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Designing Consent: Emerging Spatialities in Data-driven Work Environments

INTRODUCTION

In his book Manufacturing Consent (1979), American sociologist Michael Burawoy tried to answer the long-standing question in industrial relations, why do workers routinely consent their own exploitation?[1] He argued that surplus labour is secured, and obscured, by constituting the labour process as a game, fostering internal competition, and creating internal labour markets. The labour process emphasises workers as individuals rather than a class, as a way of aligning the interests of capital and labor. While Burawoy's question and proposition are still relevant, they are not sufficient for conceptualising consent in the time of post-industrial, automated, and smart work.

As proposed by Byung-Chul Han, the era of biopolitics, a central force in industrial production, is obsolete and we are in the era of psychopolitics.[2] Big data and smart technologies are seductive mechanisms that neoliberalism uses to exploit the psychic realm for surveillance and control. Instead of discipline and deprivation, psychopolitics are pleasing and fulfilling, reward us with emotions and the opportunity to become subjects. At the same time, as our behaviour is modelled by algorithm correlations on big data, neoliberalism is making us its subjects—master and slave in one.[3] Overall, compliance is turned into consent.

Today, across economic sectors, data collection technologies allow for pushing even further the individualisation of the work process. Ideas of autonomy, personalisation, flexibility, self-monitoring and positive psychology dominate entrepreneurial discourse. While research has looked at this questions from the perspective of industrial sociology,[4] shortcomings still remain concerning how management and space entangle towards the creation of new narratives building consent in contemporary human and non-human work environments. The question is therefore, how might their design be participating in the psychopolitics of control and worker consent.

1   Michael Burawoy, *Manufacturing Consent: Changes in the Labor Process under Monopoly Capitalism* (Chicago: The University of Chicago Press, 1979).
2   Byung-Chul Han, *Psychopolitics: Neoliberalism and New Technologies of Power* (London: Verso, 2017).
3   See also: Justin Joque, *Revolutionary Mathematics: Artificial Intelligence, Statistics, and the Logic of Capitalism* (London: Verso, 2022).
4   See for example: Sophia Galière, "When food-delivery platform workers consent to algorithmic management: a Foucauldian perspective," *New Technology, Work and Employment*, volume 35, issue 3 (November 2020): 357–370; Caitlin Petre, "Engineering Consent: How the Design and Marketing of Newsroom Analytics Tools Rationalize Journalists' Labor," *Digital Journalism*, volume 6, issue 4 (March 2018): 509–527; Paul Jackson, Hosein Gharavi and Jane Klobas, "Technologies of the self: virtual work and the inner panopticon", *Information Technology & People*, Vol. 19 No. 3 (2006): 219–243

The three hypothesis presented below are the result of ongoing exploratory research on this question. Specifically I report on trends identified through the analysis of corporate documents and fieldwork on multiple case study research covering sectors such as horticultural production, dairy farming, and industrial automation in logistics. In these sectors in transition, technologies and spatial design are explicitly coupled to generate ideal the conditions to secure surplus labor. With that, this contribution aims to delve not only on the question of how data is reinventing the way buildings condition performing work, but inquire who is developing technologies and associated narratives, for whom, and to what end.

Critiques as the ones here presented might be derided as conspiracy theories, but I argue that is merely an evasion. What follows are not conspiracy hypothesis to explain new forms of supporting capitalist exploitation. In fact, the treatment is much closer to a market analysis with the results being an outcome of observing trends in the working of market forces and actors. That being said, the three hypothesis I put forward below are particular trajectories in the design of work environments for consent. Architecture in the service of workplace psychopolitics, paradoxically, exists alongside other forms of oppressive work conditions, and the fact that the reasons for a worker to consent their exploitation are far more complex than what this paper can encompass.

GAMING ENVIRONMENTS: INDIVIDUALISATION AND COMPETITION

Hard-core members of the *gamers* community use red, blue and green (RGB) LEDs lighting to create special effects and personalise their gaming room setup. 'This is what my room looks like with no RGB, I literally feel dead inside,' tells a gamer in a YouTube video.[5] Indeed, purportedly these light also help setting the right mood and to boost concentration on the game.

