Draw me my factory: understanding the power of organizational cartoons in shaping employees' representations of the future of work

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Résumé

Cet article porte sur la fabrication de bandes dessinées en contexte organisationnel, un type particulier d'artefacts visuels visant à façonner la représentation que les salariés se font de l'avenir de leur travail. Il s'appuie sur une étude de cas menée dans le secteur aéronautique, actuellement traversé par une généralisation croissante de la robotisation et de l'automatisation. Nous analysons comment ces bandes dessinées, qui présentent une vision optimiste du futur du travail, ont été conçues. L'étude met en lumière les dynamiques de pouvoir et les choix narratifs qui ont conduit à mettre en avant certaines dimensions de l'automatisation tout en en occultant d'autres. Nous identifions six processus interdépendants qui participent à la fabrication de ces bandes dessinées : la négociation, la clarification, la hiérarchisation, la narration, la vulgarisation et la recherche d'interprétabilité. Notre contribution s'articule autour de trois apports principaux. Premièrement, nous montrons que l'étude du processus de fabrication d'artefact visuel permet de mettre en évidence les rapports de pouvoir à l'œuvre dans la construction des futurs organisationnels. Deuxièmement, en identifiant six processus imbriqués, nous montrons comment il est possible d'intervenir dans leur élaboration pour promouvoir des imaginaires d'entreprise plus ouverts. Enfin, nous contribuons aux perspectives critiques sur l'Industrie 4.0 en montrant comment ses principaux promoteurs tendent à minimiser, voire à occulter, les transformations négatives qu'elle engendre.

Mots-clés : industrie 4.0, imaginaires organisationnels, artefact visuel, bande dessinée, rapports de pouvoir

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1. THEORETICAL BACKGROUNDS

1.1. IMAGINED FUTURES AND FUTURE MAKING

In the recent years, a diversity of scholars and industrial practitioners have engaged in discussions about new transformations of industrial processes under the term of Industry 4.0 or Factory of the Future (Vuksanović et al., 2016; Xu et al., 2018). This empirical interest and orientation towards a future of the Industry open the way to different imagined futures. To navigate a uncertain world, organizational actors must form fictional expectations about what is going to happen in the future in order to give a basis to their present decisions (Beckert, 2013). The literature on imagined futures addressed a variety of issues such as emphasizing organizations as future-oriented (Beckert, 2021), how financial decisions are made (Komporozos-Athanasiou, 2020) but also how new utopias could be created and supported (Wright et al., 2013).

To extend our knowledge on how we can navigate the Future, scholars developed the concept of future making. Future making shifts our focus onto the practices we use to transform the future into a manageable set of actions. Future-making can be defined as "how practitioners make and enact imagined futures" (Thompson & Byrne, 2021, p. 247). The future making literature focuses on the concrete practices and material devices used to enact imagined futures and transform them into actionable strategies. The underlying assumption is that our way of

knowing the future is sensorial and not strictly cognitive, linked to discourses. Hence, it is necessary to explore the ways in which material devices affect our senses so that a future is made performative (Comi & Whyte, 2018). In this perspective "imagined futures are an experienced temporal category that 'actors co-produce and enact through future-making practices' (Wenzel et al., 2020, p. 1443 cited in Thompson & Byrne, 2021).

To understand our orientation towards the future, it is then necessary to look at what practitioners do, what devices they create rather than what they think or say about the future. To this end, previous studies on future making have shown the role of visual artefacts in assisting practitioners navigating the future, particularly to formulate actionable strategy (Comi & Whyte, 2018). In doing so, scholars have linked studies on future making to a broader stream of research on the role of visual artefacts in organizations.

