The Human, Conditioned

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Introduction

'Man is the Measure of All Things'

Dan Handel and Víctor Muñoz Sanz, editors

This introduction takes its title from a quotation of the pre-Socratic philosopher Protagoras, which opens Ernst Neufert's *Bauordnungslehre* in the 1943 edition, a book which, arguably, would become one of the most influential manuals of architecture in the twentieth century.[1] The phrase is positioned above an illustration of a 'standard man', broken down to its dimensional modules, which Neufert would use as the norm through which an entire world of standard living would be constructed. Neufert's standard man was a descendant of a humanist tradition that went back at least to Leonardo da Vinci's Vitruvian man, channeled through the requirements of modern industrial economy.[2] As Neufert would develop his Octametric system, which attempted to standardise masonry with a 12.5 cm module, he amended the dimensions of the standard man accordingly.[3] And so the opening quote appears in an ironic light: the brick was in fact the measure of all things, including man, trapped forever in a three-dimensional Octametric matrix.

Bricks were also involved in what can be considered the most complete experiment in conditioning humans – the advent of scientific management at the turn of the twentieth century. Frank and Lillian Gilbreth, who would become known for their 'time-and-motion studies', initiated their quest towards efficiency by developing a method to optimise the process of bricklaying. As they aligned their practice with the ideas of Frederick Winslow Taylor, they used chronophotography to analyse and engineer bodily movements, a method which they understood as a malleable process of integration between the worker and his environment. This practice was soon backed by an ideological and moral drive. In their 1912 *Primer of Scientific Management*, the Gilbreths argued that time-and-motion studies could form the basis of a 'science of eliminating wastefulness resulting from using unnecessary, ill-directed, and inefficient motions'.[4] This was in line with contemporary ideas of efficient production, which, Martha Banta writes, saw 'the human element' as the only obstacle to a better society. It was therefore proposed that a closer alliance with the machine should be forged, in which 'the machine was [presented as] the great emancipator of mind and soul'.[5] The Gilbreths thus studied not only the physical qualities of workers, such as anatomy, health, nutrition, size, and mode of living, but also their skill, training, and earning power, and even gave attention to psychological features, such as creed, contentment, and temperament. They then specified the variables of the working environment, which included everything from the size of the units moved and the tools used in the process, to lighting and heating conditions, colours used in the space, and social factors, such as union rules.

The attempt to analyse and get into the mind of the worker was not common among the apostles of scientific management, who were mostly focused on the more technical aspects of work.[6] It was developed in a context of attempts to integrate psychology into economic industrial rationale, significantly promoted in the works of German-American

psychologist Hugo Münsterberg, who inquired, in one of his influential publications: 'how we can produce most completely the influences on human minds which are desired in the interest of business?'[7] In response to this challenge, Münsterberg proposed a complex interaction between humans and machines, in which both needed to adapt: 'No machine', he writes, 'with which a human being is to work can survive in the struggle for technical existence, unless it is to a certain degree adapted to the human nerve and muscle system and to man's possibilities of perception, of attention, of memory, of feeling, and of will.'[8] In his view, what he termed 'psychophysical energy' flowed seamlessly between minds, bodies and machines, blurring the boundaries between 'subjects' and 'objects', now entangled in a continuous process of reciprocal adaptation.[9]

While descriptions of psychophysical energy may strike a note of strangeness in our contemporary understanding of mental processes, they prefigure the feedback environments of cybernetic thinking, in which organisms and machines populate a universe of communication. As Beatriz Colomina and Mark Wigley noted, the schematic representations of these environments echoed Neufert's 'silhoutted normative body surrounded by geometry', now showing 'images of the human inside cybernetic feedback loops'.[10] However, at least in theory, man was no longer the measure of all things: human actions and reactions were deciphered in similar ways as these of other organisms and machines, which opened a glimpse into a non-humanist view of the world.

The problem was that cybernetics was from the outset related to (human) control. Norbert Wiener was well aware of that not only in his initial definition of the new field as 'the science of control and communication in the animal and the machine', but in expressing his hopes that 'the good of a better understanding of man and society which is offered… may anticipate and outweigh the incidental contribution we are making to the concentration of power.'[11] Behind the dreams and aspirations of the cybernetic project for achieving interactive and contingent devices and environments, lay the contradictory legacies of behaviourism, teleology, and control engineering, as Lucy Suchman well noted.[12] Ultimately, cybernetic thinking led Western societies to subject themselves to a grand experiment that Donna Haraway presciently described as 'the translation of the world into a problem of coding'. It is 'a search for a common language in which all resistance to instrumental control disappears and all heterogeneity can be submitted to disassembly, reassembly, investment, and exchange.'[13]

Three decades after these words were written, the algorithms that were developed by Silicon Valley technocrats promising the creation of yet another better world keep devouring our subjectivities into bits of data, turning in the process the environments we inhabit into surveillance and conditioning machines. Malls and casinos track movement patterns, wearable technologies record heartbeats, social media crawlers monitor reactions, and polling companies aggregate sentiments to transform all human thoughts and actions into monetisable data, with the implicit ambition to condition humans to an invisible matrix of supply. The dream corporations now dream is a complete passive version of ourselves, constantly served with products and experiences with the human element reduced to the confirmation of a credit transaction.

As Michael Osman noted, at some point at the inception of these intertwined histories of management and control, a 'misalignment between regulatory thinking and architectural discourse' materialised.[14] Under the guise of being necessary to fulfill biological needs, mechanical systems, record keeping instruments, furniture, or diagrams formed an infrastructure of control and regulation that dislocated the human from its assumed centrality. These systems of conditioning were

merely accommodated by architectural design practice, and taken as part of a determined path towards rationalisation – disregarding other forces and their motivations towards predictable outcomes and security. This issue of *Footprint* focuses on instances in which architecture plays a more active role in these processes. When companies such as Amazon or Google reimagine homes as responsive information envelopes, when museums and retail spaces rethink their interiors in light of its social media impact, and when wearables and other devices track and determine every movement in a workday in a logistics warehouse, architecture's capacity to mediate between our inner landscapes and our surrounding world is undermined.[15] The issue contains cases in which Man – a constant around which fundamental concepts of architecture were developed for centuries – becomes a malleable category, to be deliberately challenged and altered through spatial and environmental manipulations.

The term Man, and the humanist tradition which followed from it, have been challenged in feminist, queer, poststructuralist, and postcolonial critiques, which questioned its nature, or even pondered if we are actually human.[16] What we seek here is to add to these perspectives cases of what we call *radical conditioning*, in which some architectures bypass assumed values of humanism and operate under a wholly different set of values, emanating from industrial and post-industrial economies and its technological developments. These architectures dictate the creation of spaces in which the human body has to operate, and to which it needs to adapt in order to survive. The research articles and visual essays included in this issue shed light on the many ways architects, advertently or inadvertently, coalesce with forces intending to condition humans. Unfolding in the study of histories, architectural types, aesthetics, atmospheres, systems, and users, authors propose inquiries along two main directions.

The first trajectory highlights the prolific use in spatial design of concepts borrowed from cybernetics and information technology – user participation and feedback loops for example – for the conditioning of human behavior through the built environment. Nina Stener Jørgensen investigates the concept of user participation through digital technologies in 'Capital of Feedback: Cedric Price's Oxford Corner House (1965–66)'. The analysis of this unbuilt project by the celebrated British architect, and his oeuvre in general, serves as a way of casting new light on his concept of participation and user interaction with the help of technology. More importantly, Jørgensen boldly presents Price's work as both a potential guideline in today's use of information technology and smart systems in design, and as a cautionary tale on contemporary promises of emancipation through technology.

With 'Action Office, or, Another Kind of 'Architecture Without Architects', Philip Denny articulates how Robert Propst, the inventor of the Herman Miller Action Office furniture system, defined the protocols for transforming every component of daily office work into a cybernetic loop full of data that could apply to projects beyond the workplace. Denny argues that, devised as a multimedia system aimed at circulating data through the workplace, Action Office complicated the boundaries between architecture, furniture, and organisation – a fact that has kept the full breadth of Action Office somewhat away from mainstream architectural scholarship.

Andreas Rumpfhuber opens up the Quickborner Team archives with 'In Praise of Cybernetics: Office Landscaping and the (Self-)Conditioning of Workers'. In this visual essay, text and graphic materials dissect the cybernetics-inspired design methodology of this system proposed in the mid-1950s, and the non-hierarchical organisation of the resulting Bürolandschaften (office landscapes). Ultimately, Rumpfhuber argues that the Quickborner Team's goal was not only to radically,

and constantly, reorganise office floors based on feedback loops, but to facilitate the self-conditioning of workers to the benefit of the organisation.

The second trajectory deals with architecture conditioning the creation of new subjectivities, placing the body as the territory of intervention. These contributions elucidate and speculate on the relationship between the design of the extracorporeal and the conditioning and design of the corporeal.[17] In 'Building Bodies, Constructing Selves: The Architecture of the Fitness Gymnasium', Sandra Kaji-O'Grady and Sarah Manderson present a survey of different types of gym, their architectural articulation, material language, and atmospheric qualities. With that, they highlight how these spaces, their fetishisation of traditional spaces of work and control, and the rituals that happen within, (re)produce a desire to voluntarily submit oneself to discipline and assessment towards the construction of new subjectivities and the redesign of the body as an object of conspicuous consumption.

With 'From Exigent to Adaptive: The Humans of Air Architecture and Beyond', Elizabeth Gálvez discusses Yves Klein's attempt to envision a post-mechanical architecture that establishes a new, playful relationship between human bodies and the environment. With the survival of the human species at stake amidst the climate emergency, Gálvez's visual essay radically proposes to reconsider Air Architecture as a model towards creating an architecture nurturing a future adaptive-human species.

In 'A Conditioned Exchange', Fredrick Torisson looks at conditioning in the sense of how a certain environment can enable the development of a certain subjectivity, and offer conditions for it to thrive – something which, in turn, locks in the development of the architectural type along a certain path. In particular, Torisson offers an overview of the transformation of architectural spaces for exchange in the sixteenth and seventeenth centuries and its relationship to the emergence of an ethos of speculation and the formation of a new subject, the *homo œconomicus*.

Finally, in her visual essay, Nitzan Zilberman proposes to look at a recent typological invention, the selfie museum, as an environment that challenges architecture's basic ideas of programme and aesthetics. 'On Display: The Strategy of "Flattening" in the Selfie Museum and its Relevance for Architecture' shows how these museums have turned from the display of objects to the display of environments and orchestration of experiences, essentially blurring the line between body and display, and turning subjects into objects to be distributed via social media.

As a whole, these narratives explore the agency of architects and designers to operate in ways that challenge the association of spaces of extreme conditioning with the Hegelian rise of the machine as an inevitable, mythic force external to, but taking over, human culture, to eventually substitute obsolete humans. This prophecy, which shadows the development of machines from automatons to Deep Learning, is heavily biased. First, because it lends ultimate power to those that own and rule the technology – which happen to be those who would benefit from its proliferation. Second, because by doing so it renders humans that work alongside, communicate, and sometimes teach the machines invisible. Mechanisation, as Sigfried Giedion wrote seventy years ago, 'is blind and without direction of itself'; it is more dangerous than any natural force because 'it reacts on the senses and the mind of its creator'.[18] But perhaps a close scrutiny of the spaces in which humans and their artifacts interact in unprecedented ways could provide architecture with the timely opportunity to challenge our anticipated redundancy, and reconsider its own humanism in order to charge it with new meanings.

Notes

1. Ernst Neufert, *Bauordnunglehre* [Lesson in Building Regulation] (Berlin: Volk und Reich Verlag, 1943).
2. 'It was from the members of the body that [the ancient Greeks] derived the fundamental ideas of the measures which are obviously necessary in all works, as the finger, palm, foot and cubit', Vitruvius famously asserted, yet, at the same time, he conditioned the perfection of these bodily dimensions to their fit within a precise geometrical armature, leaving open the ambiguous question of whether the body is defining the geometry or vice versa. See Robert Tavernor, 'Contemplating Perfection Through Piero's Eyes', in George Dodds and Robert Tavernor, eds., *Body and Building: Essays on the Changing Relation of Body and Architecture* (Cambridge, MA and London: MIT Press, 2002), 78–93; Beatriz Colomina and Mark Wigley, *Are We Human? Notes on an Archeology of Design* (Zurich: Lars Müller Publishers, 2017).
3. Jean-Louis Cohen has discussed Neufert's continuous standardisation efforts, which he managed to promote both under National Socialism and after the war ended. See his *Architecture in Uniform* (Montreal: Canadian Centre for Architecture, 2011).
4. Frank Bunker Gilbreth, *Primer of Scientific Management* (New York: D. Van Nostrand Company, 1912), 8. Once the working body was compared to a motor, some scientists 'reasoned it might even be possible to eliminate the stubborn resistance to perpetual work that distinguished the human body from a machine. If fatigue, the endemic disorder of industrial society, could be analyzed and overcome, the last obstacle to progress would be eliminated.' In Anson Rabinach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (New York: Basic Books, 1990), 2.
5. Martha Banta, *Taylored Lives: Narrative Productions in the Age of Taylor, Veblen, and Ford* (Chicago: University of Chicago Press, 1993), 26–27.
6. The interest in the mental aspects of work can be attributed to Lillian Gilbreth, who not only wrote *Primer of Scientific Management* (as well as most of the published works by the Gilbreths), but also earned a PhD in psychology and published her dissertation, *The Psychology of Management,* in 1914. Lillian Gilbreth's attempt to apply psychology to the workplace stemmed from her interest in educational psychology, which she studied briefly with A. H. Thorndike, one of the forefathers of educational psychology, at Teachers College, Columbia University.
7. Hugo Münsterberg, *Psychology and Industrial Efficiency* (Boston: Houghton Mifflin, 1913), 24.
8. Ibid., 159–60.
9. Spyros Papapetros convincingly argued that such reciprocity had to do with a historical moment in which 'artifacts start having cataclysmic effects on people' – a moment when a vital epistemological shift in the status of objects has occurred, allowing us to identify 'new communicative possibilities that essentially undermine the object-subject divide'. In Spyros Papapetros, *On the Animation of the Inorganic: Art, Architecture, and the Extension of Life* (Chicago: The University of Chicago Press, 2012), vii.
10. Colomina and Wigley, *Are We Human?*, 160.
11. Norbert Wiener, *Cybernetics, or Control and Communnication in the Animal and the Machine* (Cambridge, MA: The MIT Press, 1961 [1948]), 29.
12. Lucy A. Suchman, *Human-Machine Reconfigurations: Plans and Situated Actions* (Cambridge: Cambridge University Press, 2007).
13. Donna J. Haraway, 'A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century', in her *Manifestly Haraway* (Minneapolis and London: University of Minnesota Press, 2016), 34. 'A Cyborg Manifesto' was originally published in *Socialist Review* no. 80 (1985): 65–108.
14. Michael Osman, *Modernism's Visible Hand: Architecture and Regulation in America*, (Minneapolis and London: University of Minnesota Press, 2018), xii.
15. Negar Sanaan Bensi and Francesco Marullo, eds., *Footprint* 23, 'The Architecture of Logistics' (Autumn/Winter 2018).
16. To name a few, Donna J. Haraway blurred boundaries between humans, animals, and machines to move away from traditional feminism in 'A Cyborg Manifesto' (see note 13); K. Michael Hays discussed

the emergence of a posthumanist approach within modern architecture in *Modernism and the Posthumanist Subject: The Architecture of Hannes Meyer and Ludwig Hilberseimer* (Cambridge, MA and London: The MIT Press, 1995); N. Katherine Hayles looked at the questions of embodiment in the information age and how that relates to the emergence of the posthuman in *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago and London: University of Chicago Press, 1999); Rosi Braidotti, *The Posthuman* (Cambridge and Malden MA: Polity Press 2013); Beatriz Colomina and Mark Wigley questioned the boundaries between fleshy bodies and technological addendums in *Are We Human?* (see note 10); urban landscapes shaping the posthuman condition were collected by Mariano Gomez-Luque and Ghazal Jafari (eds.) in *New Geographies* 9, 'Posthuman', (Harvard Graduate School of Design: Actar Publishers, 2017); and the reconceptualisation of architecture through the lens of queer theory and trans studies was explored by Robert Alexander Gorny and Dirk van den Heuvel (eds.) in *Footprint 21,* 'Trans-Bodies/Queering Spaces' (Autumn/Winter 2017).

17. For more on the idea of the corporeal and extracorporeal, see Jean-Didier Vincent, 'Interior Architectures' in Philippe Rahm and Jean-Gilles Décosterd, eds., *Décosterd & Rahm: Physiological Architecture* (Basel: Birkhäuser, 2002), 43–49.
18. Siegfried Giedion, *Mechanization Takes Command: A Contribution to Anonymous History* (New York: Oxford University Press, 1970 [1948]), 714.

Biographies

Víctor Muñoz Sanz is an architect and researcher whose work examines the notion of 'workscapes', that is, the architectures and territories of human and nonhuman labour. He holds the degree of Architect from ETSA Madrid, a Master of Architecture in Urban Design from Harvard University, and a PhD cum laude from UPM. Víctor was Harvard's Druker Fellow; Emerging Curator at the Canadian Centre for Architecture; co-principal researcher of 'Automated Landscapes' at Het Nieuwe Instituut; fellow at the Akademie Schloss Solitude; and is currently a researcher at TU Delft. He has published essays in *Harvard Design Magazine*, *Bartlebooth*, *Work Body Leisure* (Hatje Cantz, 2018), *e-flux Architecture*, *Volume*, *Domus*, and *On Site Review*. His research on automation with Het Nieuwe Instituut was exhibited at the Venice Biennale.

Dan Handel is an architect, researcher and curator. He was the inaugural Young Curator at the Canadian Centre for Architecture, developed exhibitions for the Venice Biennale and Het Nieuwe Instituut, and was curator of architecture and design at the Israel Museum. Handel holds an MArch from the Harvard Graduate School of Design, and a PhD from the Technion Israel Institute of Technology. His writing has appeared in *Harvard Design Magazine, e-flux Architecture, Thresholds, Frame, San Rocco,* and *Pin-Up*. He is the editor of *Manifest*, a journal of the Americas and a recipient of grants from the Graham Foundation for Manifest (2012, 2014) and Carpet Space (2019).