The spatial design of control rooms for industrial automated processes follow a similar logic for achieving consent and work satisfaction in routine work. 'Incorrectly planned environments intended for 24x7 use often are depressing, unwelcoming and uncomfortable at best — and at worst create fatigue and boredom' reads a web page by ABB — a top industrial automation company.[6] 'Operators are not static robots,' tells another document, after all, 'they are human beings who thrive on variety, stimulation, activity and choice.'[7] With that, the workspace nurtures a feeling of 'proactive alertness' in the operator.[8]

The operator's desk is the ultimate *gaming station* of the post-industrial worker. In advanced models, operators can save up to 10 ergonomic and environmental presets. The operator blends with the console in a 'neocybernetic' fashion — the machine recognises workers, adapts and reacts to their bodies and environmental preferences, and provides them with the information at the moment that is needed.[9] As in a gaming room, light is a key component in the desk. Its intensity and colour temperature creates 'the perfect meaningful non-flickering light for each individual operator and situation.'[10] Such emphasis on gaming-like environments is evident in the remote control console, a Nintendo-looking device with Joysticks, buttons, coloured lights, and icons.

Despite the emphasis on the user being in total control, individual choice is limited when this can jeopardise the quick and smooth movement of information between human and machines. The so-called Operator Activity Cloud monitors the workplace environment and warns the operator when light, sound or air quality are not meeting standards and impacting alertness. The system can eventually take control, and individual comfort preferences can 'be automatically overridden by the process system in pre-determined situations.'[11]

Gaming takes a totally different dimension in a data-driven glasshouse horticulture business. Data collected at the level of the individual employee through labour registration systems allows to assess individual performance. The idea is that instant 'performance feedback motivates staff to be more productive', particularly when there is a bonus involved.[12] The performance ranking of employees is shared publicly in a dashboard on a monitor in the canteen — the only social space available in the glasshouse — shaming slow workers and motivating individual competition. Data transparency becomes an instrument for the control and creation of subjects who strive to be 'liked' and receive a monetary and emotional reward.

FREEFLOW MOVEMENT: AUTONOMY AND CONTINUITY

Centralised systems of control and data registration can impact negatively industrial processes and worker's satisfaction. Human and non-human animals bodies occupy space, and their accumulation in a single, necessary passing point can cause data-capture processes to slow down. For example, in a glasshouse, vegetable pickers register their actions on a terminal via a RFID tagging device linking their ID, activity, and performance (number of

5   Tech Tesseract, "TRANSFORM your GAMING SETUP with RGB Lighting! How I light my Gaming Room!", YouTube video, accessed August 25, 2022, https://www.youtube.com/watch?v=dZgABJ72y20
6   "How to enhance control room operator capacities: human factors and ergonomics", ABB, accessed August 25, 2022, https://new.abb.com/control-rooms/features/how-to-enhance-control-room-operator-capacities
7   With ABB's desk system "It's even possible to have one temperature above the desk and another down on the floor for someone who suffers from cold feet." ABB, "System 800xA Operator Effectiveness Control rooms of the future are here now" (2012), 4. See patent filing: ABB AB, "Automatic Configuration System For An Operator Console" (International, 2015).
8   ABB, "How to enhance control room operator capacities."

9   See: Antoine Picon. *Smart Cities*: A Spatialised Intelligence (Chichester: John Wiley & Sons, 2015). A patent filing by ABB refers to a drowsiness alert system in which a wearable device would monitor the operator's vital signs. ABB AB, "Drowsiness Alert System For An Operator Console" (International, 2015).
10   ABB, "How to enhance control room operator capacities."
11   "System 800xA Operator Effectiveness Control rooms of the future are here now," ABB, accessed February 2018, 4, https://library.e.abb.com/public/23e1ec050575dc4fc12579e6002b8d22/3BSE068791_en_800xA_Control_rooms_of_the_future_are_here_now.pdf?x-sign=j+NIVGydq0pluJrZed7dTqvFUOdCVDaCEWyNZ/7+xLsdZ+Th/iiD8LmOzrEaRE3q
12   "Work-IT. Manage labor and production by data monitoring," Hoogendoorn, accessed 25 August, 2022, https://www.hoogendoorn.nl/en/product/work-it/

kilograms collected for example). Workers clustering at the same time to register their labour on a terminal increases the risks of human error, time, and costs. In a dairy farm, an ill cow can potentially obstruct the passageway to the milking robot, disrupting the traffic of the most productive animals.