1.2 VISUAL ARTEFACT AND SYMBOLIC FORM OF CONTROL

The role of visual artefacts in shaping organizations' future has been a key result of the visual turn in organization studies (Boxenbaum et al., 2018). While visual artefacts can serve as the 'storage' or 'crystallization' of social knowledge, they can also generate specific versions of social reality. Hence, despite their "seemingly iconic and fact-like representation of social reality", visual artefacts convey strong political meanings (Quattrone, Ronzani, Jancsary, & Höllerer, p. 1201). They constitute a powerful device to shape individual representations, even sometimes by masking or perverting social reality (Meyer et al., 2013, p. 504).

At an organizational level, visual artefacts constitute a powerful way to shape workers' representation and convey managerial messages (Carollo, 2021). Since they can either mirror and reproduce normative standards or create different realities to achieve political mobilization (Quattrone et al., 2021), visuals enable or constrain individual interpretations and actions (e.g. Boxenbaum et al., 2018; Höllerer et al., 2018). Visuals contribute to shaping workers'

representations of the present but also of the future of their work. (Comi & Whyte, 2018). For that reason, visuals convey a symbolic form of control (Carollo, 2021).

Yet, despite this large consensus on visuals framing power, 'linguistic' meaning-creating devices still get the largest part of scholars' attention in studying cultural symbolic forms of control (Carollo, 2021). Our study seeks to document visuals' power framing, and particularly their power framing of the future of work, by considering one particular visual artefact, 'organizational comics'. In the wake of Carollo, we define organizational comics as "comics deliberately created by an organization with the primary aim of communicating with its stakeholders (the employees, in the case under examination)" (2021, p. 645) and posit that comics convey particular representations of organization's reality. Organizational comics can be understood as a management tool used to shape employees' representations. More particularly, as suggested by the literature on future making, organizational comics can convey representations of the future of organizations and constitute therefore a particularly relevant material to study future making.

To our knowledge, only one other research explores the use of organizational comics as a tool for managing employee-employer relations (Carolo, 2020). This paper aims to complement this investigation by studying how organizational comics can be manufactured in order to shape employees' representations of the future of their work. In doing so, this paper reinforces articles on visuals as forces of control by exploring, not only their content but also how and by whom they are manufactured.
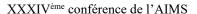
2. RESEARCH METHOD

2.1 RESEARCH CONTEXT

For this study, we build the case of a French company in the aviation industry (here, named AEP). This industry is largely concerned by automation through the debates about advanced manufacturing and concepts like Industry 4.0. which currently challenge work organization in factories with the generalization of the use of robots and automatic machines in the production flow. In that context, AEP is currently changing its machines and implementing automation in the production flow through a modernization project entitled "The factory of the future."

Our case takes place in one particular AEP's factory, which has been chosen to become the project's flagship. When we collect our data, a "site modernization manager" had been hired to manage change. The first steps of the modernization project are already done in that factory and a new line of production, with automatic machines (named McM), is already installed. However, many employees do not embrace the change. The factory of the future project implies not only technological changes but also deep skill evolution and change in work arrangements. In order to reassured employees, it is decided to give an overview of the project and its features through a large diagram that is displayed on a panel in the factory. The modernization project is summarized in a 14-box diagram, each box representing a "sub-project," related either to new technologies, new means of production, new work organization or new skills. Among those 14 boxes, we can find, for instance, the following sub-projects: "Closed door machining"; "Big Data"; or " Predictive maintenance" or "Job and skills management," "Economic awareness" and "Working together".

Although considered as useful to communicate, this "homemade" 14-box diagram, is, however, seen as a bit rough (it was made by the site modernization manager and one of his colleagues

on a free software). It is therefore decided to keep communicating through visual artefacts but to call upon a professional drawer to embody the 14-box diagram through drawings. In order to make the modernization project understandable, the factory manager and the site modernization manager ask a professional cartoonist to draw 5 comic book pages representing the factory in a futurized version (see appendix). Those pages feature employees working in a modernized version of the plant, among automatic machines and robots.