Building Bodies, Constructing Selves: The Architecture of the Fitness Gymnasium

Sandra Kaji-O'Grady and Sarah Manderson

Today's gymnasiums do more than shape bodies; they operationalise, monetise, transmit and feed fitness culture and ideologies in tandem with health policies, social structures, education, fashion, popular media and culture. The psychical, social and moral conditioning of subjects that is played out through the gymnasium is not a side effect of physical fitness, but its actual target. This makes 'working out at the gym' a subject of academic interest beyond exercise physiology. Thus, a significant body of research has developed in the humanities, which considers the production, representation and commodification of bodies and selves through gymnasiums. This work attends to the social history of fitness and exercise in gymnasiums; the place of gymnasiums within broader discourses around 'wellness' and health; the work of fitness instruction; the self-presentation of a muscular, fit body in social media; the relationship between working out, success in the workplace and neoliberalism; and the role of gender, class and professional status in exercise regimes in gymnasium settings. The gymnasium itself, as physical infrastructure and site, has been considered in terms of its historical evolution; its spatial organisation in relationship to social hierarchies and gender; and its management. The accessibility, cleanliness, organisation and quality of its facilities have also been studied in relation to consumer satisfaction.[1]

Gymnasiums are more than neutral infrastructure or crystallisations of social practices and systems of thought. They are critical sites wherein competing ideological positions about bodies and their environments are aestheticised. The spaces and settings of the gymnasium materialise Michel Foucault's conception of an 'architecture that would be operative in the transformation of individuals': places that shape matter and have a performative action on whatever inhabits them, imposing this on their occupants.[2] Architecture plays a formative role in shaping the transactional environments through which subjects come under constant transformation and negotiation. Yet surprisingly little has been written on the architecture and interior design of the contemporary fitness gymnasium. Existing scholarship stresses the standardisation of equipment, bodily movement and fitness parameters, going as far as to suggest that 'fitness centres have developed into more or less standardised locations worldwide.'[3] We caution against extending the standardisation of bodily movement that is found in, say, the popular Les Mills Fitness programme and its concomitant equipment, to the architecture of gymnasiums. We observe instead that today's commercial fitness gymnasiums are extraordinarily diverse and knowing in their aesthetic differentiation. Indeed, gymnasium operators and their architects, like the crowd of 'individuals' in Monty Python's *Life of Brian*, all insist on their vision 'for an extremely different gym to anything we have seen,'[4] or claim to offer something unique, including even, the 'anti-gym.'[5]

The global real estate of gymnasium brands has grown exponentially in the last decade, each brand

successfully marketing and deploying a distinct sensibility across multiple locations and cultures. Many are parent companies or chains operating multiple studios and sub-brands, such as Equinox Fitness (which also owns Soul Cycle and Pure Yoga), Barry's Bootcamp, Psycle, Rebel, Third Space, and Crossfit (which positions itself as a movement). The great divergence in design expression between these gymnasium brands illuminates the way architecture is deployed as aesthetic capital, but we think design achieves more here than market differentiation; design elicits desire and constructs subjects. Gilles Deleuze and Félix Guattari note that desire is 'never an undifferentiated instinctual energy, but itself results from a highly developed, engineered setup rich in interactions.'[6] It is just such 'setups' and their relationship to desire that we fixate upon here through analysing the stylistic manifestations into which the gymnasium typology has atomised. In doing so we hope to show just how potently architecture contributes to the self-fashioning that takes *place* through the gymnasium. The desire to subject oneself to the regime of a gymnasium is stimulated by the seductive appeal of the array of potential 'selves' constructed within these spaces. The hybridisations of the gymnasium play with several recognisable aesthetic tropes. Here we examine the luxurious, the machinic, the therapeutic and spiritual, the ecstatic and fetishistic, and the militaristic. Through the translation of these tropes into surfaces, signs, materials and spaces, gymnasiums position their brand, create distinct experiences, and recruit and grow exercise communities.

Shaping Selves, Constructing Communities

Gymnasiums bring together the people, infrastructure, atmospheres, regimes and processes through which the targeted and precise *physical* conditioning of bodies is made possible. In the gymnasium, bodies are literally shaped (or, as some would have it, sculpted), through repetitive exercises and engagement with resistance machines, weights, and other equipment. As Pirrko Markula and Richard Pringle argue, 'gyms are designed to discipline… bodies towards normalcy', towards the ideal male (increased muscularity) or female (thin and toned) body.[7] Or, as Barry's Bootcamp trainer Andy Lee proclaims, the ideal body is one that is 'lean, toned, strong'.[8] In pursuit of this medical and cosmetic ideal, gymnasium attendance has increased across all classes, ages and genders in the developed world over the past two decades. Physical conditioning has a psychical effect. The gym-goer's moods, thoughts, and self-perception are altered. An enhanced sense of self-determination and agency is developed as individuals work to overcome pain, exhaustion, sloth and boredom. The ways in which gym-goers are perceived by others changes too, especially through the entanglement of self-fashioning and self-representation that takes place most intensely through social media.[9] Securing the approval (and desire) of others is just one of the ways that gymnasium environments contribute to the shaping of selves.

Indoor gymnasiums arose simultaneously with the prison, asylum and the schoolhouse 'in the context of a spatial disciplining and the functionalisation of social life.'[10] The gymnasium has since departed from these 'total institutions' as Irving Goffman characterised them in *Asylums* (1961) – where inmates are committed against their will and new identities imposed upon them. The gym has escaped the schoolyard and reattached itself symbolically and sometimes literally to spaces of leisure, hospitality and self-care. Gym-goers voluntarily enter into the belief 'that they need to change, and that it is their responsibility to do so'.[11] Subjects submit themselves to forms of discipline, physical contact, performance assessment, and machinic engagement that in other contexts might be construed as harassment, objectification, humiliation, or torture.[12] This submission takes place in a social and political context, for the belief that one needs to get fit through structured exercise is provoked by media fat-shaming, work-based subsidies, health insurance policies,

advertising and the campaigns of gymnasiums themselves. The responsibility of self-transformation is perfectly captured by the mantra of Barry's Bootcamp – 'Fuck Perfection. You do YOU'– echoing Nike's 'You are entirely up to you. Make your body. Make your life. Make yourself.'[13] Having worked hard to translate their ethos succinctly, gymnasiums often inscribe these emotive images and slogans on their walls – not unlike spaces of religion. The culture of individual responsibility and voluntarism makes fitness gymnasiums extraordinarily efficient from the point of view of both their commercial operation and the state's interests in a healthy populace, with gym-goers paying from their own pockets to perform exercises independently or in groups. The endless annual lists and reviews of 'best' gymnasiums by social and mainstream media influencers further stimulate the appetite for the endless reformation of bodies and subjectivities.[14]

Gymnasiums also shape selves within communities.[15] Emile Durkheim posited that when people come together to perform any kind of ritual, be it dancing, singing or inscribing one another's bodies, a sense of something beyond the self, which we might call religious feeling, is born. He called the state experienced through synchronised social and physical activities 'collective effervescence.' This feeling is then directed onto people or objects that, thereafter, become sacred.[16] Following Durkheim, Matylda Ciolkosz proposes that the synchronised movements of modern postural yoga, mirroring those modelled by teachers, enable greater acceptance of its philosophical notions and religious origins.[17] This may well be the case for all choreographed exercise in gymnasiums, indeed, the experience of 'collective effervescence' is a motivating factor for participating in group exercise at the gymnasium rather than exercising alone at home. Collective effervescence extends the 'natural high' of endorphins from a private experience to a one that is social. Additional rituals before and after the workout prolong its sociality. At BXR London, the collective sociality of the fitness enterprise is promoted as 'another family where you make friends and speak about everything after you train.'[18] Harvey Spevak, the chairman of Equinox, asserts that membership is more than access to the gym, 'it's a lifestyle and a community'.[19] Gymnasiums achieve this sense of a collective through protocols and practices that elicit *ritual* practice among the assembled bodies of gym-goers, which include prescribed postures and actions, as well as initiation rites, performance targets, competitive and social events, post-workout commensality, bathing and grooming, membership structures, etc. Eric Chaline compares going to the gym with organised religion, noting the regularity and zeal of adherents and the fact that 'the faithful of both church and gym travel to a separate building, wear special clothes, eat special food and take part in shared rituals that are performed with complete absorption and dedication.'[20] Like churches, individuals are brought into (and reform themselves in accordance with) the communities and competing ideologies that characterise each gymnasium.

Chaline's comparison between working out and organised religion is not a trivial one, for the architecture of the gymnasium constructs sometimes fantastic sensorial environments for the staging of ritualised activities. As the Barry's Bootcamp brand puts it, 'This is more than a pile of equipment. It's a magical combination of instructor, lighting, music, and the people in the room… the room becomes an ecosystem of collective accomplishment.'[21] The CEO of the Equinox fitness chain claims, 'I tell our architects that I want people to walk into our spaces and feel a bit like they're in a temple – not in a religious way but in a spiritual way.'[22] We have seen such 'collective' accomplishment before, in the synchronous group movements 'of geometrical exactitude' that Siegfried Kracauer identified as the aesthetic of the 'mass ornament.'[23] The dances of the Tiller Girls that Kracauer fixated on were performed on empty stages, against a curtain or

painted backdrop. In the contemporary gymnasium, formations of bodies and machines are staged in more elaborate and augmented settings, but as with the Tiller Girls, the surfaces and movements of bodies become part of the performance. Mirrored surfaces multiply and enhance the spectacle of 'mass ornament', creating the impression of an infinite space.[24] Gymnasiums exploit the full repertoire of experience design – scents, soundscapes and music, light shows, tactile surfaces, manipulations of air quality and movement. The main spin room at Becycle in Berlin, designed by Gotz and Bilchev in 2016, is such a space. It is a black box with acoustic standards equivalent to a recording studio, where DJs play sets at volume levels and with deep base and lighting equivalent to Berlin's famed nightclubs. It recalls spaces of pleasure in which an ecstatic, pharmaceutical release from the pressures of working life are sought and, like them, seeks chemical changes to the body's performance and mood. Many gymnasiums are, like Becycle, theatrically artificial and immersive – tightly wrought, even subterranean spaces, without views in or out, and with highly regulated thresholds for entry. Some manipulate air temperature, humidity, and even gaseous composition to establish a precise microworld. At SP&Co's No. 3 Jubilee Place, the most exclusive of all London's fitness destinations, for example, the reduced levels of oxygen in an advanced altitude chamber make bodies work harder, while giving those who can afford the experience the impression they are elite athletes.

Gentrified gyms

Today, leisure and work are no longer antithetical. What looks like leisure is best understood as an extension of work. The project of the self, or what Paul du Gay identifies as the emergence of an 'entrepreneurial self', is one in which individuals are engaged in a process of perpetual self-actualisation that is motivated by the desire to forge a successful career.[25] As Derek Wynne observes, 'the dominance of work as central to life produces a pattern of leisure practice in which work interests predominate'.[26] Frew and McGillivray propose that 'the health and fitness club is the principal space where the quest for, and attainment of, physical capital takes place'.[27] This means that gymnasiums are part of the machinery of post-industrial economies. A muscular body attained in non-work time and, ironically, resembling the body of a pre-industrial labourer, expresses the modern subject's consent to the punishing work regimes of many professions. Professional identities are thus moulded through engagement with gymnasiums, which is why they are so frequently co-located with workplaces and their membership subsidised by employers. Amanda Waring, observing the use of health clubs by professionals who work in London's money markets, describes the development and maintenance of a fit and healthy body as an integral part of 'a project of the self' leading to enhanced career opportunities.[28] As one participant in Waring's study suggested, boutique fitness clubs are for 'high flyers who want to fly that little bit higher.'[29]

Gymnasiums targeted at high-income urban professionals invest significantly in real estate and in interior design. Boutique gyms commonly use historic buildings in inner urban precincts to conjure the atmosphere of a traditional gentleman's club – indeed, members of one New York gym are exhorted to 'Think of the Equinox Wall Street Fitness Club as a luxurious 1920s private club.'[30] Equinox Wall Street is in the neoclassical Bankers Trust Company Building, built in 1910, and one of New York's Designated Landmarks. [Fig. 1] A number of high-end gyms in London do the same: Equinox Kensington is organised around the art deco dome of the historic Derry and Tom's building, a 1930s department store that was the headquarters of the Biba fashion chain in the 1970s. The Engine Room, a simulated rowing 'studio', is in a Grade II listed converted church in Marylebone. Another_Space, in neighbouring Covent Garden, preserves the exterior brick façade, tripartite sash

Fig. 1: Equinox Wall Street, New York. Photo: Eric Chan.

windows, and lofty interiors of the 1878 building's former use as a market warehouse. Expansive views of the city beyond are a characteristic feature of these upmarket gymnasiums, reminding the gym-goer of the domain over which they have (or seek) mastery. The interior of Another_Space was designed by Goldstein Ween with furniture, lighting and finishes 'more akin to those you would find in a boutique hotel than a gym'.[31] Where less aspirational gyms stress the dedication of their employees to fitness instruction as a vocation, Another_Space highlights that its trainers are dancers, choreographers and actors – creative individuals with cultural capital (and concomitant precarious employment in the gig economy).[32]

Cultural capital is captured in a myriad of ways. At Core Collective in London, Waind Gohill and Potter Architects included a public art program in their conversion of a mansion block to a bespoke gymnasium. BLOK Shoreditch, designed by Daytrip Studio, features photography by Max Oppenheim and light installations by artist Ben Cullen Williams. Another_Space, Core Collective and their ilk wish to attract design-conscious consumers. Similarly, Equinox Bond Street in New York includes a description of the gymnasium's architecture ahead of any information about its ethos, classes or trainers: 'With quintessential New York attitude, the club infuses historic urban architecture with a boundary-pushing downtown vibe. Housed in a former manufacturing building, Equinox Bond Street creates a true fitness temple with a soaring 18-foot ceiling, exposed brick, arches, and Corinthian columns.'[33] The interior is by architect Kara Mann, who knows her audience well – she also designed Gwyneth Paltrow's Goop retail pop-up in the Waldorf Astoria hotel. Its Wall Street club has 'plush, elegant' interiors designed by David Rockwell.[34] The Bond and Wall Street clubs are not, however, their most exclusive. Equinox operates ninety-six clubs, including a small set of gymnasiums for se(le)ct members in Manhattan and London who pay €135 per hour for training sessions. Extending further the submission of the subject's intimate physiology to disciplinary regimes, entry to the exclusive 'E clubs' is by retina scanner, after which exercises are performed in in rooms kept at a cool eighteen degrees Celsius to minimise perspiration. At Equinox, changing room lockers are custom-built cabinetry in dark timbers and inspired one gym-goer to gush in her blog, 'The women's locker room is beautiful. It's so strange to actually like a locker room but this felt and looked luxurious.'[35] In fact, not so strange. Ceren Doan observes that what one buys with the higher membership fee is the opportunity to withdraw one's body from the gaze of others. The more "fortified" physical set-up [of changing rooms] in exclusive gyms suggests that "upper-class bodies" are to be handled more discreetly than other bodies and are entitled to more privacy and protection.'[36]

Upmarket gyms work hard to transform the anxieties and shame some associate with nudity in public into a more gentle, sensual frisson. Yearning and desire are transferred to rain shower heads, frosted glass doors, marble surfaces, hot fluffy towels, and expensive hair and beauty products. All because, as Doan says, 'due to the assemblage of naked and semi-naked bodies in this confined, shared arena the body and its function become a delicate matter.'[37]

Gymnasium changing rooms are where beautiful bodies are not so much vehicles for success at work as they are the critical ingredient to attracting the gaze of potential sexual partners. Sex at the gym, rather than sex attributed to one's dedication to the gym, has stimulated a prurient media interest despite sanitary laws in most nations barring sexual activity in gymnasiums. The David Barton Gyms in 1990s and 2000s New York were famous as places where 'drag queens worked out in platform heels' and the 'locker rooms doubled as hook-up joints.'[38]

Barton's most 'nightclubby' gym, according to the *New York Times*, in the former McBurney YMCA, had a fibre-optic light show in the steam room and was the subject of a legal suit by a member who alleged 'emotional distress' from witnessing sex there.[39] More recently, Equinox Wall Street was subject to an allegation by an employee that he was dismissed after reporting a valued client had masturbated in the steam room.[40] The relationship between gay communities and identities and fitness gymnasiums has been comprehensively described in Erick Alvarez's *Muscle Boys: Gay Gym Culture* (2010).[41] The relationship between heterosexual communities and gym culture, on other hand, has been studied primarily in terms of gendered exercise regimes, overlooking the ways in which gyms spawn interpersonal and intimate relationships. We suggest that, while etiquette and the narcissism of self-fashioning discourage gym-goers from interrupting each other's exercise routines to socialise, the addition of cafes (juice and shake bars), bars serving alcohol, spas and jacuzzis, clothing shops, and lounges, promotes the pursuit of extracurricular relationships between gymgoers. We observe that the more exclusive the gymnasium, the more extensive are its pre- and post-workout services and spaces. Indeed, reversing the provision of a gymnasium in a hotel, in 2018 Equinox launched a chain of luxury boutique hotels for health-conscious travellers to complement and extend its fitness brand.

Labouring bodies

Questions of class and professional status are not, however, as simple as a quick review of those gymnasiums that deploy luxury amenities and motifs might at first suggest. It is not the case that the professional classes only attend gymnasiums like the ones discussed above while the less well-off lift, push and pull weights in low-rent garages. Throughout the course of the twentieth century, numerous sociologists, from Max Weber to Georg Simmel to Pierre Bourdieu, studied the use of leisure as a signifier of social position.[42] Forms of leisure activity have been shown to convey social class or status.[43] Contemporary gymnasiums, however, freely appropriate a broad spectrum of leisure and labour practices from across societal and historical divisions. The gym-goer carries out acts of choreographed exertion, often borrowed from boxing and wrestling, or, as we will see in Crossfit, submits to laborious activities such as moving truck tires like a mechanic or climbing rope ladders like a stevedore. Gymnasiums intended for white-collar professionals uphold the erotic and exotic musculature of the labouring body as an ideal, and occupy the spaces of the underclasses, formerly the domain of dissidents and outsiders. Such gymnasiums participate in the gentrification of cities that further the disappearance of industry from their midst, but do so in ways that suggest they are unaware of or indifferent to the paradox. Soho House in Chicago, for example, occupies a former belting factory, while boasting that the leather boxing equipment in its gymnasium and professional boxing ring was fabricated by the city's last tannery.

The same tensions can be found in Crossfit gymnasiums, referred to by adherents as 'boxes'. Typically occupying the expansive structures and free volumes of former warehouses, factories and garages, these spaces appear to operate *almost* as-found. [Fig. 2] At SuperForce Crossfit, Porte Alegra, Brazil, the architects Grupo Nuvem designed the fit-out for the former car workshop so that the industrial character of the building seamlessly integrates with Crossfit's signature colours of red and black. A car balance has been preserved and co-opted as support for the ropes. Raw timber palettes are employed as seating. Rings and ropes hang from steel beams, scaffold structures and suspended frames are affixed to walls, all of which provide the metaphysical structures for corporeal exertion.[44] There are few machines because, as Crossfit's founder, Greg Glassman

declares, 'Crossfit doesn't use machines, it builds them.'[45] Instead, thick rubber mats are ubiquitous in these spaces; capable of withstanding impact, resistant to the dangerous slippage of moving bodies, impervious to the various bodily fluids expelled.[46] An essential component of the box is the use of free-standing structural frames from which its members are encouraged to hang – the ability to support one's own body weight is part of the ethos. While these boxes-within-boxes contain specialised proprietary fitness equipment, they are designed to resemble spontaneously assembled junkyard scrap, an image furthered by the presence of truck tires, chains, and barrels. These inclusions are geared to underscore Crossfit's ethos that its exercise programme is one 'that can be undertaken anytime, anywhere.'[47] Crossfit boxes have a porosity that sees trainees move into the street. The opportunistic appropriation of existing buildings and urban environments emphasises the alleged continuity between Crossfit and 'life', and rehashes older arguments about the moral and health value of the 'outdoors' versus indoor environments. [Fig. 3]

While Crossfit's motto that it 'prepares you for life' means no air-conditioning and a makeshift aesthetic, it is patently not preparing bodies for a life employed in physical labour or hardship. The economic incentives of minimal material adaption make Crossfit accessible for those wishing to establish a 'box', yet its adherents are largely professionals whose working lives do not demand the capacity to move tires from one side of the street to the other. The production-line and manual labouring tropes are rhetorical. Here, the body itself is understood and measured for its productive capacity, its performance, as though a machine. The Crossfit machine is a dynamic one, with an ethos centred on achieving perpetual growth and continual improvements in productivity. Neoliberal conceptions of self-care as individualised responsibility in pursuit of a competitive edge are held in tension within the locus of the Crossfit box as a site of sociability and togetherness. Crossfit boxes eschew mirrored surfaces, favouring the gaze of the group over self-surveillance: embodied regimes of mutual surveillance allow the monitoring of their relative progress towards shared goals.

