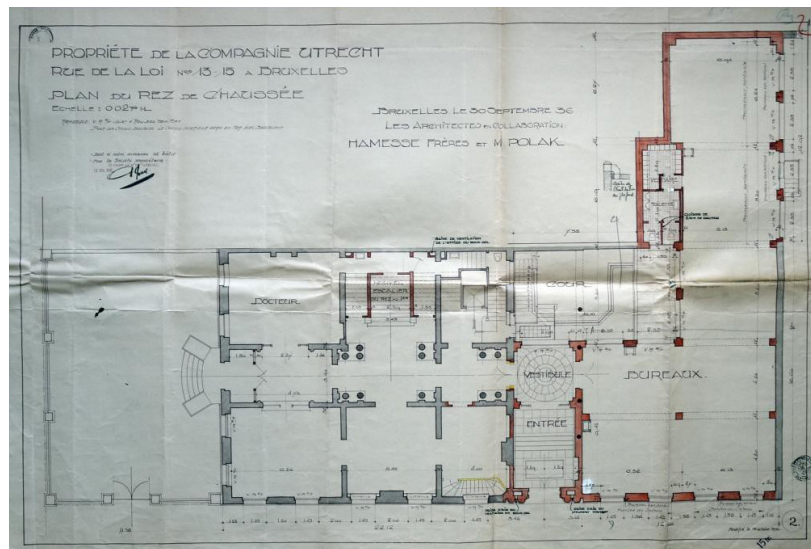
The creation of conventions, negotiated with syndical representatives, aims to guarantee the privacy, the equity and possibility to speak one's mind in working environments.

- Clear division between private and professional lives
- The social relevance of work life

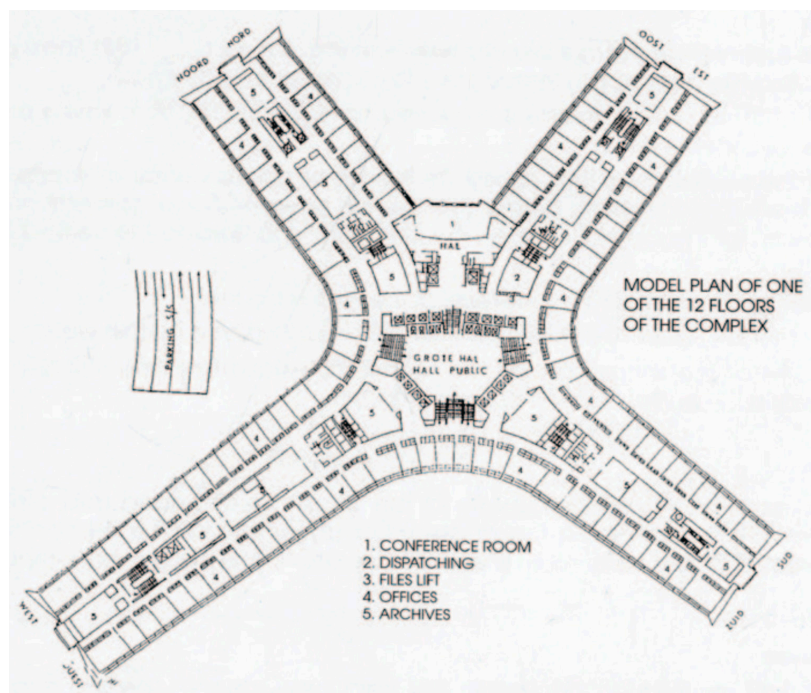
An important aspect of such approach is the particularities and differences between employees which demand a **personal fitting solution** (Walton, 1973).



3.1 Picture of the central hall of the Larkin Administration Building in Buffalo, NY designed by Frank Lloyd Wright in 1909.



3.2 Ground floor plan of the Utrecht & Cie new offices in Brussels. It already illustrates the presence of an open space (right part of the plan) meanwhile private offices compose the left part of it - 1927



3.3 Model plan of the Berlaymont Building, Brussels. The plan is composed of individual offices along the facades meanwhile the darkest area in the middle hosts files rooms, staircases and WC - 1970.

3. OFFICE BUILDING: THE QUEST OF FLEXIBILITY

3.1. The development of the open space

Aside from the industrial production and organization this paper already developed in the first chapter, the Belgian economy is also characterized by an important tertian activity (banks, insurances, consulting, etc) that was highly dependent of industrial companies. This sector induces another form of work organization with the use of office buildings. The rationalization of work did not spare it. Contrarily to what is commonly said, the open space office is not a modern concept. To be precise, it already existed in the Middle Age during which copyist monks were working in scriptoria, a hall, next to the monastery library, in which they were copying books.

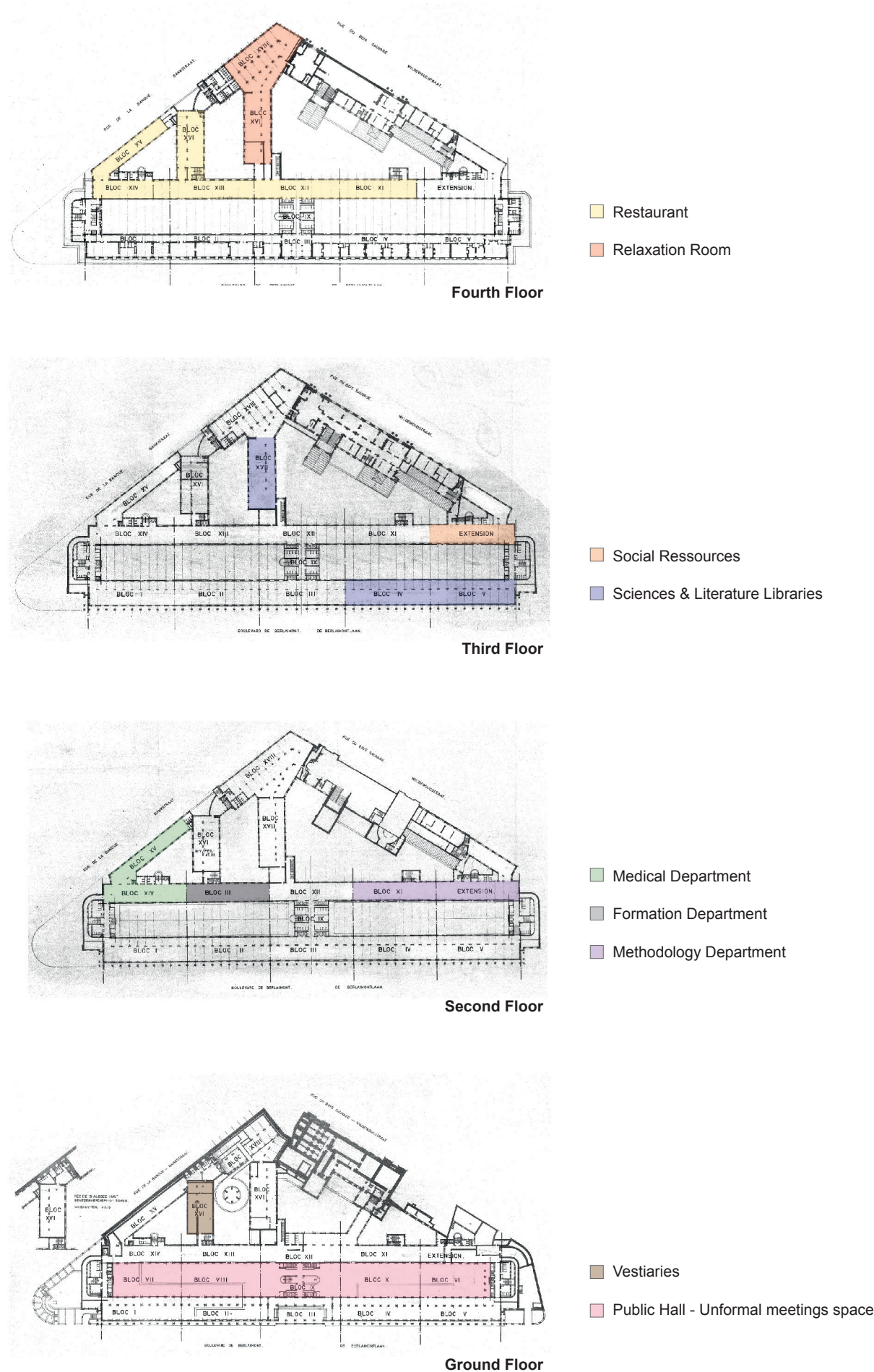
Nevertheless, the use of open spaces in modern office buildings follows the appearance of large headquarters and the beginning of scientific management. In 1909, Frank Lloyd Wright was already experimenting open spaces in Buffalo, NY with the design of the Larkin Building (fig. 3.1) (Gou, 2017). In Belgium, in 1927, the extension of the building hosting the life insurance company Utrecht & Cie, clearly shows the use of open spaces in managerial organization, though the direction was still physically isolated from its employees (fig. 3.2).