2.2 DATA COLLECTION AND ANALYSIS

We collected these 5 pages of organizational comics and analyzed them. We interviewed the factory manager and the site modernization manager to better understand how, why and for which uses those cartoons have been drawn. Finally, we interviewed the cartoonist. We asked him to describe all the creation process of the cartoons, his interactions with workers in the factory, especially the factory manager and the site modernization manager. We also asked him to show us the working documents that have been used and the different sketches and intermediate drawings he made during the creation process.

We conducted our analysis within an abductive logic (Locke et al., 2008) which involves going back and forth between theoretical knowledge, field research and data. In line with previous studies (Alcadipani & Islam, 2017; Carollo, 2021) which recognized that images are always open for multiple interpretations, each author build his/her own interpretations of the case. Each author analyzed the cartoons separately and wrote a "case" note detailing the different stages of the creative process of the cartoons. Then, the individual analyses were compared and contrasted leading to a common analysis. To help us in this analysis we also coded the three interviews of the factory manager, the site modernization manager and the cartoonist and read several times the interviews we had with employees and managers of the plant, even those by workers who were unaware of the existence of the cartoons.

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Through interviews, field observations and discussions with academic and non-academic experts on Industry 4.0 we refined our understanding of key elements in the images. Consistent with our framework, we were particularly interested in power dynamics and choices during the creative process which lead to representing the future of work in the cartoons.

3. RESULTS

3.1 THE MAIN STAGES OF THE CREATIVE PROCESS

The creative process takes place in several stages.

First visit of the factory and first sketches

First, the cartoonist is asked to come to the factory so that he can visit the site, make some sketches and meet the site modernization manager. The site modernization manager presents him with the modernization project and the 4-box diagram so that he can understand its main stakes and imagine the factory in its futurized version.

But, as the manager explains the project, the cartoonist realizes that some parts of it are not necessarily very clear. The feels a lot of hesitation and uncertainty in the way the project is presented to him.

Also, the language used by the manager is very technical. The manager uses many acronyms that the cartoonist does not understand. The cartoonist realizes very soon that his first mission is to do the work of translation: as an outsider, the cartoonist plays the ingenue and asks the manager to pause and think about the vocabulary and meaning of his words. He explains:

"I (to cartoonist) said to him (the manager): "Explain to me what your project is,". His first instinct was to explain it with all the jargon of the profession. So very often, I held up my hands and said: "Wait, I don't understand anymore!"

This also allows the project manager to realize the complexity of the project and the difficulty of understanding for individuals not involved in it.

Very quickly the manager and the cartoonist realize that the main task of the cartoonist will not be to produce images but to produce a story that "talk" to employees. As the cartoonist explains: "*We often imagine that comics are above all images, but it is, first of all, a scenario*".

Because he is not sure about the story he wants to tell, the manager decides not to participate in the development of the scenario and to let the cartoonist make proposals.

During this first meeting is also decided the means of diffusion of the cartoons: it is decided that the cartoons will be diffused on big panels inside the plant so "*that way, the employees see them*". This choice of diffusion has a direct consequence on the way in which the cartoons are conceived: each page of cartoons must be able to be read separately. Therefore, it is decided that each panel will address one of the major themes of the modernization project: the means of production, the logistics, the predictive maintenance, the plant's autonomy by night and the role of support staff. For each page, the objective is "*to answer questions or to convey important messages*" through " *the small details in the cartoons*".

Following this first visit, the cartoonist proposes some initial sketches that serve as a basis for discussion for the rest of the creative process. For aesthetic reasons and to avoid certain redundancies from one page to another, the cartoonist takes some liberty with the settings and textual features of the cartoons. These first sketches aim at proposing a first "story" of the future of the factory. To do so, the cartoonist realizes "*a kind of puzzle*" so that "*all the elements that had been mentioned (during the first visit) can be represented in one or another of the pages, and this with the most coherence possible*".