Pain and pleasure

The fetishisation of industrial spaces and machines in the fitness sector speaks to a nostalgia for a time when bodily strength in the workplace was more than symbolic, yet gymnasiums also self-consciously and theatrically play with the history of re-appropriation of industrial sites by squatters and artists, for underground clubs, raves and illicit activities. Labouring bodies and industrial spaces hold an appeal that in gymnasium culture shades into the realm of sado-masochistic fantasy. The epigraph 'If you love me, be cruel to me' stems from the 1870 novel *Venus in Furs* by Leopold von Sacher-Masoch (1835–1895). A contemporary of Sacher-Masoch, the nineteenth- century psychiatrist Richard von Krafft-Ebing subsequently coined the words 'masochism' and its counterpart 'sadism'. Medical literature describes masochism as a kind of (sexual) perversion that is premised on a wish to suffer pain, humiliation, and even torture. Brewis and Linstead qualify the paradoxical nature of sadomasochism, for 'it seeks to disorganise, to transgress, to shatter, *but in a disciplined and regulated fashion.*'[48] Masochism is not confined to the bedroom/dungeon, it can be found in other arenas. Carl Cederstrom and Rickard Grassman, for example, describe a punishing form of corporate culture wherein employees loathe the work they do and are well aware of their misfortunate situation, but derive some form of enjoyment from suffering.[49] It is easy to extrapolate such reflexive masochism to the fitness gymnasium, where the coupling of pain and pleasure is celebrated and intensified by the co-presence of other participants and the punishing demands of instructors.

Fig. 2

Fig. 3

Fig. 2: Typical Crossfit box. Photo: Josefina Casals.

Fig. 3: Crossfit occupies the street outside their box in San Antonio. Photo: Mark Bonica.

Observers have likened the machinery of the gymnasium – the treadmills, exercise bikes and weight machines – to instruments of torture such as the rack, the wheel, the cross and the cage.[50] At the flagship premises of the Rebel brand at Broadgate and St Mary's Axe in London, both designed by Studio C102, the references to the sado-masochistic dungeon extend beyond exercise machines. Subscribers attend classes led by trainers that Rebel gleefully describes as 'the people you love to hate.'[51] The Broadgate venue, licensed to serve alcohol, is marketed as 'dark, underground and dangerous'.[52] Entry to the space is through a PVC strip welding curtain, beyond which Rebel's neon logo visibly beckons. Service pipes and ductwork are conspicuously exposed. Changing rooms position client lockers of galvanised steel or copper alongside vintage barbers' chairs. All is washed with theatre-grade blue or red lighting. This theatrical staging of a post-industrial, almost post-apocalyptic aesthetic, manifests at Rebel's St Mary's Axe venue, with its reclaimed industrial light fittings from a communist-era Polish ceramics factory and a 1960s German cargo ship. To achieve an uneven quality to the floors at both venues, concrete was poured on different days and the floor left exposed for weeks before sealing with wax to gain a further patina.[53]

The links between suffering and pleasure are even more pronounced in the architecture of those gymnasiums centred around martial arts. BXR, Marylebone, London, features an industrial chic aesthetic that combines backlit dark-tinted mirrors, bronze detailing, and raw concrete walls with murals by street artist Ben Slow. Partition screens are woven from braided leather made in Italy and resembling whips. A steam room is lined in cool grey marble and mosaic tiles. The space is focused on an elevated boxing ring and the gymnasium's founder, Olia Sardarova, boasts that while half the trainers have qualifications in sports science or nutrition, the other half are professional fighters. Instead of fixating on screens, people on the treadmills watch the athletes in the ring, thus experiencing the pain of exertion while vicariously and voyeuristically enjoying the pain boxers inflict on each other. A similar focus on an elevated boxing ring can be found at The Burrow Life, located on a thousand square metre industrial site close to the airport in Kuwait. Its core classes are in Muay Thai kickboxing. Burrow Life's coaches – eleven men and two women – are fighters from Russia, Kenya, Spain, Greece, Panama, Iran, France, the UK and the United States. The interiors, designed by Lab100 Design Studio in 2015, are enclosed by walls of split concrete blocks, the roughness of which repels touch. A feature wall is of polished steel, floors are black vinyl and a spiral staircase is black steel. The training spaces are all top lit, creating a subterranean atmosphere. The Burrow homepage features a moody, dark and erotic film, in which men's bodies are sensuously cropped. The camera slowly pans on rivulets of sweat and close-ups of limbs entangled in combat and engorged muscle flash across the screen. Still images on the website include a close-up of a pair of men's hands inserting acupuncture needles into a muscular and tattooed bicep.[54] Another still, of the changing room, is taken from floor level as though the photographer was lying prostrate on the tiles.

Wellness

Considered essential to the construction of an identity of personal achievement and/or success, labour force self-monitoring is today an essential precondition of capital accumulation.[55] This form of biopolitical self-governance is perhaps most overtly expressed in the now ubiquitous organisational focus on health. As David Harvey observes, under capitalism sickness is defined as an inability to work.[56] Gymnasium goers make an overt commitment to wellness and, thus, to work. The outcome is literally wrought upon the body, at the same time as one's status at work is potentially enhanced. The medicalisation of fitness is most apparent in the

appropriation of clinical tropes. These seem, at first, to track in two directions – alternative or holistic medicine, and science-based western medicine. The first is characterised by plants and greenery, 'oriental' and exotic artefacts, burning incense, and neat rows of yoga mats. The second by hygienic white surfaces, stainless steel details, and a lack of ornamentation. Closer inspection finds the two directions increasingly blurred.

Lauren Bird notes that while yoga studios are spaces for secular fitness, unlike other gymnasiums they are often decorated with religious icons – mandalas, Tibetan prayer flags, murtis – in order to emphasise the idea of postural yoga as an antidote to the stresses of modern Western lifestyles through the integration of spirituality and traditional Hindu knowledge.[57] The interiors of these spaces are highly contrived, albeit in a bid for authenticity. There are no machines, only mats, cushions, blocks and ropes. To facilitate stretching and 'detoxification', the spaces may be warmer than in other gymnasiums, particularly in Bikram hot yoga and heated Vinyasa or power yoga, where the rooms are a very warm thirty-two to thirty-seven degrees Celsius with 40 percent humidity. Music is typically quiet, tonal, and instrumental, interspersed with bird and whale song. The idea that the space itself might contribute to 'healing' is widely held, and best captured in the inclusion of walls of Himalayan rock salt blocks in Virgin Active's gym in Singapore and at Total Fusion Platinum in Brisbane, Australia. The ions from the salt are supposed to calm and detoxify the body, purify the air and assist with lung capacity.

The yoga spaces that Bird focused on were not the work of architects. Upmarket yoga studios engaging architects eschew the flotsam and jetsam of touristic forms of spiritualism. At MoveYoga, Melbourne, architects Hecker Guthrie employ a minimalist aesthetic of lime-washed timber floors, paper Paris au Moi lanterns, and walls lined with vertical paper-washed pine half dowels. [Fig. 4a, 4b] Artfully placed potted plants and Japanese ceramics are set against the white walls of the former warehouse. The aesthetic is cool and bare, although the rooms themselves are infrared heated. The investment in high-end architecture at MoveYoga reflects yoga's uptake among a wealthier, design-conscious clientele, for whom physical exercise is a process of releasing work-induced stress and the pursuit of wellness and beauty. 'Wellness' gymnasiums walk a delicate line between romantic evocations of nature and traditional cultures, and the techniques and imagery of advanced medicine. 'Nature' operates ambiguously in these settings as paradise lost and a call to one's authentic 'natural' self, and manifests as ornament and scenography. At the Active Therapy Centre R3 in Barcelona, indirect artificial lighting 'allows the lengthening of daylight hours'.[58] In other words, nature is to be improved upon, just as the natural body is to be improved. The visual aesthetic speaks of a pre-industrial age, but atmospheres are carefully manufactured using artificial light and heating to mitigate against natural conditions. Such simulation reaches a climax at Fly, London, a yoga studio with a cinema wall onto which are projected views of wilderness places – unsullied by people – where one might vacation. [Fig. 5]

Corpor(e)al

Michel Foucault famously spoke of the ideal figure of the soldier as one that can be made 'out of a formless clay, an inept body, the machine required can be constructed.'[59] As the classical age 'discovered the body as object and target of power' Foucault wrote that it was easy enough to find signs of the increasing attention paid to the body, 'to the body that is manipulated, shaped, trained, which obeys, responds, becomes skilful and increases its forces.'[60] The narrative of man-the-machine played out not only on the anatomic-metaphysical – as the focus of physicians and philosophers – but also on the techno-political register, 'which was constituted by a whole set of regulations and by empirical

and calculated methods relating to the army, the school and the hospital, for controlling or correcting the operations of the body.'[61] Today, in contemporary conditions of mediated war, the machine-like fit soldier is functionally superfluous. This has not deterred gymnasiums from deploying military-themed practices and spaces.

Repurposed military training regimes that draw on 'the bodily techniques, rhythmic practices, and spatial awareness developed in traditional sequestered sites of military discipline' now form 'one of the fastest growing sectors of a burgeoning commercial fitness and leisure market'.[62] The largest is BMF, founded in 1999 as British Military Fitness but rebranded Be Military Fit in 2018 when the company was purchased by television adventurer Bear Grylls. Their cast of ex-service members train over thirteen thousand people weekly across 140 public parks in the UK.[63] The varied landscapes of public parks, each with a rich social and political history, are co-opted as if they were ready-made for military exercises. Grassy knolls, swales and ha-ha's become inclined resistance surfaces, trenches and obstacles. The unpredictability of weather serves an atmosphere of authenticity and hostile conditions permit the feeling of having prevailed together just as soldiers do.[64]

Indoor gymnasiums must find other ways to stimulate muscular bonding and simulate the hardships of (an older style of) military experience. They do so in a manner that relies on stylised abstractions of natural landscapes. Planet Commando on the outskirts of Brisbane is an adventure course-cum-recreation centre in a former factory warehouse that promotes a 'unique adrenaline fitness experience.'[65] Subjects are guided towards feats of mental fortitude and physical endurance. [Fig. 6a, 6b] It was founded by a former French SAS paratrooper, Denis Payan who, with his family, designed and constructed a set of obstacles, platforms and plinths from timber logs, planks, boards and rope, that look as though they were hastily assembled 'ad hoc' by 'soldiers'. The most distinctive quality of the construction is the application of an over-scaled camouflage pattern to panels and walls. Camouflage, as Jane Tynan observes in relationship to its application in fashion, materialises both 'the appetite for mediated representations of war' and the way in which 'fears and desires about conflict focus on the body.'[66] Camouflage corrals key components of militarist ideologies with a mediated aesthetics at a time of perpetual and normalised war.[67] Its ubiquity in boot camp-style gymnasiums is anything but innocent or incidental.

Barry's Bootcamps, or just Barry's as it is increasingly known, distort the expressive functionality of camouflage into an architecturally-scaled wallpaper.[68] This sits as a complement to the iconic palette of Barry's studios, with their stark black walls and red lighting. The red lighting is so intense and unrelieved that Barry's gymnasiums have hazard tape around the machines to prevent collisions in the barely illuminated rooms. Barry's exploit the disinhibiting effect of red light and its historic association with brothels, but more importantly signals the relationship between infra-red vision and war.[69] [Fig. 7] Rehearsing familiar regimes of bodily discipline, Barry's dedicate each day of the week to different parts of the body. Tuesday, for example, is Butt and Legs day. Barry's explicitly disassemble and reassemble the body as a mitochondrially-enhanced exquisite corpse. Barry's body is, literally, Deleuze and Guattari's body without organs – decentred, in a process of perpetual becoming.

Conclusion

In Foucault's view, practices of the self are not invented by subjects themselves but rather are 'proposed, suggested and imposed on them by one's culture, society and social group'.[70] We would also include the assemblages of markets, machines

Fig. 4a

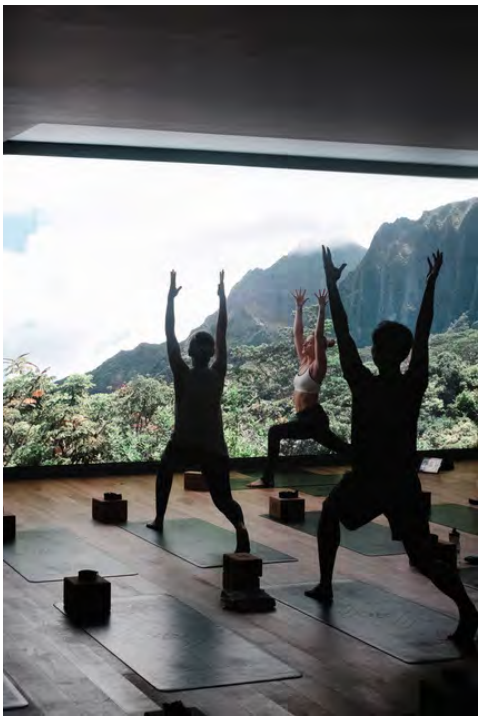

Fig. 5

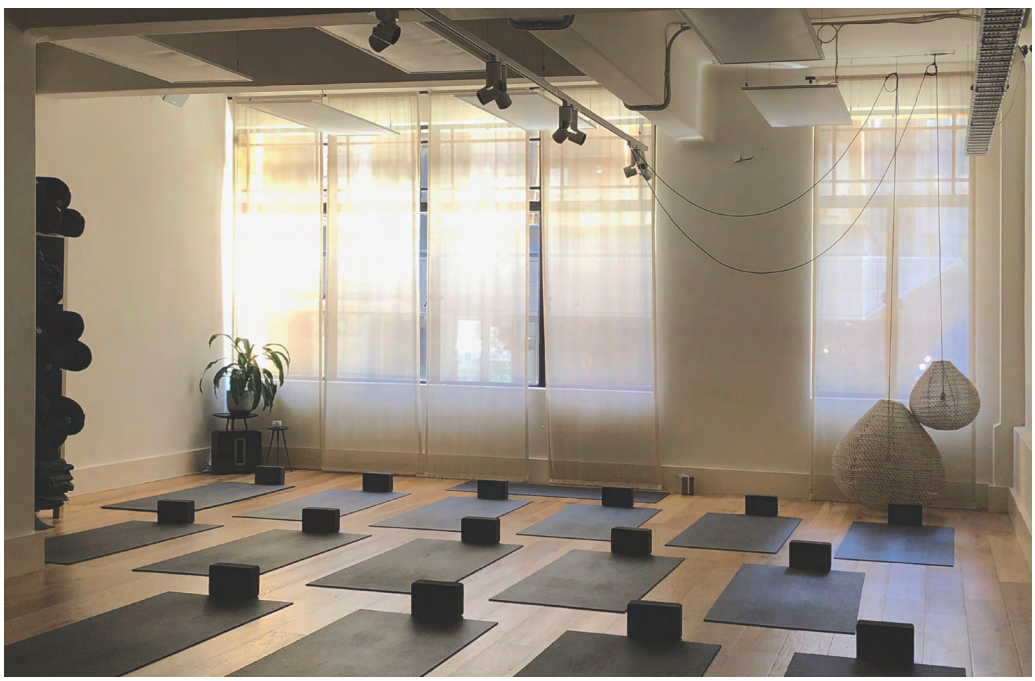

Fig. 4b

Fig. 4a, 4b: MoveYoga, Melbourne, views of the interior designed Hecker Guthrie. Photos: Marita Kaji-O'Grady.

Fig. 5: Fly London's simulated views. Photo: Josiah Craven, courtesy of Fly London.

and matter that produce trans-individual effects. Whereas for Karl Marx the production process made commodities that were to be consumed by subjects, Guattari and Maurizio Lazzarato diagnose the contemporary situation as one in which the production process makes subjects and regulates desires. Capitalism produces individual subjects within pre-formed identities – boss, reckless entrepreneur, caring mother, environmental activist, sportsman – at the same time as it de-subjectifies and fragments us into component parts of a bigger assemblage, for example as data. Guattari explains, 'it is not the facts of language use nor even of communication that generate subjectivity. On some level, subjectivity is manufactured collectively just like energy, electricity or aluminium.'[71] Lazzarato elaborates on Guattari's thesis, writing:

> The production of subjectivity involves expression machines that can just as easily be extra-human and extra-personal (systems that are machinic, economic, social, technological, and so forth) as they can be infra-human and infra-personal (systems of perception, memorisation and idea production, sensibility, affect, etcetera).[72]

We have seen how the gymnasium constitutes such an extra-personal expression machine. It brings together spatial settings and architectural forms, with resistance machines and repetitive exercises, performance measurement tools and data, membership arrangements, competitions, classes and events, trainers and social hierarchies, and images of exemplary bodies and spaces that circulate through multiple communication channels. Yet, the gymnasium offers visceral experiences that can be intensely personal, even intimate. The workout may well be a transpersonal, externally-mandated process for the normalisation of the body and construction of subjectivities, but it also is one of the few spaces, outside of the bedroom, where bodies are vulnerable to each other and where human touch is exchanged. The convergence of the intimate and the institutional is possible because the body itself is at once intensely and wholly you, *and* a public artefact composed of distinct parts and actions that can be judged and assessed outside feeling.

The gymnasium regime requires bodies to first be understood as an assemblage of parts for repair, maintenance, improvement, and display. In turn, the architecture of the gymnasium enables assemblies of bodies and machines by operating as an open-ended, sensually-rich and symbolically-loaded ecosystem in which connections can be perpetually made and unmade. Only an open-ended, incomplete, unfinished body-in-parts is able to integrate the machine as prosthetic and partner. In the gym, while legs, lungs and a stationary bicycle convene as an assemblage for the transformation of energy into movement and muscle, a second machine, independent from the first and constituted by eyes, ears, mind, screens and headphones, consumes a curated soundtrack. A third machine takes in the trainer, the mirrored walls and the synchronised movements of all those in the spin class. It is powered by a fourth machine, of member fees, salaries, legal contracts, marketing, real estate development. The gym-goer operates without regard to this fourth machine. He moves from bicycle to changing room, touched by marble basins and tumble-dried towels, washed by heated water and scented shampoos. Each sensation, each connection is orchestrated such that commercial transactions have the seductive quality of a personal encounter. Every workout confirms her self-discipline, her moral fortitude. Each time she chooses between yoga here or cardio there, she confirms who she is, at least for now.

Fig. 6a

Fig. 6b

Fig. 7

Fig. 6a, 6b: Interior views of Planet Commando. Photos: Planet Commando.