However, it was clearly expressing a financial optimization rather than any form of comfort. At that time until nowadays, having a private office or working in an open space clearly defines a hierarchical separation. The case of the Berlaymont building in Brussels is particularly interesting. The construction of the new European Administrative Center in Brussels (1962-1970) represents a complex with a final capacity of 3500 employees. At the beginning, the project was designed to accommodate almost 5000 workers in open spaces, following the work organization of Belgian Institutions (fig. 3.3). However, European functionaries preferred individual offices, fitting better their comfort expectations, drastically reducing the capacity and the functionality of the building (Sterken, 2015).

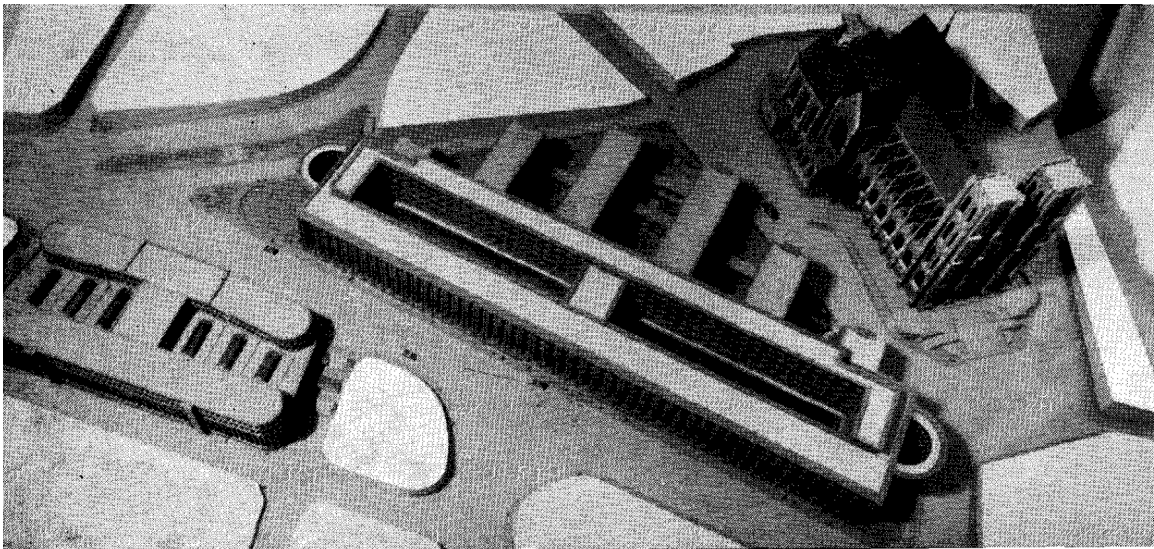
3.2. Towards a qualitative work environment

With the increasing number of workers in office buildings, the problem of qualitative and productive environment was already present during the 1950's. At that time, two German consultants, brothers Eberhard and Wolfgang Schnelle, introduced the concept of Bürolandschaft (Landscape office) considering the importance of organic organization of open space offices and the conception of team working. Together with the invention of the Action Office by Robert Probst and the Workstation of Herman Miller, took the direction of the individualization instead of enhancing collaborative work (Berry, 2018). This led to the appearance of the unfamous cubicles as the best representation of individualization in office space.

Similarly to the progress made to increase the comfort and the satisfaction at work in industrial companies, office buildings integrated the principles of the QWL with some of them visible in the Floor plan organization of La Banque Nationale de Belgique drawn in 1978 (fig. 3.5). The construction of the new headquarters of the National Bank of Belgium was initiated in the late 1930's and was slowed down during the occupation. With the liberation of the country, the construction restarted in 1948 and lasted until 1958 (Kauch, 1964). The concept of the building consists in an oblong object illuminated by an important atrium in the middle.



3.4 Repartition of collective facilities in the organizational plan of the National Bank of Belgium - 1978.



3.5 Picture of the model of the National Bank of Belgium's new head offices, Brussels - 1964.

The plans of 1978 give an overview of the organization chosen by the bank as well as the different improvements to increase the comfort of their employees (fig. 3.4). The atrium in the center guarantees an important amount of natural light to every office in the building thanks to its small width as well as an easy natural ventilation. The repartition of the program is strict: the basement hosts the safes, the ground floor is dedicated to the public with an important hall and several services around it. The first and second floors host the departments in relation with the clients meanwhile the third one is devoted to the internal affairs. The fourth floor is left for the management leadership with private offices and meeting rooms.

The interest of this building is also the presence of several spaces and functions reserved to the comfort of the personnel. In the basement, along bike parks, vestiaries are furnished for the employees and workers of the bank. On the second floor, a formation room and a medical department are offered. On the third floor, a Social Resources Department is installed. The consideration of breaks and lunch times is also underlined with two libraries (sciences and literature) and an important lunchroom together with a kitchen are also built. In the end, this building offers a good materialization of several principles defended by the QWL.



3.6 Public Hall in the middle of the National Bank of Belgium - 2016



3.7 Evolution of the highways infrastructures between 1965-1985

3.3. The Flexible Organization of Work

The 1970's represent the last decade of the Glorious Thirty characterized by an important industrial prosperity. The positive financial conjuncture was accompanied by a massive investments campaign in infrastructures (highways, canals) initiated by the State via several laws favorizing the economic expansion. This decade also showed the limits of the outdated industrial tools of the Belgian manufacture compared to the increasing competitiveness induced by the globalization. The 1980's are characterized by very low global economic performances, signing the necessity for the country to change the general economic orientation and to find its place at the center of the European Union and at the center of the new globalization. The 1990's mark the return of better financial performances influenced by an important deindustrialization, along with other European countries. In fact, Belgium as the Administrative Headquarters of Europe as well as one of the most important port on the continent initiated a switch toward a tertian economy. Between 1980 and 1999, the GDP part of manufactures dropped from 26,6% to 19%, meanwhile Tertian Sector won 12%, passing from 25,6% to 37,2%. Moreover, an important return to the city is perceived with the tertiarization of Brussels, along with Ghent and Antwerp (Vandermotten, 2017). The abandon of the industry has also several consequences on the environment in which employees work increasing the number of people working in office buildings in periphery or in trade centers of big cities. At the turn of the new millennium, the globalization changed the job market increasing the competitiveness and the demand for adaptability mostly among companies engaged in knowledge or service trading.