The cartoonist sends his first sketches to the site modernization manager who presents them to his team and the plant manager. These first sketches are the subject of many debates about what should be added and what should be removed. After some discussion, the plant manager, the

site modernization manager and the project team agree on several changes: the cartoonist is asked to remove some characters so that the factory would seem "emptier", to erase the uniforms so as not to show any hierarchical relationship, to put in the background some tools considered as too "spectacular" (such as the augmented reality glasses) and to put in the foreground certain other tools (such as autonomous robots circulating alone in the factory).

But most of all, there is a consensus on the need to represent more of the factory's trades and to make the cartoons more realistic. For that reason, the cartoonist is asked to come for a second visit.

<u>The second visit of the factory and the development of the five-story boards</u>

During his second visit, the cartoonist meets some technical directors to understand better the main factory's trades and the operational stakes of the modernization project. On this occasion, the cartoonist also meets the plant manager and observes the operators at their workstations (without speaking to them). This second visit is also an opportunity for the cartoonist to take many pictures. The pictures will be used to represent as precisely as possible the contextual elements and the machines.

This second visit is also the occasion for the cartoonist and the site modernization to reframe the scenario of the cartoons. It is agreed that the cartoons should not tell the story of a "dreamed" factory of the future but of a real one "that will exist". As explained by the cartoonist:

"We reoriented the discourse to make things more realistic, because at the beginning, the idea was really to imagine a factory of the future almost in science fiction mode. But the reality is that science fiction is not now, it's three years from now."

After this second visit, the cartoonist proposes a series of five-story boards based on the first comments he received and the elements gathered during his second visit.

This is followed by a series of iterations. It is decided to keep the five proposed story boards but to amend them. The site modernization manager is in charge of gathering in several Excel

spreadsheets the comments and requests of the project team and the plant manager. He is also in charge of the arbitrage between the different requests and the compilation of them in the spreadsheets. Priority changes are highlighted in red in the document. After discussion, the spreadsheets are sent to the cartoonist.

The requests for changes are multiple and of several kinds. They concern the highlighting of certain tools or machines, the integration of vocabulary elements or specific acronyms in the cartoons, details on the elements of the settings or the integration of precise graphic images. These requests for change are intended to introduce more realism into the cartoons so that operators can more easily project themselves into the future factory.

At this point in the creative process, the site modernization manager has a clearer view of the story he wants to tell. According to the cartoonist, he wants to show "*that they are modernizing the plant and that this modernization takes into account, on the one hand, the quality of life of the operators, and on the other hand, the performance of the plant*". These cartoons also aim to show to the employees that site modernization manager has a wise management "*en bon père de famille*" (meaning "like a good father").

Once the story boards stabilized, the site modernization manager asks to modify certain textual elements and to add graphics within the different cartoons. He sends the cartoonist some graphics and some technical documents of future robots and machines that have been ordered but not yet installed so that they can be added in the cartoons. He also asks certain characters be feminized so that the figure of the woman is not only associated with the jobs such of secretary or accountant. Some technical indicators are also added, such as the number of days without incidents, which appears several times in the comic book pages.

The End of the Creative Process

Once all the changes have been made, the cartoonist sends the pages. He also sends another version of the pages with a more advanced graphic work that make the drawings even more realistic. But the site modernization manager prefers the former version of the pages. As explained by the cartoonist: *"It was too much in the comic style and they preferred that it remains something sketched."*

3.2 FOCUS ON ONE PARTICULAR PAGE: "THE PLANT'S AUTONOMY BY NIGHT"

The initial sketch

As we have just shown, the creative process consists of a set of iterations between the cartoonist, the site modernization manager and his project team. During this creative process, all the comic book pages have been modified several times. In order to highlight the choices that have been made to represent the future of work, we propose now to focus our analyses on the creative process of one particular page: the one on the plant's "autonomy" by night. We focus our analysis on the elements that have been added and the elements that have been removed from this page.