Fig. 7: Barry's Bootcamp, Lafayette, New York. Photo: Author.

Notes

1. See, for example, Laura Ginsberg Spielvogel, 'The Discipline of Space in a Japanese Fitness Club', *Sociology of Sport Journal* 19, no. 2 (2002): 189–205; Patricia Vertinsky and Sherry McKay, eds., *Disciplining Bodies in the Gymnasium: Memory, Monument, Modernism* (London: Routledge, 2004); Kyoung Tae Kim, John Bae, Jong-Chae Kim and Soonhwan Lee, 'The Servicescape in the Fitness Center: Measuring Fitness Center's Services', *International Journal of Sport Management, Recreation and Tourism* 21 (2016): 1–20.
2. Denis Hollier, *Against Architecture: The Writings of Georges Bataille*, (Cambridge, MA: MIT Press, 1992), x.
3. Ivo van Hilvoorde, 'Fitness: The Early (Dutch) Roots of a Modern Industry," *The International Journal of the History of Sport* 25, no. 10 (2008): 1321.
4. Bridget Arsenault, 'The Story Behind BXR, London's Most Glamorous Gym', *Forbes*, 24 December 24 2017, https://forbes.com.
5. 1Rebel homepage, accessed 2 April 2019, https://1rebel.co.uk/.
6. Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. and foreword, Brian Massumi (London and New York: Continuum, 2004 [1980]), 237.
7. Pirkko Markula and Richard Pringle, *Foucault, Sport and Exercise: Power, Knowledge and Transforming the Self* (London and New York: Routledge, 2006), 83.
8. Andy Lee quoted in Anna Kooiman, 'Barry's Bootcamp: One Stop Fitness Shop', Anna Kooiman blog, 9 January 2017, https://www.annakooiman.com/fitness/barrys-bootcamp-one-stop-fitness-shop.
9. Jamie Hakim, '"Fit is the new rich": Male Embodiment in the Age of Austerity', *Soundings: A Journal of Politics and Culture* 61 (2016): 84–94.
10. Patricia Vertinsky, introduction to *Disciplining Bodies in the Gymnasium: Memory, Monument, Modernism*, ed. Patricia Vertinsky and Sherry McKay (London: Routledge, 2004), 3.
11. Susie Scott, *Total Institutions and Reinvented Identities* (London: Palgrave MacMillan, 2011).
12. This has been the case since, in Liege around 1838, Hippolyte Triat opened the first of what would become a chain of commercial indoor gymnasiums in a building that combined circus equipment, weights and galleries for watching groups exercise. See Van Hilvoorde, 'Fitness: The Early (Dutch) Roots', 1310.
13. 'Nike Make Yourself Team', Nike homepage, accessed 24 May 2015, http://news.nike.com.
14. *Tatler* and *Wallpaper* magazines, for example, annually announce their views on the best gyms. See Francesca White, 'These are the Best Places to Work Out in London Right Now', *Tatler*, 10 August 2018, https://tatler.com; and 'The Best Gyms Around the World for Design Buffs in 2018', *Wallpaper*, 6 March 2018, https://wallpaper.com.
15. Henning Eichberg, 'The Enclosure of the Body: On the Historical Relativity of "Health", "Nature" and the Environment of Sport', *Journal of Contemporary History* 21 (1986): 99–121.
16. Émile Durkheim, *The Elementary Forms of Religious Life*, trans. Carol Cosman (Oxford: Oxford University Press, 2001 [1912]).
17. Matylda Ciolkosz, 'The Possible Significance of Sensorimotor Synchronisation in Modern Postural Yoga Practice', *Studia Religiologica* 48, no. 4 (2015), 327–40.
18. Bridget Arsenault, 'The Story Behind BXR, London's Most Glamorous Gym', *Forbes*, 24 December 24, 2017, https://forbes.com.
19. Spevak quoted in the 10 December 2018 media release announcing the opening of E by Equinox on Madison Avenue, https://equinox.com.
20. Eric Chaline, *The Temple of Perfection: A History of the Gym* (London: Reaktion Books, 2015), 11.
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Biographies

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Capital of Feedback: Cedric Price's Oxford Corner House (1965–66)

Nina Stener Jørgensen

Throughout his career as a practising architect and lecturer, Cedric Price (1934–2003) was attuned to the spatial and temporal relationships between information, communication and location.[1] Price argued that for cities to 'continue to function' they would have to adapt to changing styles of communication.[2] In a 1961 lecture at the Architectural Association, Price warranted the influence of communications systems on architectural reasoning by pointing out how information in early human settlement had travelled by voice and foot alone, his central point being that as living conditions developed, communications technology would naturally adapt.[3]

Recently the work of Cedric Price has received renewed attention for forecasting the relationship between technology and society.[4] An essay published in the *Journal of Architectural Education* in 2015 suggests that Price's spatial approach to digital technologies could inspire today's architects and planners to 'find agency in shaping the city through the active engagement with and empowerment of its inhabitants.'[5] To challenge the perception that Price's emphasis on active engagement with physical surroundings is directly linked to social agency, I look at the feasibility study for *Oxford Corner House*. Carried out by Cedric Price Architects during 1965–66, the study serves as an example of how user participation, facilitated by post-war computational advancements, was intended to organise responsive space and in turn benefit society.

Like other techno-optimistic works of architecture from the 1960's in favour of adaptable space, Price's work has been criticised for anticipating budding neoliberal agendas.[6] Pier Vittorio Aureli has previously problematised the concept of 'free space' employed in the proposal for Potteries Thinkbelt, a project Price conceived in the same year as Oxford Corner House, by demonstrating how its readiness to accommodate to any given situation pre-empts the goal of neoliberal policies today.[7] Rather than reveal the ideological features of Price's proposal, I aim to demonstrate how the feasibility study for Oxford Corner House shares the economic logic of today's digital platforms by relying on feedback to sustain its programme. The term 'platform', originally used to describe a raised level or surface for people or things to stand on, now encompass any intermediate entity as an enabler of multiple networks.[8] Evolved as a new type of business model, the digital platform extracts data as a new kind of raw material. By providing storage and transmission paths, economist Nick Srnicek has argued that the platform typology is an economic model first and foremost, always looking for ways to expand its potential for monopoly.[9] However, by facilitating networked meeting- or marketplaces, where users freely share their content, digital platforms have in turn become entirely dependent on user activity.[10]

The first part of this essay tries to understand the framework of 'self-participatory entertainment' by looking at the broader context of Price's work

and the influence of cybernetics on his thinking. As Price's clients for Oxford Corner House, J. Lyons & Co., invented the world's first computer for business management, the second part of the essay presents Price's programme for Oxford Corner House by relating it to the features of business computing. The invention of LEO (Lyons Electronic Office) to meet society's increasing demand for data processing, shows how the features Price sought to employ for participatory purposes were used elsewhere for the automation of management and the anticipation of consumer choices. The third and last part considers why we might think of 'self-participatory entertainment' as information indispensable to the architectural programme of Oxford Corner House. With this essay, I argue that what Cedric Price designed as 'self-participatory entertainment' for the users of Oxford Corner House, could instead be regarded as activities designed to generate information without which Price's broader architectural programme of anticipation and usefulness would be unsustainable.[11]

'Self-participatory entertainment'

The feasibility study for Oxford Corner House was initiated in 1965 when Cedric Price was commissioned by J. Lyons & Co. to envision a possible future for their failing Corner House restaurant in central London. Price proposed turning the space into 'an urban information hub for city-dwellers to interact with' and aspired for the space to be a 'unique metropolitan centre of self-participatory entertainment, information and learning.'[12]

During his studies at the Architectural Association, Price had engaged with the notion of self-organisation. Together with Colin Ward, Giancarlo De Carlo had introduced the concept of 'bottom-up planning' to the school's educational programme.[13] In her book on Cedric Price, Tanja Herdt argues that Price drew on these ideas for laying out the organisational framework in future projects that involved responsive planning.[14] However, by not directly involving users in the planning stage, Price's concept of 'self-participatory entertainment' cannot entirely be understood as what has commonly been referred to as a participatory design practice. Instead, in Price's feasibility study for Oxford Corner House, participation can be read in relation to the incorporation of communications systems as architectural means and as such, participatory activity may be understood as an on-going planning process.

'Self-participatory entertainment' also appears as a concept in Price's 1960s Fun Palace project, where users are referred to as 'participants'.[15] Here terms such as leisure, education, fun and knowledge are related to the concepts of emancipation and transformation through learning.[16] Price's projects from the 1960's respond to the situation created by the economic aftermath of World War II that prompted a social transformation in British society. As the automation of labour through technological advancement came to mean more free time, post-war workers were buying TV sets and going on holiday.[17] Work was no longer restricted to 'making a living' and instead provided the means to individualise workers through what they consumed.[18] However, due to the lack of industrial renewal, Britain's work market was offering few opportunities for highly skilled workers. To Price this was above all a crisis in the education system, which he believed to be completely detached from any 'economic usefulness'.[19] The Fun Palace was the first project with which Price set out to tackle what post-war Britain's was experiencing as a 'brain drain'. Through 'reimagining education and self-learning through participation' Price sought to solve the deficit in educated workers, who were leaving Britain in large numbers.[20] For Price this meant encouraging citizens to spend their time away from work, their free time, and what was referred to as leisure time differently.[21] Price's programmes from this period are especially targeted at a new generation of deskilled labourers who were experiencing full employment and higher wages than their

parents of the interwar years. 'Unfettered by tradition – scholastic, economic, academic or class', the programme for Oxford Corner House was, like the Fun Palace, designed for the socially restricted worker to overcome the control mechanisms and consumption of 'free time'.[22] As such, participation in Price's vocabulary is associated with learning as a kind of re-learning, as he believed workers would have to adapt to changing conditions to benefit society.

Price stressed the importance of large degrees of 'indeterminacy' in developing adaptability to accommodate economic uncertainties.[23] 'Try starting a riot or beginning a painting – or just lie back and stare at the sky' wrote Price and theatre director Joan Littlewood, Price's client, in the brochure for the Fun Palace in 1964.[24] Littlewood envisioned the Fun Palace to be a place where 'people could experience the transcendence and transformation of the theatre, not as audience, but as players and active participants in a drama of self-discovery'.[25] Sensitive to the activities of the Fun Palace, Price limited the physical design to involve only a supporting structure made entirely from gantry cranes that would allow immediate flexibility in use. Over time, Price's representational diagrams of the Fun Palace have instead come to be considered the 'real' architecture of the Fun Palace. By meeting Littlewood's brief, and showing the many possibilities of a space by including all facilities in organisational diagrams, Price established himself as an unusual architect in turn. Architecture critic Kester Rattenbury has emphasised that Price's designs are 'important in what they do, not in what they are'; she has argued that this approach distinguished Price 'from the general run of architectural fetishism with its obsessive love of the highly refined building'.[26]

Favouring an interdisciplinary attitude, Price turned to systems theory to 'find an approach to thinking about architecture that emulated the performative potential of the new technologies'.[27] The field of cybernetics that emerged after World War II influenced Price's work on circularity. In an interview from 2000, Cedric Price argued that, if realised, the Fun Palace would have been the first cybernetic building in the world.[28]

As a trans-disciplinary approach for exploring regulatory systems in machines and animals, cybernetics has influenced all disciplines concerned with feedback and circular causality. 'Wherever the cybernetician looks he sees phenomena of control and communication, learning and adaption, self-organisation, and evolution' and in that sense, cybernetics can easily be adopted across disciplines.[29] The field of cybernetics got its name from mathematician Norbert Wiener's 1948 book *Cybernetics or Control and Communication in the Animal and the Machine,* which refers to the etymological origin of cybernetics, *Kybernetes* in Greek, meaning to 'steer' and the inherent possibility of gaining control.[30] In computer science, the analogous vocabulary of cybernetics illustrates the link to natural processes: storage is analogous to memory, data retrieval to remembering and computers to brains. Price's proposal for the Olympic Village of the 1972 Olympics included a 'Village Brain', shown to be 'thinking' in figure 1, to serve as a 'multi-message totem capable of informing, delighting and responding to the activities of the inhabitants', showing how he believed distribution of information to be circular.[31]

Price described how the structure of the Fun Palace would be able to 'learn' behavioural patterns and in that sense 'plan' for future activities by processing accumulated data.[32] In addition to equipping the users of the Fun Palace with new skills and experiences, encouraging uncertainty and spontaneity in the programme also served the purpose of supplying the 'Pillar of Information', a punch card storage system, with enough varied data to start forming anticipation of user behaviour.[33] Using an IBM 360/30 computer to compile data in order to

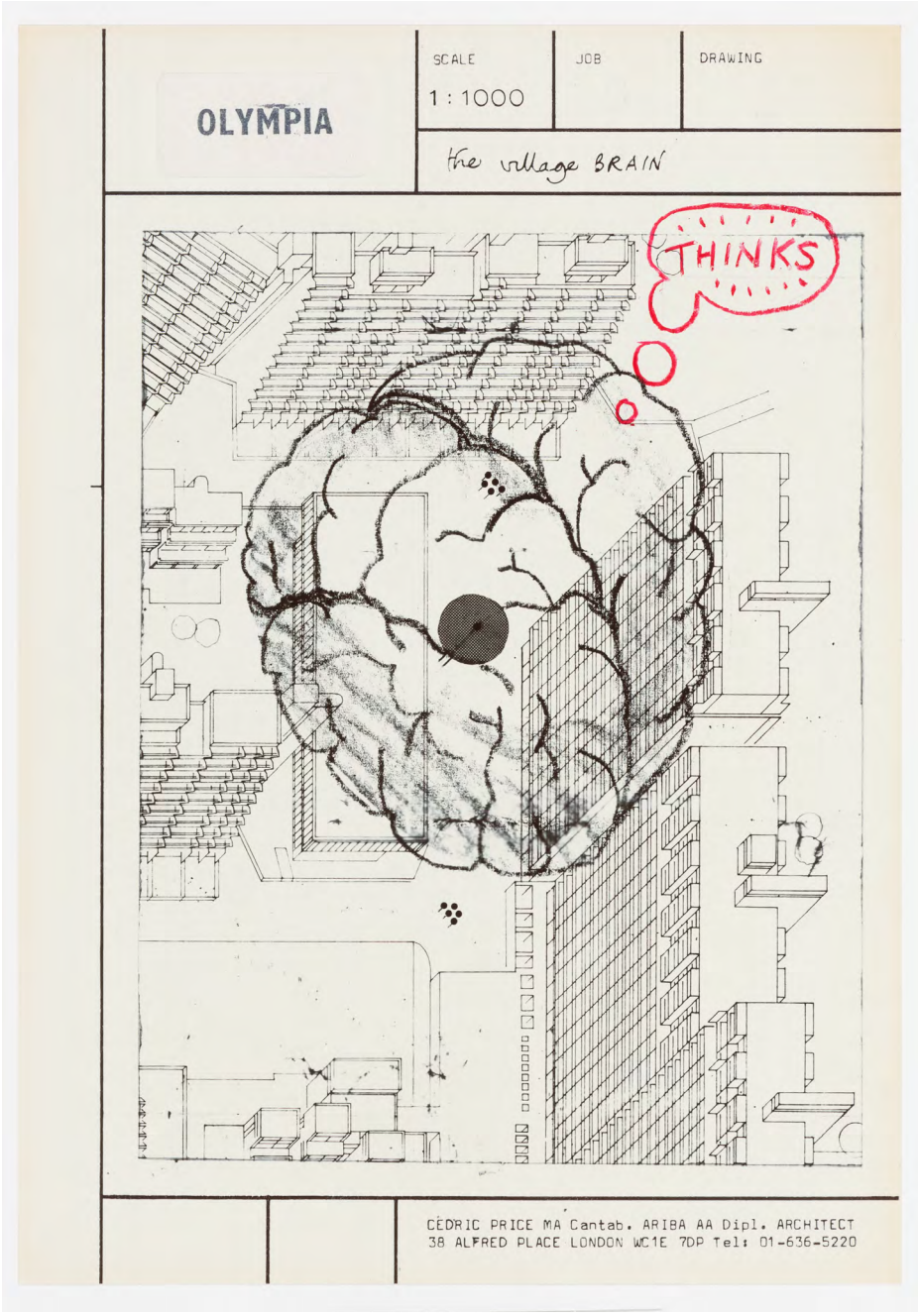


Fig. 1: Price proposed a ‘Village Brain’ for the 1972 Olympic village. Cedric Price, ‘The village brain’ for Olympia, Munich, 1971. Red coloured pencil over positive photostat print on emulsion coated paper with ink stamp on paper label, 30.1×21.1cm. DR1995:0253:005:004 Cedric Price fonds, Canadian Centre for Architecture.

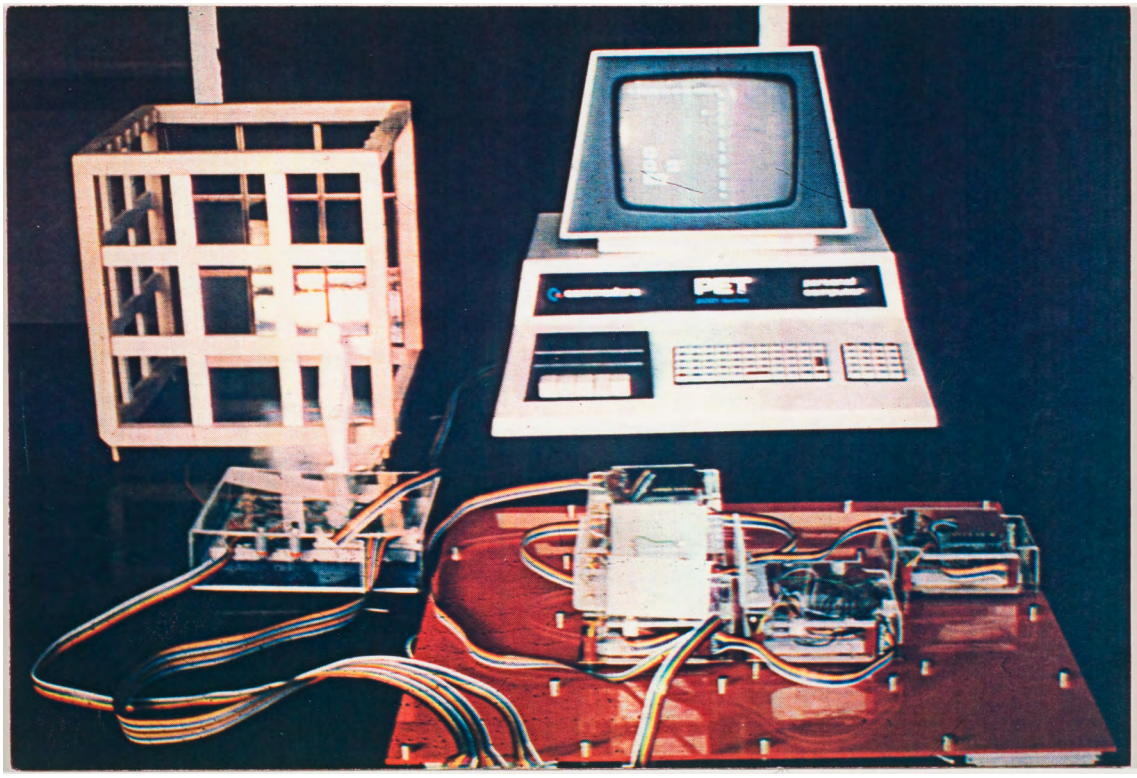


Fig. 2: View of working electronic model for the Generator project between 1976 and 1979. Colour electrophotographic print (photocopy) adhered to pasteboard, 16.3x23.9cm. DR1995:0280:651:004:006 Cedric Price fonds, Canadian Centre for Architecture.

establish overall user-trends and set the parameters for the modification of spaces and activities, the computer was intended to start adapting to the form and layout of the Fun Palace according to changes in use.[34] By including participants in its operational cycle, the structure and intentions of the Fun Palace describe the reflexive qualities of cybernetic methodology: 'modelling the form of processes and their products, abstracted from any particular embodiment'.[35]

Stanley Mathews has linked the influence of cybernetic thinking on Price's work to Norbert Wiener's description of circularity as a way in which 'a cybernetic system [will] continuously adjust itself in response to unpredictable conditions by anticipating future behavioural patterns on the basis of feedback information from prior actions'.[36] Meaning that any system sustains itself by constantly receiving self-correcting feedback. Corresponding to cybernetic analogies, it seems Price and Littlewood understood 'system' to broadly cover both the Fun Palace and society in general.