3.3.1. The mobility as the new comfort

The important investments made in infrastructures, combined with the high conjuncture of the 1960-1970's initiated an important return to the countryside in the attempt to reach a higher level of comfort. This urban exodus initiated by the State drastically changed the landscape around large metropolises, such as Brussels. In the case of the capital city, between 1955 and 1985, the surface occupied by residential functions increased of 122%. At the scale of the country, the State also invested in the creation of a dense highways network favorizing even more the urbanization of rural areas (fig. 3.7)(Dubois, 2005). In response to the increasing importance of the car chosen by the politics, the localization of office buildings changed as well: moving out of busy city centers to develop trade centers and commercial zonings easily accessible by car or by train in periphery of the city. This led to the construction of the Quartier Nord in Brussels, as well as the development of the European District, both implanted close to a train station. This situation underlines the importance of mobility in the evolution of cities but also shows its critical role in the job prospection of potential recruits. The development of company cars emerged at the same period. A car is offered by the company as part of employees' salary in order to attract them meanwhile preserving their desire to live in a villa in periphery of Brussels. Today, this bonus is particularly present and expected in Belgium when looking for a new job. In 2019, there were approximatively 600.000 company cars among the 5.889.210 cars approved in Belgium - 1/10 car is a bonus from the employer (Statbel, 2019).

3.3.2. Towards a more volatile economy

The period 1970-1999 is marked by the shift from a stable economy to a more volatile one based on knowledge and services. These thirty years have seen the development of the Internet as well as the globalization which changed the general mobility of workers and increased the competitiveness. This specific context influenced the consideration and the individual value of employees developing the concept of "High Potential" and reducing their replaceability. (Dufour, Andiappan, 2013). In such a competitive sector, employers finally started to listen and to invest in the comfort of their employees to "*make them want to walk back in the door the next morning*" (Jacoby, 2004). It forced companies to abandon the "one best way" of Taylor as well as the procedural approach defended during the 1950-1960's to focus on the individual and his particular needs.

In 1990's, the development of Internet and the Network thinking (both in terms of mobility than data analysis) emphasized two major factors that will contribute to the appearance of new management strategies increasing the importance of the individual, his comfort and needs. The quest of flexibility is the main objective of companies aiming to maintain their competitiveness and their attractivity for new performant recruits (fig. 3.8).

Mario Roy and Madeleine Audet defined two major independent axis – the Internal/External Flexibility and the Control/Autonomy – characterizing future management strategies (Roy, Audet, 2002). The interest for their study in the case of this thesis is less the description of the four managerial models presented than the nature of the variables themselves.

3.3.2.1. Internal/External Flexibility

Companies have to choose between two forms of flexibility: internal or external. The internal flexibility, influencing the management of employees, specifies the use of **telework, task rotations, hierarchical pyramid flattening and the increase of employees’ capabilities**. In general, internal flexibility responds to the new consideration of employees’ comfort considering the importance of mobility in their job routine. The external flexibility simply defines a general approach of a company focusing on the specialization of its workers, with the creation of partnerships with external companies or actors (Roy, Audet, 2002).

3.3.2.2. Control/Autonomy

Another important aspect essential in future management organizations is the choice between control and autonomy in the working process. The choice is largely influenced by the sector in which the company is working. The control is necessarily more restrictive, though the tasks are simplified to ensure the quality of the product at every step of the process. The autonomy is translated in the **valorization of an individual’s qualities** by letting him **develop his personal abilities and methodology**. The **hierarchy pyramid is reduced** to give more responsibilities to the individual himself or the team (Roy, Audet, 2002).

3.3.3. New Ways of Working (NWoW)

In the early 2000’s, several factors forced companies to rethink their managerial strategies in order to better fit to the global evolution of the society. The introduction of new information and communication technologies (Demerouti et al., 2014), the global increase of competitiveness (Pichault & Schoenaers, 2012), the mundialization (Van der Voordt, 2004), mobility issues (Sewell & Taskin, 2015) and the transition towards an information society (Blok et al., 2011) influenced the appearance of more flexibility in the management (Jemine, 2016). The increasing number of younger employees who grew up with the Internet also acquired higher expectations in terms of autonomy and digitalization. Based on the situation at the turn of the new millennium, four general principles have to be considered by companies that want to stay attractive for their new efficient young employees (Jemine, 2016):

- Flexibility
- Digitalization
- Autonomy
- Mobility

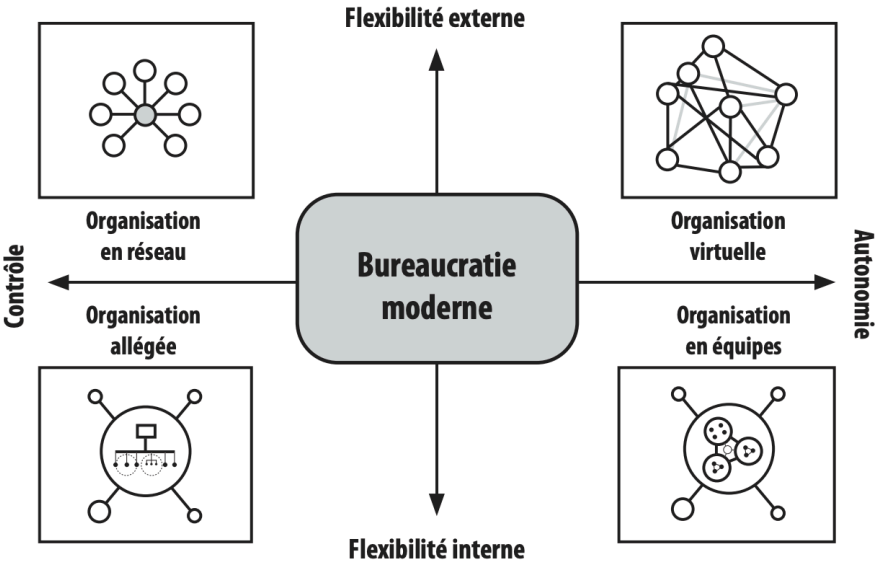
In Belgium and the Netherlands, a new approach appeared a decade ago – “*New Ways of Working (NWoW)*” – focusing on the flexibility and autonomy of the collaborators (Jemine, 2016). This principle is presented as a “*win-win*” situation that would increase the motivation of workers while sensitively reducing the costs of the company (Meerbeek et al., 2009, p. 16).

3.3.3.1. Three main axes

The NWoW approach is focused on three main aspects of the organization, known as the “3B problematization” (Jemine, 2016):

- Bricks

This aspect is based on an observation: the average occupation rate in an office building is 58%. Important earnings could be made by reducing the size of large and unoccupied headquarters, better integrating it in the social context of the city and encouraging the use of a more sustainable mobility (Jemine, 2016).



3.8 Diagram showing the four main types of modern bureaucracies - 2002.

- Bytes

The digitalization is a fundamental aspect companies have to consider in order to maintain a certain attractiveness of young workers. It has also an important potential to increase their productivity. Having grown up with new technologies, these employees are more likely to take advantage of these new digital tools to increase their rentability. The use of social networks inside the company is also a manner to enhance the notion of “community” and the knowledge sharing even though employees don’t work at the office (Jemine, 2016).

- Behavior

The NWoW approach expresses the reappearance of the notion of happiness and “corporate culture” particularly used in the paternalist movement. However, the big difference is the changing notions of happiness and motivation. This organization strategy emphasizes the autonomy, the trust, the flexibility and the mobility of employees to make them develop their individual skills and improve their comfort by leaving them experiment the working environment that suits them best (Jemine, 2016).

3.3.3.2. Strategic answers

To concretely respond to these issues, different strategic tools have been developed. In the end, the notion of an office building itself is changing, evolving from the place where employees work to the place where employees work **together** and **meet their clients**. Taking into account the increasing range of workplaces available, the office building is now part of a network at scale of the city or the country in the case of Belgium.