In both examples, what is at stake is achieving a seamless and unobstructed continuity in the movement of flows of data and matter. At the same time, low levels of worker's consent (and animal welfare) is generally attributed to such suboptimal sequences of actions, inefficient layout of workplaces, and invasive forms of control. All of these ultimately increase stress, and affect individual agency and autonomy in performing the job.

Not surprisingly, industrial technology companies have realised the synergistic relation between efficient flows, and consent, and devised new ways of data-driven control and organisation of movement in productive spaces. 'Co-ranger Productive: Seamless Works' is a system developed by Dutch company Ridder, already in use in indoor tomato growing operations.[13] Sensors, placed on the harvest carts, and on the workers' wrists make possible to register real-time positions with an accuracy of 10 centimetres. Data is sent to beacons on the roof. The algorithms of Ridder's management software correlate data to generate reliable registration of labour and output. With no visible control terminals conditioning movement and relations, hierarchies of control and servitude are blurred. Managers and workers delegate control tasks to the system. Managers have less work, and employees can focus on doing their without worrying about forgetting to register or making mistakes impacting their pay.

In dairy farming, solutions for controlling animal labour are heading in a very similar direction. Automated farms are designed as so-called Cow Lounges.[14] In these, cows roam free and decide when they want to be milked, reportedly giving them the opportunity to express their natural behaviour and liberating them from stress. By correlating data from gelocation and other sensors placed in the cow's collar, the algorithm can identify the social ranking of each cow or the status of their health—aspects that can lead to congestion in the milking robot. A carefully designed set of automated gates and fences then directs the problematic cows to a special zone in the barn, safeguarding the freeflow of productive animals.[15]

BUILDING APPEARANCES:
EXPERIENCE AND AESTHETICS

Sectors transitioning from an industrial to post-industrial, automated, data-driven mode of operations, such as port logistics or glasshouse horticulture,

might be employing architecture as a tool to both legitimise themselves as good employers and keep workers satisfied. Working on the port or in agriculture holds certain stigma, as it is traditionally associated with low-skilled, masculine and tolling jobs, and these sectors are the object of severe criticism for their environmental footprint. Yet since the use of automation technologies, modern port logistics and horticulture need to recruit high-skilled professionals, including data scientists, which are hard to attract and retain.

Companies are therefore obliged to adopt external architectural practices that have proved successful for other organisations—that is, they are externally legitimated—in order to increase their attractiveness. Indeed, these new types of jobs require a different type of space. Port workers do not operate cranes from an uncomfortable cabin anymore. The shift to automation and remote control allows to centralise operations in one office building. Further, those manly stevedores are replaced by young professionals, including women. Interior designers are hired to create attractive social spaces in office buildings, such as lounges, canteens, pantries, or meeting rooms. As mentioned before, workstations are highly technological and individualised. The layout of the tables, auxiliary furniture, and materiality of wall panels, roofs and floors in the control room are of utmost importance to achieve focus. But also to create an environment in which technical and architectural solutions create a desirable workspace, highly individualised yet collaborative and social: 'All of these factors work in favor of attracting new and hopefully younger operators into the control room.'[16]

A comparable trend can be observed in glasshouse horticulture. Technokas, a company offering architectural and engineering services for growers points at how the image of glasshouse is becoming increasingly important —to create a better experience for customer, but also 'to increase their attractiveness on the labour market with a representative business space'.[17] While the everyday work of seasonal, routine-work employees changes in one direction, companies pimp up business premises for their managers and scientist with 'high efficiency coupled with a high aesthetic value.' Indeed, horticultural entrepreneurs suddenly recognise the need of having a public facade, an appealing presence in the urban environment, and modern office environments to cater certain type of workers. With improvements in lightning and environmental control, the envelopes of these buildings are getting an additional purpose. Form and ornament seem to be giving these architectures a new form of monumentality and representativity in the landscape. Overall, it is about making of the workplace a space of emotional experience, which appeals to questions of comfort and design.