It was Gordon Pask, cybernetician, mathematician as well as Price's collaborator on the Fun Palace, who introduced the concept of underspecified goals to architecture.[37] In 1953, Pask designed and constructed the MusiColour Machine, an electronic machine for stage performances that would light up when receiving instrumental audio input. The design demonstrates the need for human interference in order for systems, human or mechanical, to respond. MusiColour would change its coloured light outputs according to its two inputs, frequency and rhythm. Musicians who worked with the machine in the 1950s allegedly treated it as another on-stage participant.[38] Usman Haque has identified the innovation of this project as its disregard for certainty: 'if the input becomes too continuous – for instance, the rhythm is too static or the frequency range too consistent – MusiColour will become bored and start to listen for other frequency ranges or rhythms, lighting only when it encounters those'.[39]

In the Generator project (1976) Price initiated the design of the actual computational programme. [Fig. 2] It would, similarly to Pask's MusiColour, get bored and 'rearrange space' unprovoked if users refrained from interacting. Programmed by John and Julia Frazer, the Generator was a constantly evolving 'intelligent building' wired to extract and demand interaction from its users, the employees of the Gilman Paper Corporation.[40] According to John Frazer, the software was designed 'in order to facilitate Cedric's belief that an instantaneous architectural response to a particular problem is too slow'.[41] Characterised as a kind of self-organising organism, the Fun Palace has been similarly described as 'an abstract machine which, when activated by users, was capable of producing and processing information'.[42] The same way Littlewood hoped to wake up 'men and women from factories, shops and offices, bored with their daily routine', so that 'they no longer accept passively whatever happens to them, but wake to a critical awareness of reality', Price was generating action in user and building by avoiding boredom.[43]

Other projects were also showing the influence of systems thinking. For the 1966 Potteries Thinkbelt project, Price envisioned a large-scale educational network for twenty thousand students. Emphasising the causal relationship between knowledge and production, the project linked education to human experience and 'the capacity for interaction'.[44] In a proposal for a livestock pen Price showed how physical space can be arranged as circuits, each unit depending on its relation to the adjoining one. [Fig. 3] Price also participated in the Federal Atomic Research Facilities project brief Atom which asked the architects to design a technology-based 'self-instructional education network' for a new town called Atomia outside of Chicago.[45] [Fig. 4] Price

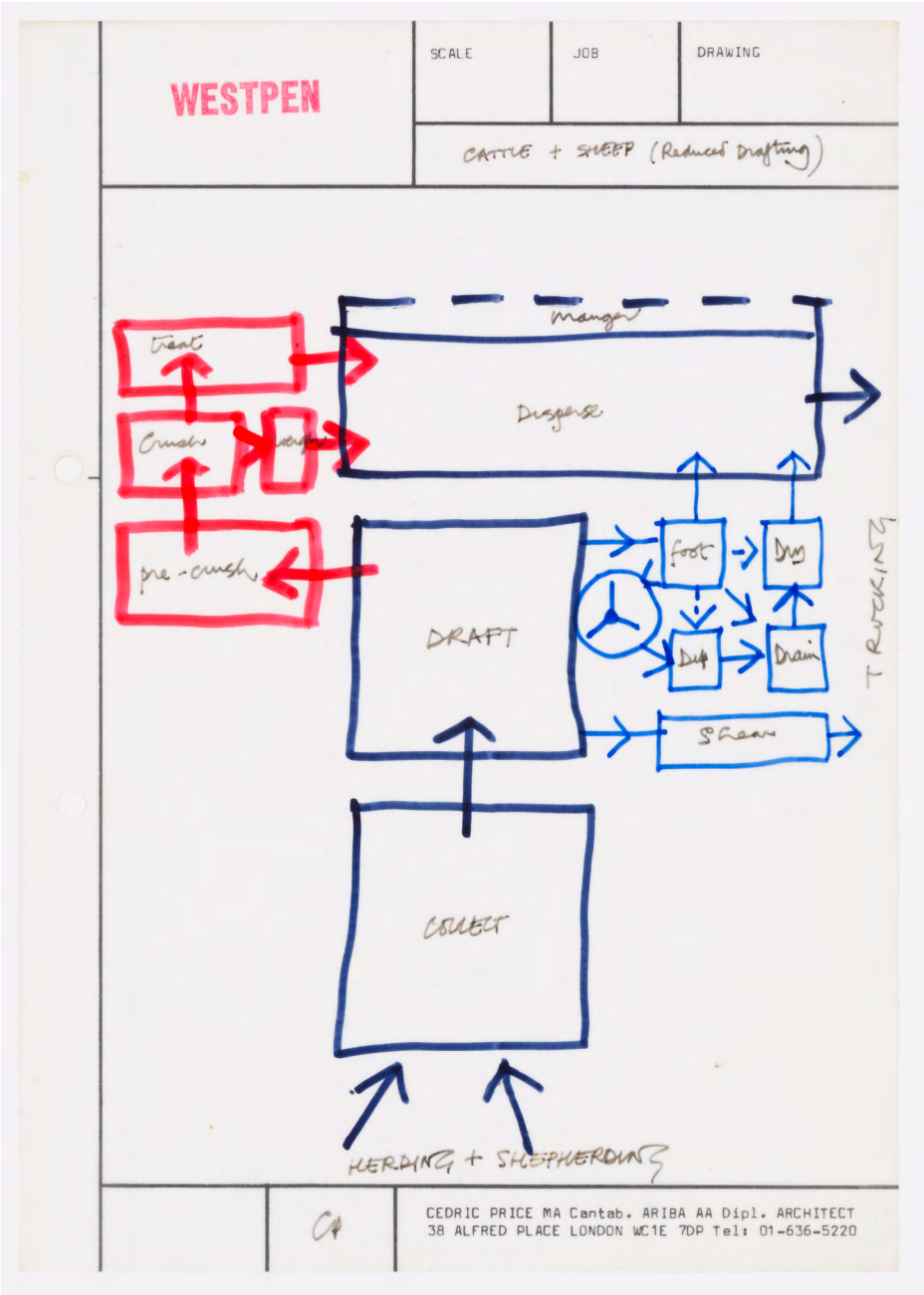


Fig. 3: Diagrammatic plan for Westpen, Hampshire, England between 1977 and 1979. Ink on pre-printed paper, 30x21cm. DR1995:0285:062:002:010 Cedric Price fonds, Canadian Centre for Architecture.

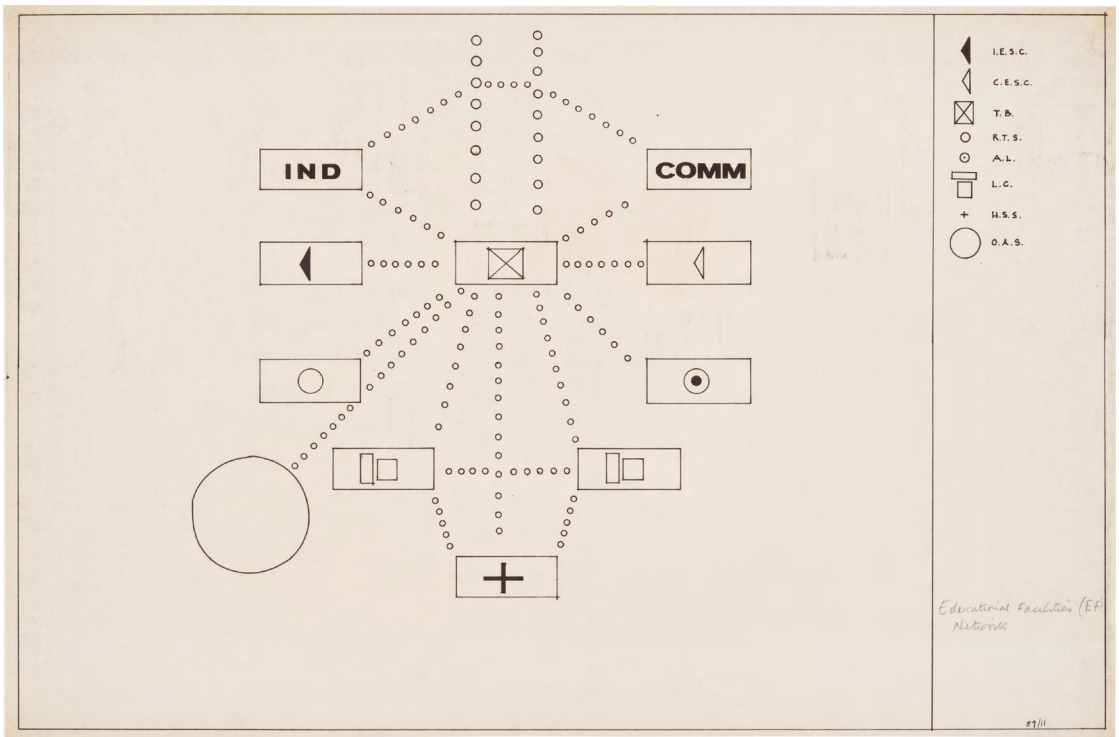


Fig. 4

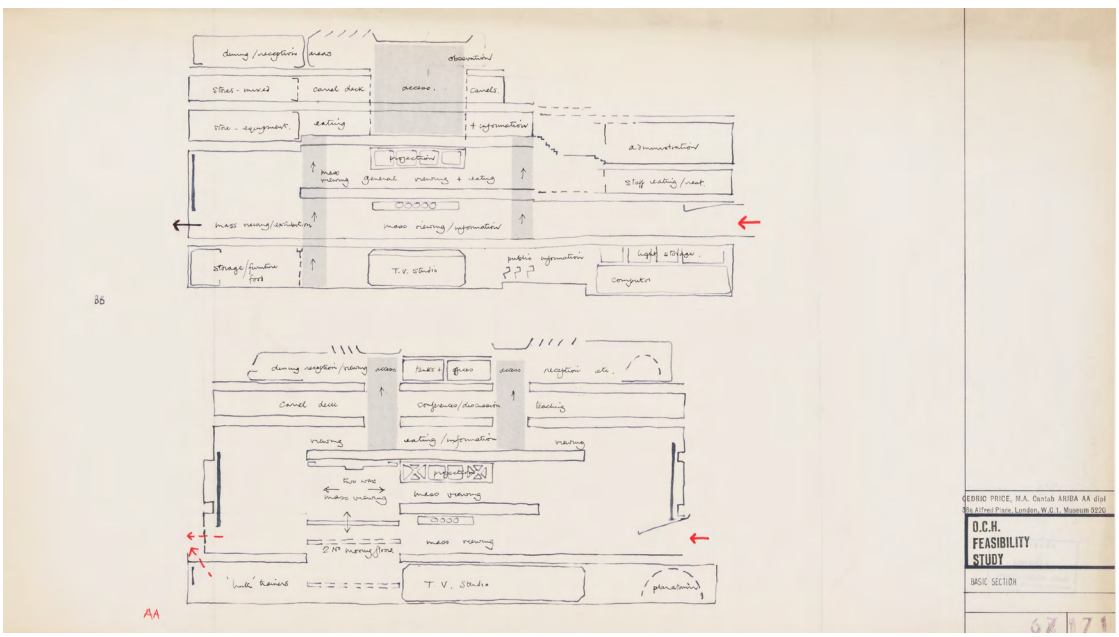


Fig. 5

Fig. 4: Educational facilities network for Atom project, 1967; reprographic copy with caption in graphite on paper, 45.7×69.2cm. DR1995:0233:017 Cedric Price fonds, Canadian Centre for Architecture.

Fig. 5: Sections for Oxford Corner House, London, 1966. Ink on architectural reproduction, 35.8×68.3cm. DR1995:0224:303 Cedric Price fonds, Canadian Centre for Architecture.

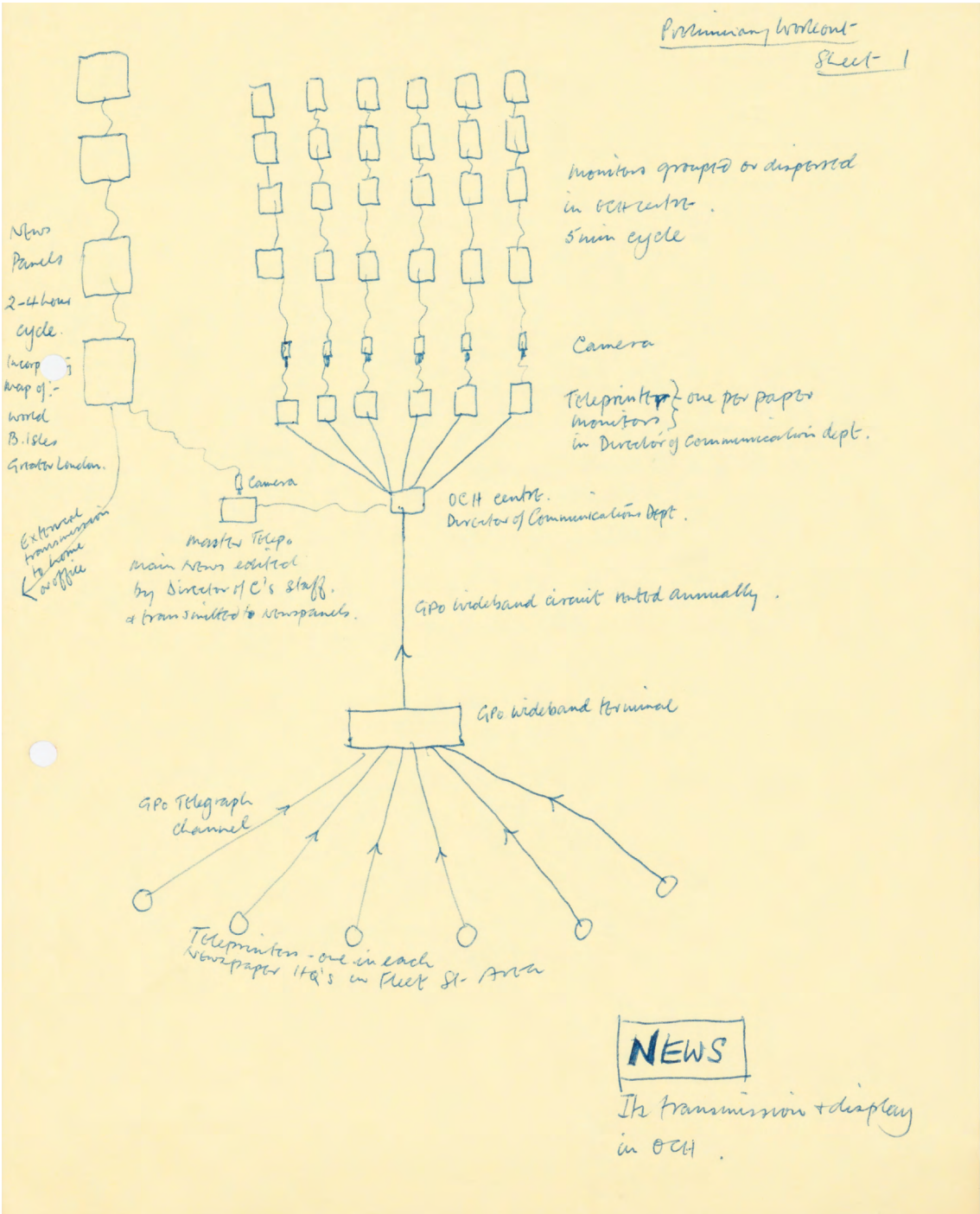


Fig. 6: Communications diagram for Oxford Corner House, London, 1966. Ink on reprographic copy, 37.7×68.9cm DR1995:0224:278 Cedric Price fonds, Canadian Centre for Architecture.

responded by proposing a 'Town Brain'; a databank and central hub for the production of educational material, as well as a 'Life Conditioner' box, a flexible structure that could provide educational facilities.[46] The idea of relying on civic information input for arranging spaces, was later vividly expressed in the statement for Non-Plan. A joint collaboration between Cedric Price, Peter Hall, Reyner Banham, and Paul Barker, Non-Plan scaled up Littlewood's idea of Non-Programme to a national level: 'serving the needs of a mobile society' by 'keeping all the options open'.[47] Published in an issue of *New Society* in 1969, they wrote: 'Why not have the courage, where practical, to let people shape their own environment?'.[48] 'Fed up' with post-war planning,[49] the group rhetorically asked: 'why don't we dare trust the choices that would evolve if we let them?'.[50] Claiming that physical planning should instead 'consist at most, of setting up frameworks for decision, within which as much objective information [as possible] can be fitted'[51] – assuming that with the principles of Non-Plan 'at the least, one would find out what people want'.[52]

Oxford Corner House

J. Lyons & Co. had, prior to their financial decline in the 1960's, been one of the largest catering and food manufacturing companies in the world, employing over thirty thousand workers, managing 250 high street teashops, five restaurants serving up to two thousand visitors each, as well as their own tea and food production. After World War II, the company's expanding infrastructure of supply and demand required increasingly large-scale calculations. The controller at J. Lyons & Co., John Simmons, initiated the development of a computer designed for the needs of the company and in 1951 Lyons' Electronic Office (LEO I), the world's first business computer, was launched.[53] The benefits of LEO business computing was explained in a 1957 promotional film as meeting a vital need for management to 'grasp the changing factors and act accordingly'.[54] In the mid 1960's, LEO merged with the English Electric Company, leaving J. Lyons & Co. to focus on their core identity as a catering company and managers of the iconic but failing Lyons' Corner Houses of central London.