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Figure1) Initial sketch of the page *"The plant's autonomy by night"*

When the cartoonist comes the first time, employees work three shifts and, consequently, regularly work at night. It is planned, however, that the machines work alone at night in the coming year. The site modernization manager wants to communicate on this major change because he anticipates much resistance from employees. Therefore, employees will see their remuneration largely decreased because of the stop of the bonuses and the payment of extra-

hours related to the night work. From the first visit of the cartoonist, it therefore is decided that one of the pages has to deal with the machine's ability to work in autonomy by night. This page in considered as very sensitive.

In this sketch, the plant's autonomy is not shown as such, but we can guess it through dialogues between employees who, obviously, come back home from the weekend. The factory is not "empty" but "full" of employees chatting while checking the work done by the machines during their absence.

In coherence with the overall story the site modernization manager wants to tell, the cartoons of this page highlight the improvement of employees' quality of life due to the stop of the night work.

In the box C1 we can see three people having a coffee and talking about their weekend. We can read the following dialogue:

- *Character 1: "Hi Jeff. How was your weekend?"*

- *Character 2: "It was great. I went to a comic book festival with my family and on Sunday we had a barbecue."*

- *Character 3: "There is no saying, a slower pace, it feels good. I'm fresh as a daisy!*

In box C5, one of the two characters is also saying, *"Well, the machines worked well while we were sleeping"*.

This sketch also highlights two main roles people can have regarding machines: some people are monitoring machines while others are working with (or for) them. In box C2, we can see people in a kind of "control tower" (which we imagine to be their office) overhanging the production lines and the machines. We can imagine this office as the management office. Thus, we can read in the two balloons: "*It is Kevin and Michel who were in charge of the watch of the whole factory*" and "*Hi guys. We are ready to take over*" - which suggest first, that the

control tower is the office of people who are in charge of the production line, and second, that people in charge of the production line keep working at night.

In box C3, we are in the management office with the two managers who have taken over from "Kevin" and "Michel" and we overhang the whole production area. We can see, the two managers monitoring the production through screens on which are displayed graphs and charts.

In box C4, we are back in the production area with the machines and we observe someone from behind that we can imagine is an employee since he or she is doing a low-skilled job: loading tools on a "servant" (which a small robot that moves around the factory and gives the machines the tools they need to work). This employee is saying "*We loaded the "servants" on Friday. They changed the tools by themselves this weekend.*" Therefore, we can understand that contrary to managers who keep working at night, employees do not work at night anymore.

Change requests

Many change requests are made by the site modernization manager and the team project. These requests are compiled on an Excel spreadsheet (see figure 2). At the top of the spreadsheet, we can see the initial sketch and some comments that summarize the content of the cartoons. These comments are structured as follows: themes to be addressed, settings, actions/movement, teams and vignette. At the bottom, in red, we can see the requests for changes made by the charge of the modernization of the site following the presentation of the drawing to his team.

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Figure 2) The change requests compiled on an Excel spreadsheet

There are many requests for changes. Indeed, it is decided to change completely the message of this page. Instead of focusing on the improvement of employees' quality of life, the site

modernization manager wants to show the emptiness of the plant by night. As explained by the cartoonist: *"The whole point was to say 'it's an empty factory, it's clean and it runs itself'"*.

In order to mark the contrast with the plant by day, it is decided to show people working by day and machines working by night. In the spreadsheet we can read: *"C1: Workstations on the afternoon, regular production flow and teams that prepare the machines for the night, always five people"* and just after *"C2: The same view at night but <u>without people!</u> An activity and a flow of production which remain nevertheless equivalent to the achievements of the day (darkness atmosphere)"*.