Considering the important mobility of workers, the fixed and personal desk disappeared to promote a more active form of work: one building with different areas (focus room, silent room, meeting room, relaxation room, etc). The name of such approach is an **Activity-Based Working**. To combine a reduction of office building size with such approach, no employee has a personal desk anymore. The **Flex-Desk** reduces the notion of routine and allow people to work in a different environment based on the task they need to accomplish. It is also accompanied by the reconfiguration of traditional open spaces into a more organic shape, more similar to the **Bürolandschaft** concept introduced by brothers Eberhard and Wolfgang Schnelle in the 1950’s. Finally, the reconfiguration of office buildings implies an important mobility of employees, more likely to work from home when it is not necessary to go to the office. This mobility is possible via the valorization of the **Telework** which is only possible with the **total digitalization** of the company, implementing a server, a chat platform and different live meeting channels (Jemine, 2016).

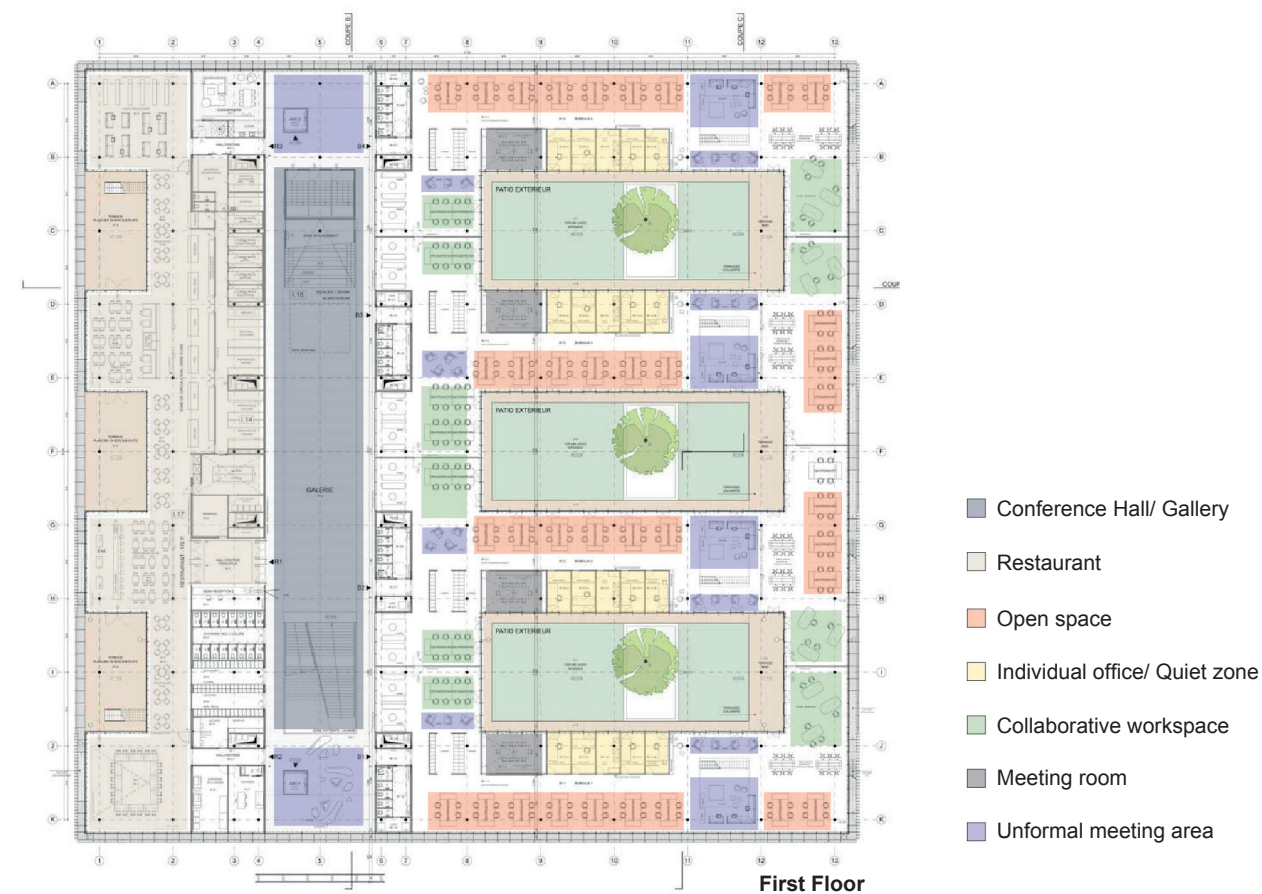
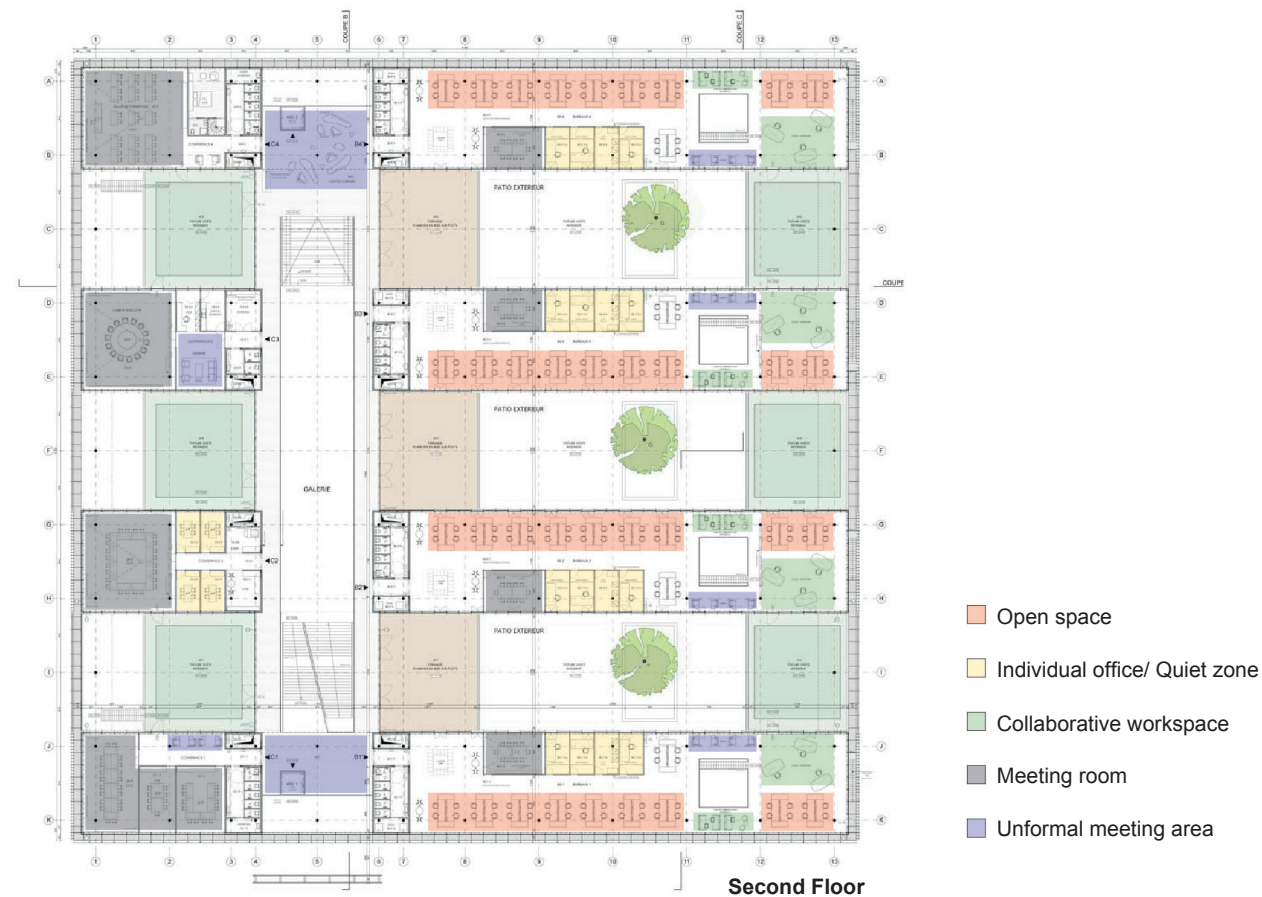
3.3.4. A case study: AGC Headquarters

As already said above, the New Ways of Working, as well as other strategies enhancing both mobility and flexibility (the liberated company, the virtual company, the management 2.0) redefine the notion of office building itself (Jemine, 2016). A definition and a spatial conception commonly shared during more than fifty years. The architectural and programmatic consequences of such revolution are important, though the inherent flexibility and modularity of this kind of building permit an important evolutivity through time.