Price imagined the adaptability of Oxford Corner House to reflect his approach to education and new technologies, as it would 'permit and encourage self-pace exploration by the individual' only driven or hindered by 'his curiosity, skill and mental appetite'.[55] Price's credo corresponded with LEO's aim of 'freeing clerks to do more stimulating and rewarding work'.[56] Moving on from the Fun Palace project, Price wanted to create a 'system that evolve[d]', making Oxford Corner House 'open-ended and undetermined'.[57] Oxford Corner House would transform from restaurant to leisure centre, with 'activities ranging from eating and drinking to self-pace learning and involvement with world news'.[58] An internal memo at J. Lyons & Co. shows that they imagined that by hiring Price, they could be catering for 'a new social pattern'.[59]

Provided with a seemingly open brief, Price was only constrained by the location and boundaries of the existing building: a four-floor restaurant in a busy part of the British capital. Unhindered by the physical constraints, Price wrote: 'The equipment which we have centralised has no boundaries'. Setting the scene for 'responsive architecture' as well as illustrating the core-cybernetic idea of the city as a 'nervous centre', Price proposed turning Oxford Corner House into a communications system: 'It can penetrate through walls, buildings, towns and countries provided the transmission paths are available'. Circulation and access was for this project unhindered by the human-centred features of the Fun Palace, leaving Price to concentrate on providing J. Lyons & Co with an information infrastructure.[60] [Fig. 5, 6, 7]

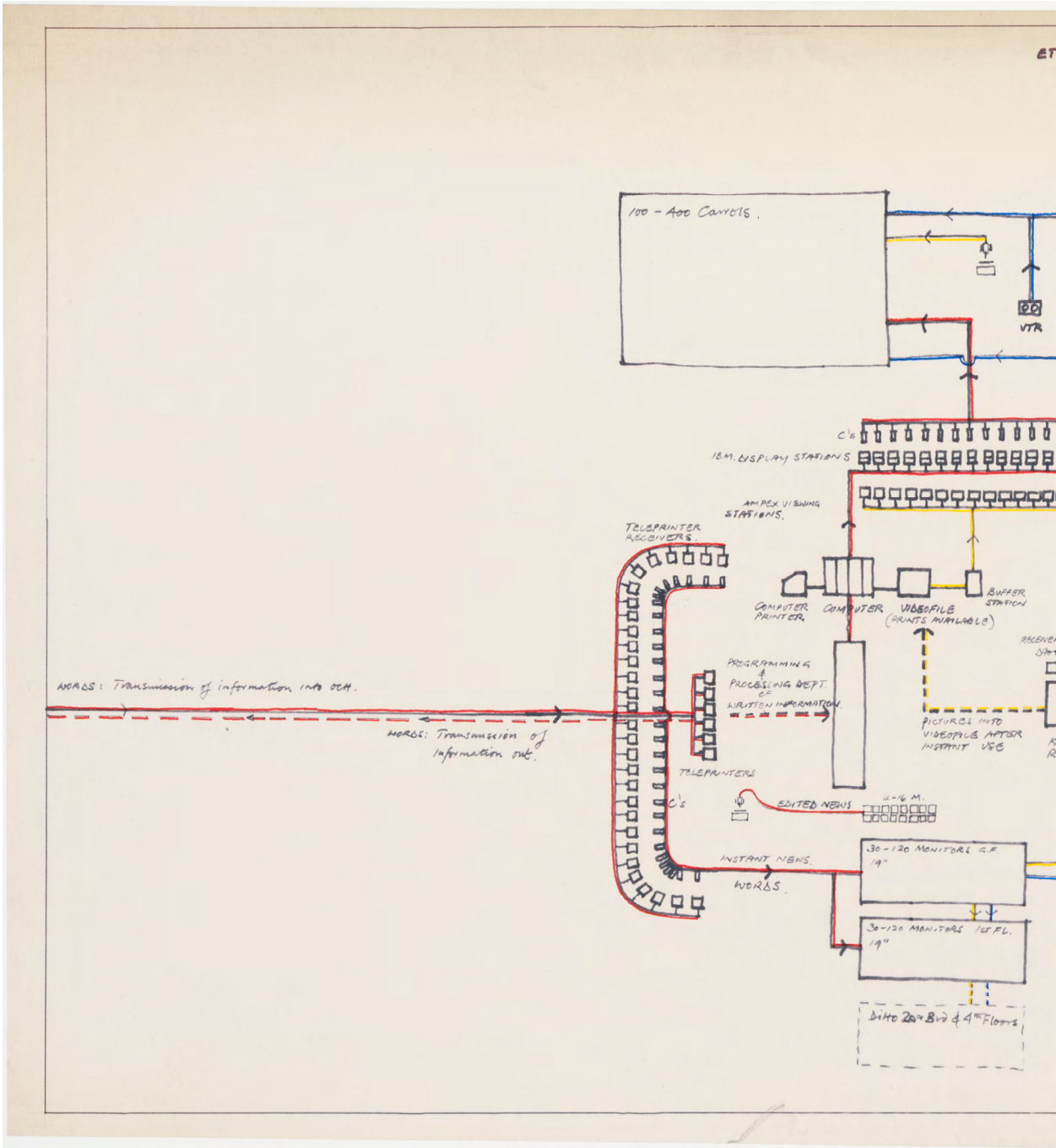
The LEO computer at J. Lyons & Co.'s headquarters at nearby Cadby Hall, had first been intended to process the data for Oxford Corner House.[61] However due to lack of storage, Price considered IBM computers with a capacity of 844,000,000 characters to 'do the job'.[62] By 1965, when the feasibility study for Oxford Corner House was initiated, IBM computers were better equipped than LEO devices. This was largely due to the British government's apprehension in developing and continuing to support private initiatives of computer technology after World War II, when Britain had been at the forefront of computational development. Due to security risks, the British government overlooked the potential of business computing, leaving America to lead in the field of digital technology. The technological re-ordering of labour, not fully foreseen by the British government, resulted in the 'brain drain' that Price was concerned with.

Prior to their decline, J. Lyons & Co. had funded the completion of Cambridge University's EDSAC (the Electronic Delay Storage Automatic Calculator) and as such the LEO 1 was largely modelled on computing for engineering, but with storage being the main advancement, it had twice the memory size of EDSAC, occupying five thousand square feet (465 m^2).[63] As Lyons' management required many simple calculations compared to a few, complex calculations, business computing proved different from scientific computing and subsequently studies of how to optimise the influx of input were carried out in the development of Lyons' Electronic Office.[64]

LEO quickly gained a monopoly over data processing; being the only business computer in Great Britain, it carried out all of the British General Post Office's national transmissions, and later managed all of the PAYE tax code for the British government, as well as government payrolls and business management of multiple corporations. For the British transport company, LEO calculated the shortest distance from each station to the other four thousand, a job that otherwise would have taken 'fifty clerks five years to do'.[65] Additionally, LEO would carry out calculations for the British Ministry of Defence – a task for which it would be sealed off from personnel.

Computer specialists later argued that LEO had been successful precisely because it relied on customer information to update its flow of input, anticipating more responsive kinds of computation.[66] Because multiple inputs and outputs were running at the same time, multiple but simple factors – such as weather forecasts and the amount of ice-cream in store – could be combined, making it possible for 250 shops to make last-minute changes to their orders. David Caminer, one of the computer engineers of LEO 1, has explained the use of manager input as the first example of re-engineering: 'For example, if there was a heat wave or a cold snap, we could have an upsurge in demand for beef and dumplings, or salads.'[67]

Apart from dining areas, Cedric Price and J. Lyons & Co. settled on the following functions for Oxford Corner House: exhibition hall (with changing displays), catering facilities, bowling alley, hobby shops, and sport centres. Price explored a wide range of technological devices that could function as educational and training aids inside Oxford Corner House. The Eidophor projection system that would project televised programmes onto large outdoor screens in full daylight, the Link System for Indoor Driving Tuition, a simulated driving machine, and recording cameras were all considered and included in the feasibility study portfolio. As computers had not yet been developed with display, and screens were only able to receive and project, CCTV was employed as a kind of interface, projecting live information on the various floors.[68] Different electronic systems were dispersed throughout the building – the ground floor was designed to provide


100 - 400 Cameras.
VTR
C's
IBM. DISPLAY STATIONS
AMPEX VIEWING STATIONS.
TELEPRINTER RECEIVERS.
COMPUTER PRINTER.
COMPUTER
VIDEOFILE (PRINTS AVAILABLE)
BUFFER STATION
PROGRAMMING & PROCESSING DEPT. OF WRITTEN INFORMATION.
WORDS: Transmission of information into OCM.
WORDS: Transmission of information out.
PICTURES INTO VIDEOFILE AFTER INSTANT USE
TELEPRINTERS
C's
EDITED NEWS
4-16 M.
INSTANT NEWS.
WORDS.
30-120 MONITORS G.F. 19"
30-120 MONITORS 1ST FL. 19"
DITO 2ND & 3RD & 4TH FLOORS

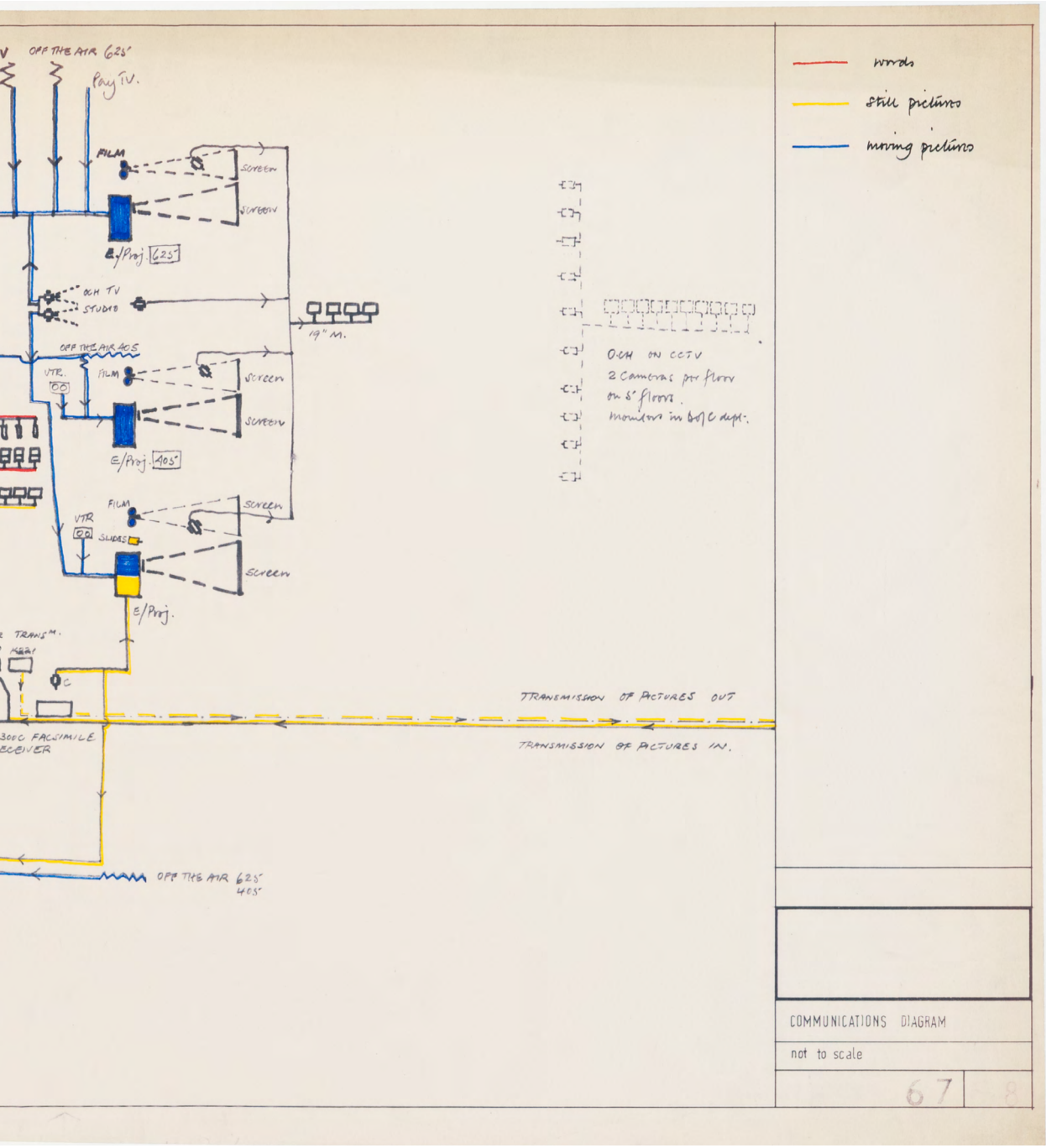


Fig. 7: Communications diagram for Oxford Corner House, Cedric Price, 1965. Ink on reprographic copy. DR1995:0224:342:001:003, Cedric Price Fonds, Canadian Centre for Architecture.

an instant news flow and information especially devoted to displaying transportation routes and timetables. Ten television-viewing rooms followed on the second floor and an information library on the third floor.[69] These computer systems were then to be linked to the outside world, transmitting and receiving data to sustain information channels.[70] Moreover, the hydraulic moveable floors that Price had already designed for the Fun Palace would enable various interchangeable spatial entities, like a TV studio in the middle of the second floor. The floor slabs would be managed by London's Hydraulic Power Co., ordered by fax sent via the GPO, to carry out the many possible floor plan rearrangements. As seen in the section for Oxford Corner House, the floors of the second and third levels would move according to the arrangement made by visitors, made possible by pneumatic lifting.[71] [Fig. 5] The British General Post Office's transmission lines shown in figure 6 as 'GPO', was only some of the national infrastructure relying on the programming of LEO computation. Price employed GPO transmissions as Oxford Corner House's exterior communications system.

One of LEO's central jobs was to carry out stock management. Every day, the manager at each of Lyons' 250 shops would have to place an order at Lyons' headquarters. As 'understocking leads to lost sales', when working with food, 'overstocking soon becomes intolerably wasteful' the 1957 promotional film for LEO explained.[72] After lunch, each Lyons manager would consider her stock; the film shows how she 'weighs up local conditions and decides what variations [to add to her order]'. The manager then proceeds to call the head office where her variations are noted quickly onto punch cards; 'there is no written record; what the [telephone] girl hears, she punches' simultaneously a short paper tape 'puts in last minute management decisions'.[73] Afterwards 'the programme is fed first laying down the sequence for the multiplicity of calculations LEO will perform, next the standing orders from [the manager's] telephoned revisions; teashop by teashop are fed in with the overriding variations on the paper tape'. Immediately, packing notes are printed out for both the clerks in the central storage and management. 'After further electronic processing' and by 'means of discriminance built into the system, LEO will examine all the statistics, but only print those that require action'. In this way, the promotional film explains, the central management 'are given precise up-to-the-minute information and enabling decisions to be more closely related to trading conditions'.[74]

The film explains how it was 'programmers, method-men and electronic engineers' who would analyse the needs of J. Lyons & Co. and then 'at the right time, crystallise them into a development plan'.[75] This plan would then be transformed into a logical scheme of circuit diagrams much like Price's diagram for the overall communications system for Oxford Corner House. [Fig. 7] Only for LEO designers, each unit would be treated as its own circuit. In comparison with Price's diagram, that serves an architectural purpose by showing the entire building as a circuit, the drawings for LEO of each physical rack or circuit board had to be very detailed, as the switching devices were assembled and programmed by hand.

In a 1952 internal LEO publication 'The Layman's Guide to LEO', the management's new computer is referred to as an automated calculator and explained in those terms. LEO consisted of a 'store' for keeping numbers, an 'arithmetic unit' for abstracting information, an 'input' for 'putting information into the store' and finally an 'output' for printed results. To carry out a computational job, the four basic units had to 'operate in conjunction with one another in definite sequence'.[76] A simple operational circuit for LEO was described as a feedback loop, involving all four basic units: Input, Storage, Output and Operator. A feedback loop can best be described as the circulation of a set of messages

that are exchanged without regard to their content, or as a kind of non-hierarchical information extraction only directed by its purpose.[77]

Gordon Pask's diagram for the Fun Palace shows how engaging with information activities would provide the desired adaptability in the user. [Fig. 8] The diagram describes three procedural stages of a participant entering the Fun Palace: 1) data collection, 2) compilation, and 3) feedback, and the concurrent modification of spaces and activities in the Fun Palace, as feedback was effectively comparing people coming in (unmodified people) to people leaving (modified people).

In order to find agency in anticipation, we might imagine the Lyons manager from the promotional film as a participant in LEO computation. Able to make her own local considerations and alterations to the order, she provides the system with information that the managers at the head office would otherwise have no way of knowing. As such, her orders are presented as vital to overall sales, perceived cybernetically; she carries out an activity that generates information, without which the system, in this case the enterprise of J. Lyons & Co., wouldn't operate or reach its goal of supplying all shops accordingly. Then if we imagine that the same Lyons manager had carried out enough information during a twelve-month cycle, she would have provided enough variables for LEO to start carrying out its own arithmetic abstractions and begin to predict the following day's order. The manager would have automated herself out of a job. On the other hand, if LEO only relied on stored information, the argument against such automation would be that J. Lyons & Co. would be unable to adapt to local conditions and assessments, only visible to the manager. Her job as a participant is to provide input, while the overriding programme decides exactly what goods will arrive to her store the next day. With a programme 'liable to change at short notice', the film argued that it enabled J. Lyons & Co. to avoid under- and overstocking and to eliminate imprecise planning.[78] In Oxford Corner House, form was influenced by information retrieved from users, in such a way that the floorplan would be arranged according to how users would access information. Like the use of LEO for management purposes, the programme for Oxford Corner House was organised as a facilitator of reliable flows of telecommunication for the design to constantly change according to the activity of its users.

Activity is information

Price's vision to 'strategically and with minimal physical means reorganise systems toward more socially productive ends' was encouraged by clients who were eager to make use of the new digital technologies.[79] Debates from the 'Cybernetic Committee' set up by Price for the Fun Palace, demonstrate how the ideals of realising 'indeterminate space' were essentially modulated over time as Price was hired to do similar, user-involved work by other clients, far from Littlewood's left-wing and emancipatory ideology. The committee was set up in 1963 to debate the ramifications of the systems employed in Price's projects. In the end, psychological reflections superseded the technical, and it became apparent that designing a code of conduct for a 'free space' would be challenging, the committee concluded that enforcing social control would be necessary to prevent violence.[80] However, for the commercially commissioned Oxford Corner House this concern was not an issue: social conduct would already be enforced by the social conventions of visiting a tea house or restaurant, and although, like Fun Palace, Oxford Corner House would be open twenty-four hours a day, security staff would tackle any unwelcome behaviour.