The cartoonist is also asked to highlight the increasing role of machines in production flow. He is asked to represent better the MCM machines (the one that be fully autonomous by night) to organize the page in order to show chronologically, how employees will work and interact with the machines throughout the day. The aim of the changes is also, even implicitly, to psychologically prepare the employees for the disappearance of certain jobs in the plant. Hence, a palletizing robot (a multifunctional robot that is able to load the servants) has been purchased and is supposed to be put into operation in a short term. For that reason, it is decided to remove the cartoon with the men loading the servants (box C4) and to draw instead a box representing a palletizing robot. In order to represent the palletizing robot as faithfully as possible, the cartoonist is asked to use some technical drawings of the robot as a model. He is also asked to add the words "palletizing robot" in a speaking bubble so the robot can be easily identified by all the employees.

In addition, it was requested that the "*control tower*" be removed. Two reasons are given by the cartoonist. First, because, it not sure that the management office will overhang the production lines as represented. Second, because the site modernization manager is afraid that it sends a message of "*I supervises everything*" which could go wrong.
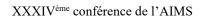
The final version of the page

The final version (see figure 3) is a comic strip of five cartoons, four representing work in the factory during the day and one, the largest and most central, representing work in the factory at night. The contrast between the four small cartoons and the large one is striking. While the four daytime cartoons show employees interacting with each other and operating the machines through screens, the nighttime cartoon is completely empty. In the nighttime cartoon, everything is done to highlight the machine work. While the cartoon is tinted of blue, we can see a white light in front of each machine, which indicates that they are operating. The name of the machine "mCm" is explicitly written on one of the machine so we can easily recognize them.

Each cartoon is associated to a precise schedule and a particular team. For the four daytime cartoons, we can read: 08:01 Morning team; 10:25 Morning team; 14:36 Afternoon team; 18:29 Afternoon team. For the last cartoon of the plant by night, we can read 23:17 but there is no team mentioned, which highlights that the machines do not need anyone to operate at night.

As explained by the site modernization manager when we asked him to comment the cartoon:

"It (the cartoon) i's explaining to people that they're going to work morning shifts and afternoon shifts. The idea is to say that at 23:17, the plant will be autonomous. It will inevitably lead to reflections and debates, because even though we've been saying for months and months that we're moving towards autonomy, an illustration will certainly be more telling. With the light here indicating that the machines are running."

The palletizing robot is also represented in one of the four daytime cartoons, at the bottom of the page. In this cartoon, two operators are watching the robot working and one of them is saying: "*Everything is ready! The palletizing robot will do the loading during the night*".

On one of the small cartoon, an operator is watching graphs on a screen. These graphs are real images that the site modernization manager has sent to the cartoonist. He wanted him to add real images on screens to make the cartoons more credible. In this comic strip, we can also see two black screens (on the daytime cartoons at the top and top left) on which we can respectively read "*Jours sans AT 204*" and "*Jours sans AT 235*". These screens are counters of the number of days without accident ("Jours sans AT" means "Days without work accident"). If these screens may seem to be details, they are actually quite important. First because, they allow to show that thanks to the machines, the number of accidents is decreasing (we can see that from one image to the other the number of days without accident increases). Second, because they also allow showing that the quality of life at work matter in the plant.

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Figure 3) Final version of the page "*The plant's autonomy by night*"

3.3 DRAWING THE FUTURE THROUGH SIX INTERTWINED PROCESSES

From our analysis of the case study, we identified six intertwined processes leading to the manufacture of the organizational cartoons: negotiation, clarification, prioritization, storytelling, popularization, interpretability. The six processes identified here are ideal typical. They influence each other and do not necessarily take place in a chronological order, even if some are more prevalent at the beginning of the process (for example, the stabilization of a group) and others at the end (for example, the tension between realism and vagueness).