13   "CoRanger Productive: Seamless Works," Ridder, accessed August 19, https://ridder.com/ridder-coranger-seamless-works/
14   "Cow Lounge®," ID Agro, accessed September 2, 2022, https://www.idagro.com/products/cow-lounge
15   "Barn Design for Robotic Milking," Lely, accessed August 20, 2022, https://www.lely.com/media/filer_public/0e/fd/0efd2985-1aaf-4eb4-98dc-530fb3ce5b45/stallenbouw_en_20-05-10.pdf.

16   Per Lundmark, "Control room ergonomics with the operator in focus for an attractive collaborative environment," ABB Value Paper (n.d), 6, accessed September 3, 2022, https://library.e.abb.com/public/0c863836b06a0818852575ac00620b97/1463_Lundmark_Control_Final.pdf
17   "Grote doelmatigheid gekoppeld aan hoge esthetische waarde," Technokas, accessed September 2, 2022, https://technokas.nl/smart-greenhouses/bedrijfsruimte/grote-doelmatigheid-gekoppeld-aan-hoge-esthetische-waarde/

CONCLUSION:
WORKERS AS SUBJECTS, WORKSPACES AS A LABORATORIES

Between 1928 and 1932, Elton Mayo and Fritz Roethlisberger of the Harvard Business School conducted a series of experiments in the Hawthorne plant in Chicago. Their aim was to discern which conditions nurtured work satisfaction, and consent.[18] While they drew some conclusions linking higher levels of agency and cooperation in doing the work to job satisfaction, the experiment lost credibility on methodological grounds.[19] Nonetheless, the study did bring a key insight: the so-called Hawthorne effect.[20] An unwanted side effect in observational research, it describes how individuals modify their behaviour—in this case attention and interest in their work—and consent when they are being observed and receive feedback during an experiment. Research has shown that the reverse is also true: anomic workplaces—that is, incompetent management and inappropriate means to do the work—undermine consent.[21]

Since 2016, when I began researching automated landscapes, there has been an acceleration in the development and application of automated and data-driven technologies at workspaces. Companies in the sectors investigated are constantly updating their systems, introducing new technologies, and collaborating with technology developers in testing others currently in development. In that way, the workplace becomes a laboratory. Workers are then put in a situation in which it is not just their performance that is being observed, but also one which shows how management is competent and *cares* for better, more efficient working conditions, and, most importantly, one in which, as subjects of an experiment, worker's experiences in interacting with technology are observed, and *matter*.

What data scientists need to train their machines, and improve their correlations and behavioural predictions, is the unobstructed flow of data. As long as humans and non-human animals are part of the assemblages of production, gaining their consent will be needed. By creating conditions for competition, autonomy, and emotional affect, experimental approaches to the design of work environments seem to be participating in the psychopolitics of control and worker consent. To what extend the shift from workers as objects of exploitation to the creation of subject-workers through technology and design impacts their consent at work is a question that demands additional inquiry. In that sense, further research should focus on providing empirical evidence to test this hypothesis. This would necessarily need to account for the voice of the workers to understand how they perceive these technology-led transformations in the spatialities of work, and how these condition their relation to employers.

18   Elton Mayo, *Social Problems of an Industrial Civilization* (Boston: Division of Research, Graduate School of Business Administration, Harvard University, 1945)
19   Irving Schonfeld, Chu-Hsiang Chang, Occupational health psychology: Work, stress, and health (New York: Springer, 2017).
20   H.M. Parsons, "What happened at Hawthorne?: New evidence suggests the Hawthorne effect resulted from operant reinforcement contingencies," *Science*, vol 183 issue 4128 (March 1974): 922–932.
21   Randy Hodson, "Organizational Anomie and Worker Consent," *Work and Occupations* 26, 3 (August 1999): 292–323