During the 1960's, criticism of Price's projects addressed elements of the designs considered controlling and pseudo-radical. As Price gradually capitalised the features of indeterminate free-space, the English situationist group King Mob encouraged

the public to 'occupy the Fun Palace', as they viewed Cedric Price as the leading architect of 'professionalized radicalism'.[81] In 1969, George Baird wrote: 'Price's idea of architecture as "life conditioning" rests on essentially the same view of human experience as Jeremy Bentham's Panopticon'.[82] Public sentiment had shifted, and the inherent control mechanisms of cybernetics were perceived to be limiting. Royston Landau later argued that while Price's aim does '[bear] a strong resemblance to the British philosophical concerns of Jeremy Bentham and to John Stuart Mill's deep passion for personal freedom' a closer examination of Price's 'version of enabling' can be compared to Bentham's idea of providing the individual with greater utility, or usefulness', as the idea of 'freedom to be useful' Landau argued, 'seems to lie very close to the surface of the Cedric Price production'.[83]

Almost ten years after the first initiatives to build the Fun Palace, and at the end of its so-called obsolescence cycle, Price and his co-authors maintained the importance of the idea by proposing the Non-Plan to see what would happen if people could 'decide for themselves'. By taking the features of the Fun Palace to a national level, Price maintained the societal importance of indeterminate and responsive architecture. As Non-Plan was intended to consist of geographically widespread zones of so-called launch-pads it would connect users and planners in the task of organising space. Cybernetically 'wired', like the Fun Palace or Oxford Corner House, Non-Plan's launch-pads would be facilitated by the same mechanisms that J. Lyons & Co. would depend on for managing their supply-chain. Precisely by relying on last-minute input, society would be freed from forecasting and be able to eliminate long-term planning altogether. By extracting information, the launch-pads, the authors claimed, would be able to provide citizens with what they wanted by letting them actively take part in producing their own environment. 'Even the first waves of information would be valuable, if the experiments ran for five years, ten years, twenty years, more and more of use would emerge.'[84] Instead of planning, the ideal of Non-Plan to 'set up frameworks for decision' was aimed at '"knowing" instead of "imposing"'.[85] Compared to planning, which the authors claimed 'lurched' 'from one fashion to another, with sudden revulsion setting in after sudden acceptance', the launch-pads would be provided with enough knowledge to anticipate responses by receiving information retrieved from participatory activity.[86]

That Price perceived 'self-participatory entertainment' as a dynamic activity of information exchange between user and building seems to be inspired by the work of media theorist Marshall McLuhan. Price considered 'the potential impact of different forms of media on the active participation of users; referring to the "hot" medium of film versus the "cold" medium of television'.[87] In order to 'sustain and maximize civic connections through information', information entering Oxford Corner House would, according to Price's diagrams, arrive through different channels and then travel according to purpose.[88] Price noted: 'So far people are involved simultaneously with: 1) The hot medium of film; 2) the cold medium of TV; 3) The hot medium of written word (which I suppose may be transformed to a cold medium when shown on a TV receiver); 4) The hot medium of radio & sound generally; 5) The hot medium of print on panels around the building'.[89] McLuhan introduced the hot/cold distinction in his 1964 study *Understanding Media*. 'Cool media' could, according to McLuhan, be perceived as organic and curvilinear whereas 'hot media' would 'run' linearly through a building.[90] The temperature analogy would determine how much 'brain work' any given activity would require. A lecture would, according to McLuhan's principles, be considered a 'cool medium' as it would require more 'participation' than a hot medium like television.[91]

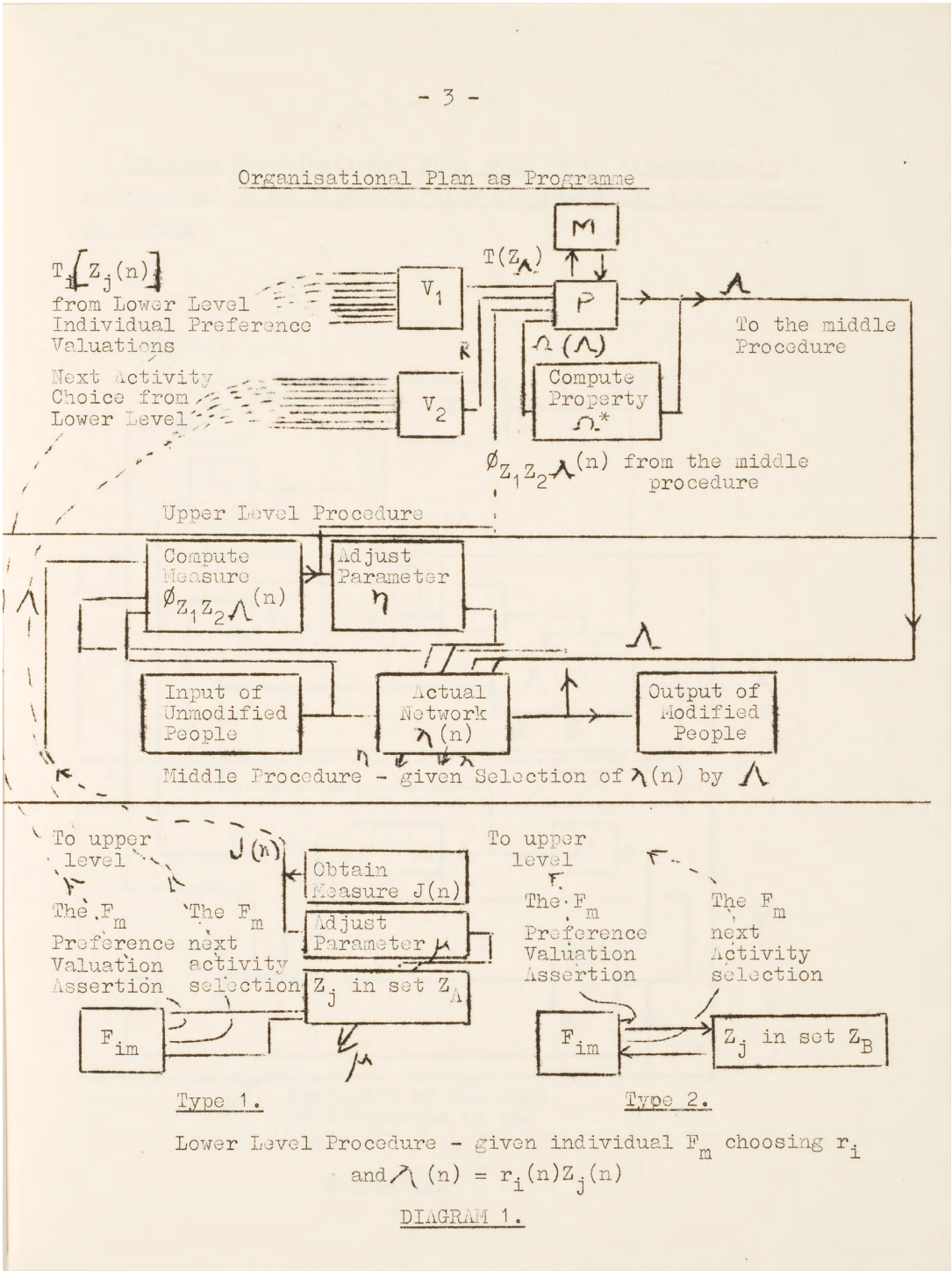


Fig. 8: Gordon Pask and Cedric Price: ‘Organisational Plan as Programme’, from the minutes of the Fun Palace cybernetics committee meeting, 27 January 1965. Reprographic copy, 25.6x20.5cm. DR1995:0188:525:001:001:004 Cedric Price fonds, Canadian Centre for Architecture.

Following Price's architectural reasoning, participation is thus what happens between the screen and the user, between stimuli and response. As such, for Oxford Corner House, the combination of programme and informational interfaces become the building's architectural means.[92] In turn, 'self-participatory entertainment' becomes a matter of cognitive interpretation, of hot or cold media, of brain work and interaction and as such, by generating it, activity becomes information. McLuhan wrote: 'The new patterns of human association tend to eliminate jobs, it is true. That is the negative result. Positively, automation creates roles for people'.[93] Seemingly inspired by McLuhan, Price considered the degrees of participation required by the various roles that could be assumed in Oxford Corner House. Whether engaging with a hot or cold medium, the overall distribution of activities all served the same purpose; creating new roles for people in order to respond to the needs of a changing society.

Conclusion

Described as 'unequivocal in seeing architecture serving the user'[94], Price's 'desire to improve the human condition' was mediated through responsive architecture.[95] The participatory ethos can be located in his reputation to have redefined 'the ways in which the architect might enhance human life, extend human potential, and promote social change'.[96] However, the feedback mechanisms that Price intended as architectural design also made him dependent on human action for creating responsive environments. In order to anticipate choice in a building, Price needed input from its users through 'self-participatory entertainment' that can be seen as a system's self-regulating or conditioning activity.

Stanley Mathews recalls how Price had told him shortly before he died that the Fun Palace 'wasn't about technology, it was about people', suggesting that followers and critics alike might have misunderstood his endeavours.[97] However, the remark also demonstrates Price's cybernetic understanding of the reflexive relationship between the two terms 'people' and 'technology', and that focusing on one over the other seems to be only a matter of emphasis. Today the ethos of the digital platform equally claims that it is 'people' and their lives that are central to the smart city. Input is intended to be derived from sensors or produced by people's mobile devices 'acting as data "feeds" to predetermined central systems' much to the benefit of established user networks of digital platforms.[98] The visions of 'big, data-driven, smart urban systems rely on the power for large transactions of simple information', as the smart city encourages people to 'actively participat[e] in the shaping of environment[s]'.[99]

In a 2000 interview with Hans Ulrich Obrist, Price was asked about the future of participation. Obrist, who had just interviewed Giancarlo De Carlo, wanted to know if Price would agree with De Carlo that participation had become 'kind of formalistic and a cliché'. Obrist explained how De Carlo had proposed that the 'the only way to work with participation would be to make it implicit in a building, to make it almost invisible'.[100] Price referred to radio shows that ask their audience for input: 'which makes for rather cheap radio but very dull listening for the rest of the population' as a way of agreeing with De Carlo, saying that 'at the moment it's almost a little dictum of right thinking people to allow everyone to participate'.[101]

How Price would have responded to the prospect of smart cities and invisible data monitoring, we cannot know, but in many of his projects, he pointed towards an inbuilt and planned 'obsolesce', in order to prevent his proposals to outlive their timeliness. Price provided his projects with lifespans of about ten years: for the Fun Palace, he stated that it 'must last no longer than we need it'.[102] However, throughout his career Price continued to be concerned with technology's possibilities for human beings and it is for this endeavour that his work today is hailed.

Described as a 'persistent critic of normative architecture' and as an 'iconoclast visionary – notorious for breaking all the rules', Price's projects extend far beyond their intended life span.[103] Despite being modelled after the visionary concepts of free time for the Fun Palace, ultimately the programme for Oxford Corner House shows how capitalism, in the shape of J. Lyons & Co., intended to extract value from workers in their so-called leisure time. Unlike for the Fun Palace, the programme never sought to ask what kind of activity comes after work. With Oxford Corner House, Price didn't distinguish between 'action' as social agency, and 'activity' as physical action, and as encountered in cybernetic reasoning there seems to be no distinction between the two, as long as they continue to generate input. The question is, if the participatory elements in Price's design can be reduced to activities that generate information, is it then possible to perceive Price's projects as models for coupling architecture and technology in architectural participatory practice today. Although Price was responding to a different social and economic situation than our own, the development of business computation shows that the same technological means he employed to 'better the human condition' were already employed in the 1960's to increase economic capital. Perhaps instead of hailing Price as what is conventionally considered socially radical, it would be productive to reconsider his statement: 'Cities die due to lack of usefulness' as a way of stressing the importance of economic adaptability.

Notes

1. 'His major themes are those of time and movement. Central to his thinking and his work is his opposition to permanence and his discussion of change. Price's projects continually push against the traditional physical limits of architectural space and map out the trajectories of time.' Hans Ulrich Obrist, *Cedric Price – The Conversation Series, 21* (Cologne: Verlag der Buchhandlung Walter König, 2009), 9–11.
2. 'Cities die due to lack of usefulness'. Cedric Price, 'A Summertime Breeze', in *AA Files* vol. 0 (1984): 71.
3. Royston Landau, 'A Philosophy of Enabling: The Work of Cedric Price' in *Cedric Price: Works II,* ed. C. Coudrille (London: Architectural Association, 1985), 13.
4. When Price is quoted, or mentioned, it is often for his radical forecast of the present moment. The 2019 digital supplement to the online journal *e-flux* quotes Price in its first editorial statement: 'When Cedric Price declared "technology is the answer, but what was the question?" he could not have understood the extent to which such a logic would underpin the economic and industrial logics of disruption that have since become increasingly determining of social life and urban experience'. E-flux journal: 'Digital Supplement, Editorial Statement'. https://e-flux.com/.
5. Kathy Velikov, 'Tuning up the City: Cedric Price's Detroit Think Grid', *Journal of Architectural Education* (2015): 51.
6. Anthony Iles argues that Price's visionary designs have been co-opted by neoliberal policies and how the 'Fun Palace can be considered a pre-vision of the emerging post-industrial society'. Anthony Iles, 'Legislating for Enthusiasm: From Fun Palace to Creative Prison', Arcade, March 2009, http://arcade-project.com.
7. 'Cedric Price's proposals for the Fun Palace and Potteries Thinkbelt as extreme examples of how labor has been "enabled" by specific architectural spaces that have anticipated our contemporary modes of production, modes in which knowledge, cooperation, and information play a fundamental role in producing economic value'. Pier Vittorio Aureli, 'Labor and Architecture: Revisiting Cedric Price's Potteries Thinkbelt', *Log* no. 23 (Fall): 99.
8. Tarleton Gillespie, 'The Politics of "Platforms"', *New Media & Society* 3 no. 12 (2010): 348–350.
9. Nick Srnicek, 'The Challenges of Platform Capitalism: Understanding the logic of a new business model', *Juncture* vol. 23, Issue 4 (2017): 254.
10. Gillespie, 'Politics of "Platforms"', 348.
11. 'The element of anticipatory design is essential because architecture in one way, has proved itself useful in that it is apparently dating faster and faster,

running out usefulness quicker and quicker'. Cedric Price, 'Anticipatory Architecture', Columbia University, 1995. *Cedric Price Works 1952–2003: A Forward Minded Retrospective* vol. 2: 'Articles and Talks', ed. Samantha Hardingham (London & Montreal: Architectural Association & Canadian Centre for Architecture, 2016): 460–1.

12. Stanley Mathews, *From Agit-Prop to Free Space: The Architecture of Cedric Price* (London: Black Dog Publishing), 179.
13. Tanja Herdt, *The City and the Architecture of Change: The Work and Radical Visions of Cedric Price,* trans. Helen Ferguson (Zürich: Park Books, 2017), 103.
14. Tanja Herdt suggests that projects such as the Fun Palace and Non-Plan were influenced by the ideas of 'bottom-up' planning introduced to the Architectural Association by Giancarlo de Carlo and Colin Ward in the 1950's. Ibid., 103.
15. Arata Izoaki, 'Erasing Architecture into the System', *Re: CP*, ed. Hans Ulrich Obrist, (Basel: Birkhäuser, 2003), 28–32.
16. Joan Littlewood, 'Non-program', *The Drama Review* vol. 12, no. 3, Architecture/Environment (Spring, 1968): 132.
17. 'Those who at present work in factories, mines and offices will quite soon be able to live as only a few people now can: choosing their own congenial work, doing as little of it as they like, and filling their leisure with whatever delights them'. Littlewood, 'Non-Program', 130.
18. John Rule, 'Time, Affluence and Private Leisure: The British Working Class in the 1950's and 1960's', *Labour History Review* vol. 66 (2001): 223–4.
19. Aureli, 'Labor and Architecture', 112.
20. Stanley Mathews, 'Cedric Price: From the "Brain Drain" to the "Knowledge Economy", *Architectural Design* 76, no. 1(2006): 91.
21. 'Price's architecture reflected the changing character of British society in those heady times, but it also acted as a catalyst to expedite social transformation'. Stanley Mathews, 'The Fun Palace as Virtual Architecture: Cedric Price and the Practices of Indeterminacy', *Journal of Architectural Education* (2006): 39.
22. Cedric Price, 'Oxford Corner House', ed. Coudrille, *Cedric Price: Works II*, 65.
23. Mathews, 'Fun Palace as Virtual Architecture', 40.
24. Cedric Price and Joan Littlewood, 'Fun Palace promotional brochure', 1964. https://cca.qc.ca.
25. Stanley Mathews, 'The Fun Palace: Cedric Price's Experiment in Architecture and technology', *Technoetic Arts: A Journal of Speculative Research*, vol. 3, no. 2 (Intellect Ltd, 2005): 76.
26. Kester Rattenbury, 'Catalogue for "Magnet" – an exhibition by Cedric Price', arranged by The Architecture Foundation in London, from 18 April – 8 June 1997.
27. Mary Louise Lobsinger, 'Cedric Price: An Architecture of Performance', *Daidalos,* no. 74 (2000): 23.
28. Obrist, *Cedric Price – The Conversation Series*, 84.
29. Cybernetics was explored before 1948 and especially the Josiah Macy Foundation's conferences on 'Circular Causal and Feedback Mechanisms in Biological and Social Systems' are said to have been influential in the field. Bernard Scott, 'Second-Order Cybernetics: An Historical Introduction', *Kybernetes* (October, 2004): 1367.
30. Ibid., 1366.
31. Hardingham, ed., *Cedric Price Works* vol. 1: 'Projects', 350–1.
32. Mathews, 'Fun Palace as Virtual Architecture', 44.
33. Molly Wright Steenson, *Architectural Intelligence*, (Cambridge, MA: MIT Press, 2017), 132.
34. Mathews, 'Fun Palace: Cedric Price's Experiment', 85.
35. Scott, 'Second-Order Cybernetics: An Historical Introduction', 1368.
36. Mathews, 'Fun Palace as Virtual Architecture', 41.
37. Usman Haque, 'The Architectural Relevance of Gordon Pask', *Architectural Digest* 77, no. 4 (2007): 55.
38. Haque, 'Relevance of Gordon Pask', 56.
39. Ibid.
40. John Frazer, *Cedric Price Opera*. Ed. Samantha Hardingham (London: Wiley-Academy, 2003), 46.
41. John Frazer 'Computing Without Computers', *Architectural Digest*, 75, no. 2 (2005): 39.
42. Lobsinger, 'Cedric Price', 24.