Negotiation. The first process that interests us is that the realization of a drawing required the implementation of a collective of actors. The cartoonist did not act on his own initiative. He was solicited by a principal, the site modernization manager. In addition to these two main actors, other members of the organization (the project team members and some technical

directors) participated to the project and were able to participate in the different rounds of discussions and suggestions to modify the images. Not all of them had the same level of involvement, but they nevertheless formed a collective within which the exchanges took place. Within this group, roles were distributed but not in a porous way. For instance, there were many negotiations within the project team. The whole team did not agree on the elements to be shown and the elements to be changed in the drawings. During our interview with the site's modernization manager, he reported this exchange between him and a member of his project team:

"When the cartoonist came back and showed us the first sketches, Jimmy, the logistics manager, asked, 'It is possible to add two people here?' He was actually realizing that with productivity gains, there will be major changes in his team. So I told him, 'No Jimmy, this cartoon represents exactly what we discussed.' He answered 'But Michael (a member of Jimmy's team) is not represented on that picture'. And I said, 'No Jimmy...'"

Since the negotiation is between the actors in this group, it is interesting to look also at who is excluded from the group. Here, it is notably the operators who, although the main recipients of the images, were not directly asked about their realization. Unlike the members of the management, no formal meeting with a dedicated time was planned for the cartoonist to exchange with them. We can see that if the act of drawing is the fruit of a single person, the overall process of producing these comics is in fact the fruit of a heterogeneous group of actors whose objectives must be questioned in order to clarify the dynamics that may have taken place.

Clarification. The group dynamic is interesting because it leads actors to review and modify their positions on future industrial transformations. The transition to the Factory of the Future is a complex process that involves a multitude of technological and social issues. Most actors focus on one aspect of this transformation (for example, the future of maintenance) and do not

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necessarily have an overall vision of what the pooling of all these innovations will bring. Through the existence of a group and dedicated discussion spaces (to jointly produce the comics) the actors are able to clarify their understanding and vision of what the Factory of the Future is. In particular, the successive iterations with, each time, modified storyboards allow refining the representations of technological changes that were previously unclear. The cartoonist's work also allows to highlight the impact of the factory of the future on the organization of work. Hence, while the project team wanted to emphasize the technologies of the future (in particular virtual reality) when they started they work with the cartoonist, they realized with the first sketches that the modernization project was not only a technological matter but also concerned how employees will work together and with the machines. The cartoonist explains:

"There first reaction was, "Well, the glasses... It's not so important. It's going to happen, yes, but there are other things that are very important that you don't see."

A similar and parallel process is that of **prioritization**. Through successive iterations and exchanges, the members of the drawing group are able to choose which central elements of the transformation should be shown and which can remain in the shadows. Through this process, we understand that cartoons operate as material devices through which individuals can visualize a complex and uncertain change initially difficult to grasp. Because only so much can be represented on a cartoon, in the face of a complex transformation such as the Future Factory, members are forced to prioritize the elements they seek to display. By making some dimensions visible and other invisible, actors take the right to define what the core is and what is marginal in the Future of Work. As explained by the cartoonist:

"My first drawings made them rethink on their priorities. There were things they didn't want to show anymore and things they wanted to change. So my drawing made them work on the message they wanted to transmit."

Storytelling. The fourth process is the transformation of a set of technological innovations into a unified narrative. Basically, plant managers seek to reassure operators about the introduction of new machines and technologies that will help automate the production process. Rather than seeing the drawing process as a technical, manual and neutral process, the cartoonists emphasized several times his role in facilitating storytelling. Hence, the cartoonist went far beyond his graphic role to discuss the substance of the scenario and the final story. As he explains:

When I started, I thought, "They're going to give me a script and I'm going to put it into a comic book". […] But in the end, the biggest job I had to do is the scenario in itself. That is to say, translating into a story and into images of what they had to tell".

Popularization. These technological innovations rests on technical specificities and intricacies which are difficult to explain and often rely on jargon. During the cartoons' creation process, jargon and technicalities are translated into everyday vocabularies or terms which are familiar to operators. That way, cartoons are transferring the technological innovations into popular culture. What was once elitist's ideas about the Future of Work are translated into simplistic ideas that lay people can integrate. As explained by the site modernization manager:

"The project is still quite conceptual, and we were not sure that all our teams had in mind what we wanted to do. […]. So, we had to find a way of communicating that would be more readable and understandable for all of our staff".