To illustrate the spatial consequences of the NWoW strategy, a case study will be analyzed: the AGC headquarters designed by Philippe Samyn & Partners in Louvain-la-Neuve, Belgium between 2010 and 2014 (fig. 3.11, 3.12 & 3.13).



3.9 Illustration of a New Ways of Working office structure - 2021



3.10 Head offices AGC Glass Europe designed by Samyn&Partners - Organizational floor plans - 2014

The building consists of two stories protecting the car park located underneath. The floor plan is a square divided into four departments and a gallery joining all of them together. The central gallery can be used independently as a conference center for both internal and external events. Built for AGC, the European leader of flat glass manufacture, the building was a pretext to show that the glass can be combined with energy efficient and working comfort.

The internal dynamics can be separated in two different scales: the building and the department. Each department is designed to work in autonomy. As a consequence, each of them is equipped in the same logic (fig. 3.10). As a flexible work environment, different areas can be distinguished: open space, teamwork zone, conference room, individual insulated offices and informal meeting zones. This hierarchy of space contributes to increase the flexibility to the workers following an activity-based working. At the scale of the building, all departments share an access to the central gallery, the most important area of social interactions. It can also be used as a congress hall with its auditorium. On the top floor, four flexible rooms can be reconfigured via the use of movable walls and are dedicated to collective collaboration and formations. Finally, on the first floor, a large restaurant, offering a capacity of 180 seats creates one last environment for workers to enjoy their break or to work in a different context (Samyn, 2014).

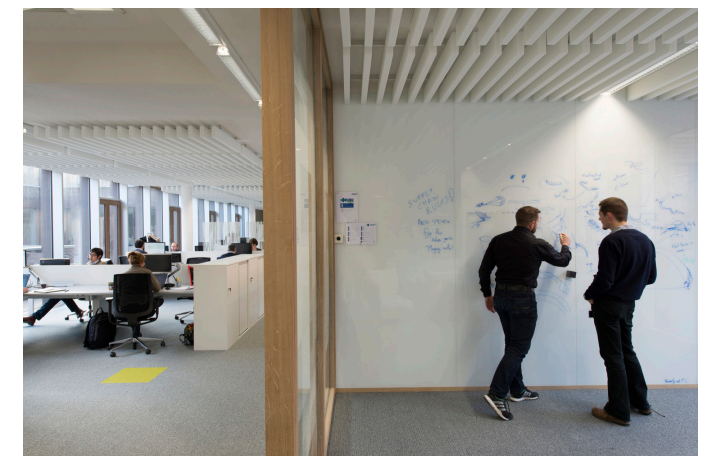
The notion of comfort of this building integrates also the thermal and visual parameters via active facades and electronic control of internal climates. As architects precise: “84 % of workstations are positioned less than 4 m from the walls; 95 % enjoy an unobstructed outside view and 100 % of meeting rooms have both these features.” (Samyn, 2014).



3.11 Head offices AGC Glass Europe - Samyn&Partners - Exterior view - 2014



3.12 Head offices AGC Glass Europe - Samyn&Partners - Central Gallery - 2014



3.13 Head offices AGC Glass Europe - Samyn&Partners - Collaborative environment - 2014

3.3.5. Expectations vs Realities

An important number of studies has defined and boasted the concept of NWoW and their potential improvements towards more flexible ways of working. However, few of them explicitly show the real benefits inherited from these new approaches (Rolfö, 2018). A survey initiated by Linda Rolfö in a company using the Activity-Based Working aimed to define in what measures the “perceived performance and employee satisfaction” have been impacted by the change of work organization. The study showed that 46% of employees have perceived a positive impact on their performances while 18% have considered negative consequences. Moreover, it showed that 93% of employees were satisfied by the new environment while only 54% were favorable to such organizational change before it happened (Rolfö, 2018).

However, several negative consequences have to be considered when putting into practice the theoretical concept.

- Workstations’ occupation

The creation of a NWoW office concept reduced the number of workstations of approximately 30%. However, this model implies an important demand for more mobility and flexibility and the regular use of different ways of working. The reality shows an reverse effect: some employees feel unconsciously obliged to arrive earlier at the office in order to get a good spot where to work (Jemine, 2016). The absence of territorialization as well as the continuous need of adaptation might also become a factor of discomfort (Rolfö, 2018).

- Paradox of mobility

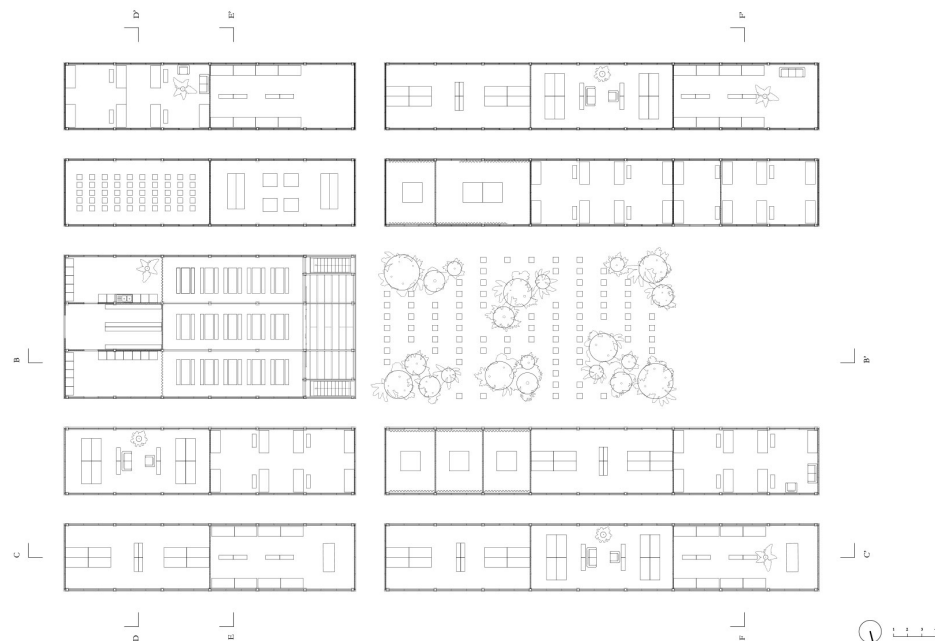
The activity-based working considers the movement of an employee from one room to the other in function of the task to accomplish. However, observations done by Grégoire Jemine suggests a more stagnant practice. This effect is even reinforced by another aspect of the NWoW: the digitalization. The use of social networks within the company to ask a question can easily replacing a time taking travel to ask it in person (Jemine, 2016).

- Zones’ attribution

The activity-based working suggests a clear delimitation of different rooms, each of them following its own implicit rules. Once again, the reality shows the respect of these rules does not obviously fit with the necessities of the company’s environment (Jemine, 2016). Or does it mean that an employee expecting several calls could not use the “quiet zone” because of the nature of his work?

- Distraction and noise

Finally, the movements induced by the nature of the new organization can also affect the concentration of workers. It also shares an issue with the old open space: the important noise created by the important number of people working in the same room (Rolfö, 2018).



4.1 A6k Advanced Engineering Centre - Tramnovelle - Charleroi, 2020
This Co-working is part of a network of office spaces developed across the country.