Interpretability. The end goal expressed by the site modernization manager was that workers could picture themselves in the situation represented on the cartoons. Many details were added to create a sense of realism. For instance, on the image below, we can see a schematic view of a motor which was sent to the cartoonist. It is then drawn on the upper left square of the final image. Workers can therefore quickly identify those graph because they use them on a daily basis. They get a sense of familiarity about the scene represented here.

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Figure 4) Example of a real graphic inserted in a cartoon

However, the cartoonist noticed paradoxical demands: while he has been asked to make the cartoons more realist, he has also been asked to let them unfinished so as to remain open to interpretation. When he offered to give a graphic novel style to the drawings so the faces can be recognizable, the site modernization manager asked him to go back to the previous version. The sketch-like version of the cartoons was therefore better suited to represent movements, but, also, because it its blurred aspect, allowed easier to imagine oneself in those images: faces are not recognizable (it can be us) and strokes are open-ended (I can imagine finishing the drawing by putting myself in it).

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Figure 5) Graphic novel style (on the left) and sketch-like version (on the right) of a same page

DISCUSSION

This research presents three contributions: investigating the manufacture and not only the content of organizational comics, understanding how more inclusive corporate imaginaries could be made and expanding a critical view of Industry 4.0. We detail these contributions below.

Firstly, we highlight the necessity of investigating not only organizational comics' content but also how they are manufactured in order to develop a more refined view of the power relations at play. Visual devices have a key role in shaping organizations' strategy (Boxenbaum et al., 2018).

Previous studies have shown that visual artefacts contribute to workers' practice of future making (Comi & Whyte, 2018). We reinforce those studies by delving more into the concrete steps of the manufacture of organizational comics. This enables us to view the management team as heterogeneous. Adding to structuralist view of imaginaries as tools for sustaining hegemonic value regime (Levy et al., 2016; Levy & Spicer, 2013), we highlight the diverging interests of managers when they contribute to the design of organizational comics. The study of organizational comics crafting allows us to explore which representations are finally chosen and which representations are not present. More interestingly it also allows exploring which representation were, at some point considered, and then opt out.

Secondly, by identifying six intertwined processes in the creation of corporate cartoons we show how we could intervene to shape corporate imaginaries in a different direction. Scholars and activists have been recently more pressing in their calls to change corporate imaginaries in the face of the multiple crises we now face (e.g. Roquebert & Debucquet, 2022). In our case, managerial power is enhanced through an un-inclusive process of creation of the organization cartoons. Only the factory managers and the site modernization manager were associated in the process and employees 'voice was minimal. If they were able to express concerns or raise particular counter interpretations of the images, the modernization project team members did not have the power to ask for changes in the representation of the Factory of the Future. Cartoons are therefore conceived as a mere tool to communicate rather than a space for generating signification (Quattrone et al., 2021). By helping us understand how those corporate

imaginaries are formed, we open new venues for shaping those imaginaries in a more ethical and sustainable direction. For instance, we could explore the consequences of integrating more diverse actors in the group formation stage. We could also lean the prioritization phase towards different key values.

Finally, we contribute to critical perspectives on Industry 4.0 (e.g. Briken et al., 2017; Cetrulo & Nuvolari, 2019) by showing how its main proponents are downplaying and obscuring its negative transformations. In our case, by embodying change, cartoons make the digital turn already a reality and help management to impose their imaginary by suggesting that digitalization and automation are the only possible future for the factory.

Communication around that cartoon is also a way for managers to impose their imaginary and close further debate about critical issues such as job loss, alienation, deskilling, wage decrease and loss of autonomy at work. Cartoons can therefore be understood as visual rhetorical devices used by managers to convince that their imagined representation of the future is an objective depiction of social reality and the future of work in the factory. It is a way to give life to the managerial imaginary and, as a result, to make it real.

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