4. FUTURE PROJECTIONS: A DISCUSSION WITH RENAUD CHEVALIER

Now that the past and recent dynamics have been defined, it might be relevant to consider the next step. To understand the actual and potential tendencies in the design of office buildings and the managerial strategies linked to it, an interview of a specialized architecture firm has been carried out. The discussion with Renaud Chevalier, CEO of ASSAR Architects (Belgium) led to the definition of the actual programmatic demand of large tertian companies and to the prediction of several consequences the Covid-19 crisis will have on this sector and managerial strategies.

4.1. Actual dynamics of the office building market

Renaud Chevalier confirms the tendencies of companies to evolve towards more flexibility and mobility, made possible by an important or total digitalization of their workflow. These aspects, presented in the NWoW strategy, are commonly applied in the design of office buildings nowadays. He precises another aspect as well: the quality of the air, the acoustic environment, the lighting and the temperature. These physical parameters are more and more strict according to M. Chevalier. For example, the quality of the air is no more limited to a good ventilation, it has to be filtered and strictly cleaned before being injected. He is also aware of the conception of interactive systems that adapt autonomously the parameters to fit with the number of people in a room.

4.2. A step further

According to ASSAR's CEO, the aspect of the work mobility is already changing. As mentioned above, the notion of office space has evolved towards a more social and interactive environment. A contrario, telework might not be easy for all employees, some of them facing loneliness and a lack of social exchanges. Some consulting groups in Belgium (namely Deloitte and PwC) are creating a network of collaborative workplaces as an alternative between the telework and the central Headquarter (fig. 4.1). The idea is to favorize social exchanges and teamwork closer to employees' homes in order to reduce the time spent in transports.

But still, PwC is building an important central office (25-30.000 sqm). For M. Chevalier, it means that office building is still perceived as an important place where people meet, share and discuss. It is perhaps the social dimension of the building that is more and more relevant. However, the reality is probably less ideal. Building a new office is an investment for a company. In the case of AGC Headquarters, they plan to occupy the building during only 15 years before moving to another place. So, building small is not a profitable solution. The reality is also that employees do not obviously exploit flexible solutions that companies offer them. It appears that people prefer going to the office instead of working from home (Jemine, 2016). Building a central headquarter is not yet an obsolete investment neither it is a managerial mistake.

4.3. The consequences of the Covid-19 crisis

The pandemic that spread in January 2020 has affected the global economic balance. It also forced a large part of the population to stay at home and experiment telework. In several newspaper articles, at least at the beginning of the pandemic, people were thinking that telework would be the new way of working (lesoir, may 5th 2020). However, after one year experimenting the concept, the need to go back to the office is more and more shared (Lesoir, march 23rd 2021). But what are the other potential consequences of the pandemic?

For Renaud Chevalier, there might be several impacts affecting office building and the way people work:

- It has accelerated and forced the digitalization of a majority of companies leading them to experiment telework. Before the crisis, only 13% of workers had experimented to work from home (Lesoir, may 5th 2020).
- It will also probably accelerate the obsolescence of traditional work spaces. Considering the experiment of mobility and flexibility during the covid period, companies will turn themselves towards offices offering more flexibility and social relations.
- The future approach of working will not be centralized around the practice of telework. Studies have shown the psychological impact of the loneliness induced by working at home 5 days-a-week. However, the tendency foresees the use of hybrid solutions combining work from home and at the office.
- Though NWoW approach suggests an important reduction of office space by offering other alternatives, Renaud Chevalier thinks the surface of office buildings will increase or at least won't be reduced. He argues that earnings made by reducing open-spaces will be filled by the increased number of meeting rooms, unformal meeting spaces and restaurants.
- As ASSAR designs also residential complexes, a change in the programmatic demand is already happening due to the widespread of homeworking. Developers predict an increasing demand for larger appartements (3 bedrooms) replacing the traditional interest for 2 bedroom-appartements. This is explained by the prediction that people will be looking for an additional room to occupy as a home office. M. Chevalier goes even further, predicting a possible change in the type of bonus offered by companies: instead of proposing a company car, enterprises could propose to invest in the purchase of a bigger appartement or an additional room to encourage the home working.
- Finally, the Covid-19 might reinforce the rules or parameters concerning the healthiness of office spaces. New norms ruling the quality of the air, the light, the acoustic and the hygiene might be introduced in response to the lessons taken from the pandemic.

5. CONCLUSION

To conclude, the situation towards which the market of office buildings is orienting itself tends to a redefinition of the concept of the work environment in general, although it mainly concerns knowledge and service companies. A redefinition that has already been initiated by the theorization of the New Ways of Working (NWoW) organizational strategy but which might risk to evolve considering the potential consequences of the Covid-19 crisis. The intentions of this paper were to identify the major dynamics having shaped work environment and conditions through the history in order to understand the actual tendencies and to potentially predict the future global orientation of the market.

Firstly, the results of this research suggest that the pandemic crisis will enhance the consideration of office spaces as a place of collaboration, meeting, knowledge sharing instead of underlining its abandonment for a total remote working strategy. In brief, a place of social interaction instead of a simple place to work from. The interest for activities dedicated to the comfort of workers gravitating around the office space was already used during the industrial period. In the first instance, the construction of a dining hall as well as vestiaries contributed to the creation of a more convivial and healthy work environment. Later on, certain companies invested in a paternalist strategy via the creation of community centres to promote healthy activities and attract workers to join their manforce. By building a certain community around the company's equipments, it participated to the appearance of the Corporate culture, a principle re-emerging these last few years in digital companies (Facebook, Apple, etc). More recently, the National Bank of Belgium implemented in its head offices several spaces for employees to enjoy during breaktimes such as relaxation rooms, its own restaurant, two libraries and even a medical department.

Secondly, another aspect defining the actual and future organizational politics is the flexibility. This notion considers the personal interests of each employee and offers them different work environments they can use in function of their preferences. The flexibility is actually based on two parameters: the digitalization and the mobility. The former, on one hand, is a sine qua non condition for the efficient development of work, no matter it is from home, at the office or in a co-working. The pandemic has confirmed a tendency observed since the appearance of telework at the turn of the 1990's. Though available, there is still an important desire to take advantage of the office: a need of social interactions and an on-site collaboration, instead of simply replacing it by a total work from home.

The mobility, on the other hand, is an older principle, anchored in the tradition of Belgian employees for more than 150 years. Indeed, in 1870, a train subscription was proposed to workers, inviting them to leave the unhealthy urban slums to reach a more affordable house in the countryside. Also, during the 1960's the positive economic conjuncture, together with important public investments in highways infrastructures, initiated an important peri-urbanization around major cities, putting the notion of mobility and daily navette at the center of employees and employers' preoccupations. In consequences, head offices were delocalised outside city centers or close to train station to be more accessible meanwhile the company car became an important salary bonus used to attract and keep employees in a particularly competitive environment.

Thirdly, a last parameter involved in the actual and future organizational scheme is the desire of autonomy and the disappearance of hierarchical supervision. This principle is obviously more easy to consider in companies employing highly qualified workers for which the supervision is not a necessity as they know what they are doing.

Finally, one precision has to be made. The interest of companies to invest in the comfort of their employees is rarely based on a simple altruism. In the case of new office buildings based on NWoW strategy, there is an economic interest to move towards such approach: a reduction of the building size itself, leading to important earnings for the company. However, the enhanced desire of physical collaboration induced by the pandemic crisis, could alter this win-win situation compensating the smaller number of individual workstations with a bigger number of meeting rooms. The futur should also see a new dimension given to the mobility favorizing the use public transport and the proximity with the place of living by creating a network of co-working spaces across the country. What is sure at the moment, is that the archaic vision of the endless open-space is being redefined promoting the social interaction, the collaboration, the flexibility and a mutual trust in the collective mission to preserve the sensitive balance between human comfort and financial viability.

6. INDEX OF FIGURES

1.1

Guther, Max. «What if working from home goes on forever.» *New York Times* (2020).
<https://www.nytimes.com/interactive/2020/06/09/magazine/remote-work-covid.html>

1.2

Beauchamp, Scott. «The Open Office and The Spirit of Capitalism.» *American Affairs Journal* (2018).
<https://americanaffairsjournal.org/2018/11/the-open-office-and-the-spirit-of-capitalism/>

1.3

Bell, Jonathan. “Office Spaces for New Ways of Working.” *Raconteur*, 2016,
www.raconteur.net/office-spaces-for-new-ways-of-working.

2.1

Marissiaux, Gustave. «Charbonnage et Haut Fourneau - La Houillère, Bois d'Avroy.»
Archives de Wallonie, 1904-1905

2.2

Marissiaux, Gustave. «Dans le triage - La Houillère, Bois d'Avroy.» *Archives de Wallonie*, 1904-1905.

2.3

Charbonnages Unis Ouest Mons. «Plan de Surface du Siège Saint-Antoine»
Archives de Wallonie, ?

2.4

Gilbreth, Frank. «Chronocyclograph. Efficiency Studies.» *Time and Motion Study*, 1937.

2.5

«Ligne de production Citroën Forest - carrosserie» *Citroenet*, 1952-1954,
<http://www.citroenet.org.uk/foreign/belgium/belgium1.html>.

2.6

SAICOM. «Grand-Hornu Rue Sainte Louise» *docomomo*, 1810-1830, <https://docomomo.be/borinage2019/>

2.7

Société Civile des Usines et Mines de Houille du Grand-Hornu. «Installations de Surface du Grand-Hornu.»
Archives de Wallonie, ?

2.8

Guillaume, F. «Couillet. - Casino Solvay.» *Back In Time*, 1982,
<http://www.backintime.be/Amicale-Casino-Solvay-Couillet/>

2.9

Cozac, Eléazar. «Amicale Solvay - Niveau de la piscine.» *cacc.be*, 1937,
<https://www.cacc.be/gallery>

2.10

Cozac, Eléazar. «Amicale Solvay - Niveau des salles de fête.» *cacc.be*, 1937,
<https://www.cacc.be/gallery>

2.11

Bettens, Ludo. «Affiche Type - Elections du conseil d'entreprise» *Collection IHOEC*, 1949.

3.1

Malloy, Jerry. «Larking Administration building - A Wright of Passage in Buffalo» *Buffalo History Gazette*, 2011,
<https://www.buffalohistorygazette.net/2011/10/larkin-administration-building-of.html>

3.2

Hamesse, Paul. «Cie D'assurances vie Utrecht» *Paul Hamesse Archives*, 1927,
<https://paulhamesse.brussels/fr/catalogue/cie-dassurance-vie-utrecht-rue-de-la-loi-13-15-bruxelles-pentagone>

3.3

Régie des bâtiments. «Model plan of the Berlaymont» *Le bâtiment du Berlaymont*, 1970.

3.4

«Plans Banque Nationale de Belgique» *Archives de la BNB*, 1978.

3.5

Kauch, Pierre. «Les bâtiments de la BNB à Bruxelles» *Revue du personnel de la BNB*, 1964.

3.6

Kauch, Pierre. «Les bâtiments de la BNB à Bruxelles» *Revue du personnel de la BNB*, 1964.

3.7

«Evolution of highways infrastructure» *Wegen-Route*, 1965-1985.

3.8

Roy, Mario & Audet, Madeleine. «Nouvelles formes d'organisation» *Cairn*, 2002,
<https://www.cairn.info/revue-gestion-2002-4-page-43.htm>

3.9

Van Meel, Juriaan. «The Activity-Based Working Practice Guide» (2021).

3.10

Samyn, Philippe. «Plans Head of AGC Glass Europe» *Archives Samyn&Partners*, 2014.

3.11

Plissart, Marie-Françoise. «Head of AGC Glass Europe» *Archives Samyn&Partners*, 2014,
<https://samynandpartners.com/portfolio/head-office-of-agc-glass-europe-5/>

3.12

Plissart, Marie-Françoise. «Head of AGC Glass Europe» *Archives Samyn&Partners*, 2014,
<https://samynandpartners.com/portfolio/head-office-of-agc-glass-europe-5/>

3.13

Plissart, Marie-Françoise. «Head of AGC Glass Europe» *Archives Samyn&Partners*, 2014,
<https://samynandpartners.com/portfolio/head-office-of-agc-glass-europe-5/>

4.1

Tramnovelle. «A6k Advances Engineering Centre.» Afasia Archzine, 29 Apr. 2020,
afasiaarchzine.com/tag/traumnovelle.

7. BIBLIOGRPAHY

7.1. Primary Sources

- Geerkens, É., & Moutet, A. (2007). La rationalisation en France et en Belgique dans les années 1930. Travail et emploi, (112), 75-86.
 - i. This source develops the social importance of industries in Belgium in the 1930’s. It explains also the implementation of the Taylorism and Fordism in the country as well as the evolution of the importance of the Foreman in the managerial organization.
 - ii. “The article compares the introduction of new methods of work organization (Fordism) and the rationalization of the production in France and Belgium.”
 - iii. The comparison with the American evolution is quite surprising by their similarities. Except that the importance of unions in Belgium is much stronger. Then, the socially oriented intervention of both industry and state are much developed in Belgium.
 - iv. This text will be used to depict the evolution of mesures implemented by companies to improve the comfort of workers during the 30’s and the answer brought by unions to reduce the alienation of workers facing the development of the Fordism.
- Jacoby, S. M. (2004). Employing bureaucracy: Managers, unions, and the transformation of work in the 20th century. Psychology Press.
 - i. This source traces the evolution of work organizational strategies with also an emphasis on socially oriented strategies. It depicts the origins of HR departments.
 - ii. The structure of the book translates the orientation of companies’ strategies.
 - iii. After having compared this source with Belgian ones, a lot of similarities are appearing which eases my research as sources from both countries are somehow complementary.
 - iv. This text is used as theoretical basis to structure the evolution of managerial strategies through the History. Even though this text relates to the US History, it allows me to know what to search for the Belgian History.
- Jemine, G. (2015, April). UN CHANTIER DE MODERNISATION DES CONTEXTES DE TRAVAIL : LE « NEWWAY OF WORKING » DANS UNE COMPAGNIE d’ASSURANCES [Conference]. Labo ratoire d’Etudes sur les Nouvelles Technologies, l’Innovation et le Changement, Liège, Belgium.
 - i. This source is introducing the NWoW strategy of managerial organization. It introduces the subject with the example of an insurance company. It details the different parameters that are part of this new form of work.
 - ii. The structure of the paper is clearly explaining the different parameters used to introduce the NWoW strategy.
 - iii. /
 - iv. This source allows me to understand the impact the NWoW will have on office building interior organization. It also allows me to prepare a series of questions for the interview of the architect.
- Linhart, D. (2017). La comédie humaine du travail. Erès.
 - i. This source explains the impact of the Taylorism and the Fordism over the liberty, identity and strength. It develops both points of view expressing the reasons invoked by them, trying to make peace between the manager and the worker, as well as increase the economic capacity of workers putting in light the value of a well structured and scientifically adjusted work strategy.
 - ii. « Car ce qu’il met en place est une machine de guerre redoutable contre les ouvriers. Il les dépasse sciemment et systématiquement de ce qui constitue leur force, leur identité, et leur pouvoir : leur métier et leurs connaissances. »

« une difficulté plus importante que pour les ouvriers eux-mêmes qui n’auront plus besoin de penser car leur travail reviendra à se conformer strictement à ce qui leur sera dicté. »

« Le parallèle peut être fait là aussi avec le management contemporain, qui se retranche derrière les statistiques, la quantification, l’objectivation pour imposer une vision abstraite du travail et qui sert de repères pour standardiser et contrôler sans cesse le travail. Les sociologues parlent de chiffromanie, de quantophrénie (la maladie de la mesure), pour qualifier ce dogme, très actuel, censé concrétiser la neutralité, l’objectivité et la légitimation des choix opérés. »

« Taylor apparaît ici, par bien des aspects, comme le précurseur de la posture managériale qui domine la période actuelle ; se positionner au nom du bonheur des salariés, prétendre à un système équitable, juste et orienté vers le bien commun, mettre en avant les difficultés d’organisation et de management du travail, invoquer la science, l’objectivité, la neutralité, ces attitudes ne sont pas sans rappeler bien des allégations et argumentations accompagnant les discours modernes. »

- iii. /
- iv. This article is interesting because it shows the political orientation taken by the state and the companies which represents an important detail to understand the organizational strategies and geographical implementation chosen by companies. In particular, the investment in infrastructures from the 1970’s will be the starting point for the urbanization of brussels’s suburbs and a more mobility oriented strategy for companies.

- Ratti, C., & Claudel, M. (2016). If work is digital, why do we still go to the office. Harvard Business Review Digital Articles, 13.
 - i. « Throughout history, buildings have been rigid and uncompromising, more like a corset than a T-shirt. With better data on occupancy, we could design a built environment that adapts to humans, rather than the inverse.” The subject of this paper is to question the future of office buildings. C. Ratti explains why we chose not to work only from home.
 - ii. « We strive for places that allow us to share knowledge, to generate ideas, and to pool talents and perspectives. Human aggregation, friction, and the interaction of our minds are vital aspects of work, especially in the creative industries».
 - iii. /
 - iv. This source expresses a reason why telework is not going to replace actual forms of work. It leaves some space for a more hybrid form of working mobility.
- Rolfö, L. V. (2018). Relocation to an activity-based flexible office–Design processes and outcomes. Applied ergonomics, 73, 141-150.
 - i. This paper shows the physical impact of an “activity-based strategy”
 - ii. Cf. The organizational floor plan.
 - iii. /
 - iv. The interest for this paper is the precious illustration of activity-based way of working into a concrete floor plan which allows me to clearly understand and compare this organizational form of work with previous one such as cubicles or open-spaces.
- Vandermotten, C. (2017). Les structures économiques de la Belgique et leur spatialité, des Golden Sixties à aujourd’hui. Belgeo. Revue belge de géographie, (4).
 - i. This source explains the evolution of economic currents that have occurred in Belgium, and the impact it had on both private and public investment orientations. It also explains the repartition of BIP per region and the wealth evolution of the different sectors.
 - ii. “Laws of economic expansion (...) frame the important growth that follows the crisis of 1958 and lasts until 1974. The politics deciding to invest massively in infrastructure, water canals and industrial zonings.”
 - iii. /
 - iv. This article is interesting because it shows the political orientation taken by the state and the companies which represents an important detail to understand the organizational strategies and geographical implementation chosen by companies. In particular, the investment in infrastructures from the 1970’s will be the starting point for the urbanization of brussels’s suburbs and a more mobility oriented strategy for companies.

7.1. Secondary Sources

- Barnes, Ralph M. «Motion and time study.» (1949).
- Bell, Jonathan. “Office Spaces for New Ways of Working.” Raconteur, 2016, www.raconteur.net/office-spaces-for-new-ways-of-working.
- Berry, Louise. “Bürolandschaft: How the Way We Work Has Shaped the Office.” Interact, 26 Oct. 2018, www.interactsoftware.com/blog/brolandschaft-how-the-way-we-work-has-shaped-the-office.
- Blok, Merle, et al. «New ways of working: a proposed framework and literature review.» International Conference on Ergonomics and Health Aspects of Work with Computers. Springer, Berlin, Heidelberg, 2011.
- de Bry, Françoise 2003 « Le paternalisme entrepreneurial », in J. Allouche (under the direction of), Encyclopédie des ressources humaines, Paris, Vuibert.
- Demerouti, Evangelia, et al. «New ways of working: Impact on working conditions, work-family balance, and well-being.» The impact of ICT on quality of working life. Springer, Dordrecht, 2014. 123-141.
- Dubois, Olivier. «Le rôle des politiques publiques dans l'éclatement urbain: l'exemple de la Belgique.» Développement durable et territoires. Économie, géographie, politique, droit, sociologie Dossier 4 (2005).
- Dufour, Lucas, et Meena Andiappan. «Chapitre 6. Les innovations en management des ressources humaines.» Annabelle Jaouen éd., L'innovation managériale. Dunod, 2013, pp. 143-159.
- Giedion, Sigfried. «Mechanization takes command a contribution to anonymous history.» (1948).
- Gou, Zhonghua. «Workplace design revolution: The inside-out urbanism.» Design innovations for contemporary interiors and civic art. IGI Global, 2017. 225-240.
- Kauch, Pierre. «Les bâtiments de la Banque Nationale de Belgique.» Archives BNB, 1964.
- Leboutte, René, Jean Puissant, et Denis Scuto. «Un siècle d'histoire industrielle (1873-1973). Belgique, Luxembourg, Pays-Bas, industrialisation et sociétés.» Éditions Sedes (programme ReLIRE), 1998.
- Meerbeek, M., et al. «A new way of working: The 7 factors for success, based on Microsoft Netherlands experience.» (2009).
- Mihaly, Almos, et al. «Le quartier Nord: entre «progrès» ferroviaire et spéculation immobilière-Inter-Environnement Bruxelles.» (2021).
- de Montmollin, Maurice. «L'ANALYSE DU TRAVAIL, L'ERGONOMIE LA «QUALITÉ DE LA VIE DE TRAVAIL» LES AMÉRICAINS ET NOUS.» Le travail humain (1982): 119-124.
- Pichaut, F., and F. Schonaers. «Le “middle management” sous pression: la difficile intégration du référentiel managérial issu du NPM dans les organisations au service de l'intérêt général.» Communication au 22e Congrès de l'AGRH, Marrakech (2011).
- Roy, Mario, et Madeleine Audet. « La transformation vers de nouvelles formes d'organisation plus flexibles : un cadre de référence. » Gestion, vol. vol. 27, no. 4, 2002, pp. 43-49.
- Samyn, Philippe. «Head Office of AGC Glass Europe.» Samyn&Partners, 2014, samynandpartners.com/portfolio/head-office-of-agc-glass-europe-5.
- Sewell, Graham, and Laurent Taskin. «Out of sight, out of mind in a new world of work? Autonomy, control, and spatiotemporal scaling in telework.» Organization Studies 36.11 (2015): 1507-1529.
- Sloover, Jean. « Participation des travailleurs et réforme de l'entreprise en Belgique.» Courrier hebdomadaire du CRISP, vol. 810-811, no. 25-26, 1978, pp. 1-54.
- Sterken, Sven. “Bruxelles, Ville De Bureaux. Le Berlaymont Et La Transformation Du Quartier Leopold.” Bruxelles Patrimoines, Sept. 2015, patrimoine.brussels/liens/publications-numeriques/versions-pdf/articles-de-la-revue-bruxelles-patrimoines/numero-15-16/article-15-16-9.
- Thompson, Clive. «What if working from home goes on forever.» New York Times (2020).
- Van Der Voordt, Theo JM. «Productivity and employee satisfaction in flexible work places.» Journal of Corporate Real Estate (2004).
- Walton, Richard E. «Quality of working life: what is it.» Sloan management review 15.1 (1973): 11-21.
- “Parc de véhicules | Statbel.” StatBel, 14 Sept. 2020, statbel.fgov.be/fr/themes/mobilite/circulation/parc-de-vehicules.