43. Littlewood, 'Non-Program', 130.
44. Aureli, 'Labor and Architecture', 112.
45. Velikov, 'Tuning up the City ', 42.
46. Ibid.
47. 'Non-Plan' applied to a zone, as a launch-pad, 'would keep all the options open'. Reyner Banham, Paul Barker, Peter Hall, and Cedric Price, 'Non-Plan: An Experiment in Freedom' *New Society*, no. 338 (1969): 438.
48. Ibid., 435.
49. 'Most planning is aristocratic or oligarchic in method even today – revealing in this its historic origins'. Ibid., 435.
50. Ibid., 437.
51. Ibid., 442.
52. Ibid., 436.
53. Jonathan Coopersmith, 'Reviewed Work(s): A Computer Called LEO: Lyons Teashop and the World's First Office Computer by Georgina Ferry', *Enterprise & Society* 5 no. 1 (2004): 143.
54. Bell, *LEO: The Automatic Office*, 12:59.
55. Cedric Price, 'The Oxford Corner House', in Coudrille, ed., *Cedric Price: Works II,* 65.
56. Colin Bell, *LEO: The Automatic Office* (London: FHP Productions, 1957), promotional film, 12:59. https://youtube.com.
57. Haque, 'Relevance of Gordon Pask', 54.
58. Molly Steenson, 'Cedric Price's Oxford Corner House Feasibility Study (1966)', *99th ACSA Annual Meeting Proceedings, Where Do You Stand,* ed. Annie Cormier, Annie Pedret & Alberto Perez-Gomez (Montreal, 2011): 139.
59. 'In an internal memo to Geoffrey Salmon, [Price] wrote, "I think that there is an enormous potential in catering for the leisure activities of the populace and that we could well be letting a new social pattern if we went ahead with this scheme, as original as the Teashops were at the turn of the century".' Steenson, 'Cedric Price's Oxford Corner House Feasibility Study (1966)', 138.
60. Mathews, *From Agit-Prop to Free Space: The Architecture of Cedric Price*, 179.
61. Steenson, *Architectural Intelligence*, 141
62. Canadian Centre of Architecture, 'The Information Hive: A Reading of Cedric Price's Oxford Corner House', March 2011, https://cca.qc.ca.
63. 'LEO Computers', website on History and Philosophy of Computing – Middlesex University, accessed 1 June 2019. http://ta.mdx.ac.uk.
64. 'The Cambridge team, however, were not developing a computer for commercial use and Lyons soon realised that the requirements of business computing were very different from those of scientific computing (for example, many simple calculations versus a few, very complex calculations; extensive versus limited input and output)'. Edgar A. Whitley, 'A Computer called LEO: Lyons Teashops and the world's first office computer', *Information Technology and People,* no. 17 (2014): 102.
65. Bell, *LEO: The Automatic Office*, 1:58.
66. Coopersmith, 'Computer Called LEO, 143.
67. Ross Bentley, 'The Tea Shops that Ruled the IT World', *Computer Weekly*, 20 May 2003, 40.
68. CCA, 'The information hive'.
69. Mathews, *From Agit-Prop to Free Space*, 180.
70. Ibid., 182
71. Using water pumped from the ground, at a pressure of up to seven hundred pounds per square inch (49 kg per square cm) around it was already used to operate lifts, theatre machinery, and various cranes, presses and other heavy equipment. Andy Emmerson, 'Hydraulic Power in London', Subterranea Britannica, accessed 1 June 2019. https://subbrit.org.uk.
72. Bell, LEO: The Automatic Office 9:38-12:59.
73. Ibid.
74. Ibid.
75. Ibid., 1:58
76. 'A Layman's Guide to LEO: Chapter 1: How LEO works', 1952, typescript on the website of the Centre for Computing History, accessed 1 June 2019. http://computinghistory.org.uk.
77. Steenson, *Architectural Intelligence*, 16.
78. Bell, *LEO: The Automatic Office*, 06:43.
79. Velikov, 'Tuning up the City', 40.

80. Herdt, *City and the Architecture of Change,* 61.
81. Britt Eversole, 'Occupy The Fun Palace', *Thresholds* 41 (Spring 2013): 33.
82. George Baird, '"La Dimension Amoureuse" in Architecture' (1969), *Architecture Theory Since 1968* edited by K. Michael Hays (Cambridge, MA: MIT Press, 1998), 41.
83. Landau, 'Philosophy of Enabling', 3.
84. Banham et al., 'Non-Plan: An Experiment in Freedom', 437.
85. Ibid., 442.
86. Ibid., 435.
87. CCA, 'The information hive'.
88. Steenson, 'Feasibility Study', 139.
89. Ibid.
90. Ibid., 139.
91. Marshall McLuhan, *Understanding Media*, (London & New York: Routledge, 1964), 25.
92. Ibid., 139.
93. Ibid., 12.
94. John Frazer, 'John Frazer', *Cedric Price Opera*, ed. Hardingham, 47.
95. David Allford, 'The Creative Iconoclast' in Coudrille, ed., *Cedric Price: Works II*, 7.
96. Stanley Mathews, *From Agit-Prop to Free Space: The Architecture of Cedric Price*, 8.
97. Mathews, 'Fun Palace as Virtual Architecture', 47.
98. Alessandra Aurigi, 'No need to fix: Strategic inclusivity in developing and managing the smart city', *Digital Futures and The City of Today* ed. Glenda Amayo Caldwell, Carl H. Smith and Edward M. Clift. (Bristol: Intellect Ltd, 2016): 19.
99. Ibid.
100. Hans Ulrich Obrist, *Re:CP*, 67.
101. Ibid., 66.
102. Whereas Oxford Corner House was supposed to last ten years, 'Non-Plan' was based on a 'rapid obsolescence cycle'. Price and Littlewood wrote: 'We are building a short-term plaything in which all of us can realise the possibilities and delights that a 20th century city environment owes us. It must last no longer than we need it'. Cedric Price and Joan Littlewood, 'Fun Palace promotional brochure', 1964. Accessed 1 June 2019. https://cca.qc.ca.
103. Whitney Moon, 'Cedric Price: Radical Pragmatist, in Pursuit of Lightness', *Journal of Architectural Education*, 71 no. 2 (2017): 171.

Biography

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A Conditioned Exchange

Fredrik Torisson

> Formerly the nobles, if they had ready money, were wont to invest it in real estate, which gave employment to many persons and provided the country with necessaries. The merchants employed capital of this kind in their regular trade whereby they adjusted want and superfluity between the various countries, gave employment to many and increased the revenues of princes and states. Nowadays, on the other hand, a part of the nobles and the merchants (the former, secretly through the agency of others, and the latter openly in order to avoid the trouble and risk of a regular profession) employ all their available capital in dealing in money, the large and sure profits of which are a great bait. Hence the soil remains untilled, trade in commodities is neglected, there is often increase of prices, the poor are fleeced by the rich, and finally even the rich go bankrupt. (Guicciardini, 1923)[1]

The conditioning of humans through architecture – whether through discipline, bio-politics or other forms of conditioning – is habitually associated with architecture produced *by* power to form or encourage the formation of specific forms of what Michel Foucault would call subjectivity.[2] Subjectivity entails an understanding of the self in relation to oneself, to others and to (subject oneself to) an authority.

Architecture is often an expression of power, but also one of the means through which it is exercised. Modern architecture can, in the words of Swedish philosopher Sven-Olov Wallenstein, be considered a 'biopolitical machine', aimed at producing specific forms of subjectivity.[3] Early modern architecture – which is the architecture considered here – was generally not imagined as intentional biopolitical machines in this sense. Architecture was more of a representation of order than, as Wallenstein puts it, a tool for the ordering itself. As a tool for ordering, architecture renders certain forms of subjectivity attractive; it is a tool that offers certain freedoms to a specific subjectivity, thereby permitting the individual to consider herself free.

In this sense, conditioning becomes less direct than the disciplining of bodies associated with Foucault's famous reading of Jeremy Bentham's Panopticon prison as a diagram of power. In this context, I will take conditioning to mean that a certain environment can enable or encourage the development of a certain subjectivity and offer freedoms to those who inhabit the environment. Architecture thus enables certain forms of subjectivity whilst making others impossible, and in this line of reasoning, architecture could hypothetically play a role in the evolution of a new subject, even if this was never intended in the first place. Such a perspective makes the emergence of new societal institutions or building types intriguing; what kind of order and what kinds of subjectivity does a new type of building – whether we consider type in terms of programme or form or both – encourage and enable?

In the following, I will look precisely at the development of a new institution: the early modern exchange, *bourse*, or *beurs*.[4] [Fig. 1] I will analyse this in relation to the early, arguably prematurely early, stages of development of the new subject, *homo œconomicus*, whose existence is usually associated with the rise of political economy as a discipline. I am curious about the role played by the dedicated structure of the exchange as an institution in the emergence and prominence of the speculator as the most radical form of merchant, a subject whose declared self-interest and ludic relation to money was a source of much bewilderment at the time. While the role of architecture here is of course limited, the material conditions of the purpose-built exchanges can arguably be understood as actors that make possible the development of what would later become *homo œconomicus*.

The birthplace of *homo œconomicus*?

It is well established that *homo œconomicus* is characterised by a pronounced self-interest, desiring above all wealth, but also luxury and leisure.[5] The term *homo œconomicus* is in an historical context an anachronism formulated in reference to John Stuart Mill in the nineteenth century. It has however been (retroactively) employed by Foucault, who briefly traced the origins of *homo œconomicus* in his lectures on *The Birth of Biopolitics* at the Collège de France in the late 1970s.[6] Foucault dates *homo œconomicus* coming into his own around the middle of the eighteenth century.[7] To Foucault, *homo œconomicus* is a different subject, essentially incompatible with contemporary subjects such as *homo juridicus*, a man defining himself through rights and obligations. Instead, *homo œconomicus* is, according to Foucault, defined purely through his interests and not defining himself through a contractual obligation.

To Foucault, this is a fundamental difference that cannot be bridged – the two are not governed by the same logic. While the subject of rights (*homo juridicus*) cedes certain rights in order to gain other rights, the subject of interest (*homo œconomicus*) does not cede anything, in Foucault's view. He notes: 'The market and the [social] contract function in exactly opposite ways and we have in fact two heterogeneous structures.'[8] With the invention of political economy, the self-serving *homo œconomicus* becomes a virtuous character, who benefits society as a whole in the pursuit of his self-interest (albeit inadvertently, as he must not act for the imagined good of society). The emergence of *homo œconomicus* can be coupled with a transformation in the nature of commerce. Commerce in the seventeenth century shifted from being something conducted in private to become an 'affair of state', as Hume put it.[9] This implies a renegotiation of the practice, but to an extent this also became a spatial renegotiation in the cities.

What specifically interests me is the preceding period and how private interest and its pursuit became a public affair, but one that was at the same time becoming increasingly private in other ways.[10] It should be noted that I use the term 'public' rather loosely here and in two different meanings: first, I use it in the meaning of 'in plain view of everybody', in the open, and later (in the period) I use it to denote something sanctioned and recognised by the state or its representative in the form of an institution – seemingly regulated and sanctioned by the state – although this was, as we shall see, not necessarily the case.[11]

There is a subtle but important distinction here. In the first instance of public, the activity itself is in in plain view for everybody to see, and later it is the *representation* of the activity that is public, the activity's associated institution. This transition took place in or through a series of remarkably similar yet subtly different architectural structures, and the discreet changes these structures underwent

Fig. 1: The Amsterdam Beurs is an illustration from the first half of the seventeenth century. Image courtesy of

during the first century of operation. In fact, the architectural structures themselves are so similar that they are habitually understood as the evolution of one particular type, yet the differences and alterations to them could also be taken to illustrate a more fundamental shift that sets the scene for *homo œconomicus* to emerge. The exchange, as it came to develop, could arguably be understood as simultaneously a part of public society, but with rules of its own that largely tended to ignore the rules dictated from elsewhere in pursuit of its own interests. This appears at least to resemble the specifics of *homo œconomicus*, who on the surface appears and is often equated with *homo juridicus*, but where *homo* œconomicus in his own view primarily obeys his own rules, and, in this domain, princes and lords are worth their net worth rather than being elevated to any higher status or realm.

Joseph Vogl notes in regard to *homo œconomicus* that 'the market is not just one forum among others but the site of social order as such: a catalyst that, in transforming passions into interests and selfish interests into amicable concord, directly follows a law of nature.'[12] The approach I have taken in this essay is to take the market as a very literal 'site' in the form of the early modern exchange as a purpose-built structure, and investigate how it came to be, as well as its catalytic potential. Although the market is essentially virtual in its character, the exchanges can be considered the nearest thing to its physical manifestation. We could perhaps, to a limited extent, consider the exchange as a structure that is intended to represent the virtual nature of the market in an actual form.[13] As the market in the exchange comes into its own, it also begins to form a distinct entity that is clearly visible, separate from the surrounding city yet simultaneously part of it, becoming both more public and more private in the process. Through this distinction, merchants could distinguish themselves as a group and develop their own rules of finance as a game, producing an interiorised world in which the native population is the speculator, whose existence is primarily within the confines of the exchange – a world of its own in a rapidly expanding universe.

Background

The following analysis of three different exchange structures in northern Europe traces the emergence and subsequent transformation of the purpose-built exchange over the course of a century – from the exchange in Antwerp in 1531 to London in 1569 and Amsterdam in 1611.[14] The story is one of both similarities and differences. The broad spectrum of the analysis here undertaken is of course by no means unproblematic – a hundred years is a very long time, and many things changed during this particular century that make a direct comparison complicated. Secondly, the political contexts of each exchange differed significantly, from the complex politics of the Low Countries, to the power balanced between Crown and City in London. At the same time, the exchanges also have much in common. All of the exchanges were constructed by architects from the Low Countries (Dominicus van Waghemakere in Antwerp, Hendrik van Paessche in London, and Hendrick de Keyser in Amsterdam). During the period in question, Dutch/Flemish influence was on the rise, and Dutch architecture seemed to offer a refinement not readily available elsewhere in northern Europe; to an extent, this also places the different exchanges in a common cultural sphere.

This is confirmed by the implicit and sometimes explicit citations of one exchange becoming the inspiration for the next. For example, Sir Thomas Gresham received a letter from his advisor Richard Clough in which he proposed an exchange with precisely the Exchange of Antwerp as model.[15] Hendrick de Keyser, in turn, went to London the year before the construction of the Amsterdam Exchange to study the Royal Exchange. In other words, the different exchanges were to an extent

considered a series at their time of construction, no matter how different the urban, political, economic, and cultural contexts were.

The reasoning behind the various exchanges was different in each case. On a general level however, the growing importance and influence of foreign merchants was certainly part of the motivation. In an investigation of the urban role of the Exchange of Antwerp, Donald Harreld provides ample accounts of how the city of Antwerp went out of its way to a) attract foreign merchants, and b) convince the populace at large that the prosperity and wellbeing of Antwerp was dependent on its ability to attract these merchants.[16] It should be noted that the construction of the exchange was conducted primarily on the level of the city and its political realm rather than that of the sovereign.[17] This meant that the exchange, constructed by the city, could be construed as a public project to attract foreign merchants, who contributed to the public good in their pursuit of wealth, whether or not this was actually the case. Harreld notes that

> as the economic success of the city proved to be clearly the result of the merchants' success, the city elites had to counter quickly any doubt about the uprightness of the merchants in the city. Chambers of Rhetoric, poets, and others joined the elite of the city in painting a favorable picture of the merchants to the inhabitants of the city.[18]

Following Harreld, we can already detect traces of the peculiar logic of *homo œconomicus* and the notion of public benefit of private pursuit as early as the 1530s.

The structure of the exchange

Prior to the purpose-built exchanges (and after, to an extent), commerce and trade in exchange notes took place in a variety of spaces in the city. Some of these would now be considered private, others public, and still others would fall between the two. Merchants in Seville would, for example, meet on the cathedral steps.[19] Before the construction of the Royal Exchange, trade in London took place in Lombard Street, which was blocked with a chain during hours of trading in order to stop carriages from passing through and disturbing the commerce.[20] In Lisbon, to take another example, the painting *View of the Rua Nova dos Mercadores: Rua Nova dos Ferros with a Corner View of de Largo de Pelourinho Velho* from the late sixteenth or early seventeenth century shows a kind of pen inside which the merchants gathered, undisturbed by the surrounding traffic.[21] In addition to these, there were the *factories* of the different nations in Antwerp, the guild hall of the merchants, the markets, taverns, and so on.[22] Commerce was conducted everywhere, and even if it in itself was a private activity, it could very well take place in public. This changed with the development of the purpose-built exchange, but the change was gradual and has in this sense been under-analysed.

All of the exchanges discussed here consisted of structures that ostensibly resemble one another. In architectural history, the exchanges studied here have often been described as paradigmatic of a building type, and the transitions between these instances are furthermore described in terms of a refinement of the building type. Often, analyses like these – for example, Nikolaus Pevsner's – define type in relation to architectural programme; that is, in relation to the composition of functions within the structure.[23] Pevsner's *A History of Building Types* (1976) is subdivided into chapters on hotels, prisons, exchanges and banks, and so on.[24] This understanding of building types is certainly modern; the proliferation of building types can be considered a modern categorisation. It bypasses a very long discussion within architecture on what constitutes an architectural type, and whether to define this through underlying idea, programme, form or

something else, and how form and programme are invariably intertwined in the development of types.[25] This relationship between form and programme becomes actualised in relation to the exchanges as practices and programmes transform alongside the form of the structure. Neither can in fact be considered stable, nor following a straight line of development toward an ideal; rather it is a question of continuous renegotiation of access, space, territory, public and private, and the nature of the exchange. There is even an argument to be made (outlined below) for the notion that the exchange does not constitute a building but an urban structure (a square), and only becomes a building through the introduction of representative façades in later additions to the original structures. Form makes certain practices possible, and that form and programme in this sense are co-dependent on one another in ways which are difficult to disentangle. The exchanges here present us with some questions of a more general nature that will not be resolved in this article, but should be kept in mind: What does the very classification of something as a type or even as a building actually do? And, should architectural history study the interplay between space and practice before these become institutionalised through a building?

The central part of the exchange structure is what we have come to refer to as the trading floor. In Antwerp, London and Amsterdam, this consisted of an outdoor square or courtyard lined with a peristyle or loggia.[26] In this space, commerce took place through the exchange of exchange notes rather than commodities during specific hours. These hours were signalled by a bell tower, which also made the exchange structure a prominent feature in the skyline, signalling the importance of the exchange as well as the merchants. On the first floor, above the loggia or the peristyle, was an indoor space that in most cases would run the entire length of the perimeter of the floor below. In this space, which appears mostly to have been lit by skylights, specialised artisans and retailers catering primarily to the merchants had stalls or shops; these included art merchants, haberdashers, booksellers, and purveyors of exotic or luxury goods.[27] The configuration of each exchange differed, and shifted over time as well, but basically, the first floor sold what could be called luxury consumption goods and goods associated with the trade of the merchants.

These are the basic components that can be identified in each exchange structure. The programme or set of functions is essentially the same, as are the fundamental components; usually, the analysis goes no further than this. The differences are attributed to the evolution of the type. In the following however, I will, building on the works of a range of scholars, make a different argument, proposing that the differences – both between the instances in the series and the alterations made to each structure – could instead be associated with the shift outlined above, whereby commerce becomes something ostensibly made public while in reality not subordinating itself to the society of laws, but instead operating in the merchants' own interest, often ignoring the regulations imposed by the state.[28] This transformation could, I want to propose, be understood in terms of the material structure of the exchange contributing to the emergence of *homo œconomicus* and his complicated subjectivity in political economy.

However, this is also where the coherence ends. As Amy Thomas has noted, the exchange is in itself a spatial contradiction. It should be both open and closed at the same time: 'an open economic environment made possible by institutional confinement'.[29] This brings us to the surprisingly thorny issue of how to categorise the exchange – do we consider the structure to be a place or a building? By place, I refer to the French word *place,* denoting a square which is public (accessible to all), carved out of the city fabric, while at the same time part of that same fabric. Building is used here in reference to an architectural object, an object that is

within the city fabric but whose internal space would *not* necessarily be considered part of public space. These are questions that, for instance, Pevsner's typology with its focus on building and programme makes invisible, yet they are important questions for architectural history to grapple with. Although the categories of private and public partially refer to a modern understanding of public and private space, I will use this very rudimentary distinction to illustrate one of the peculiarities of the exchange as a structure, a sleight of hand that shifts the private to the public – and vice versa.

Antwerp's New Bourse

The quote at the outset of this article, from Lodovico Guicciardini's *Description of the Low Countries*, was originally published in Italian in 1567 and describes the emerging money-economy in Antwerp, where the trade of exchange notes had seemingly become more dominant than trade in commodities, which was considered insecure and prone to cartel-formations.

The Antwerp Exchange or the New Bourse could certainly be described as a *place* according to the terms above. [Fig. 2, 3] It is part of the street network, it does in fact constitute part of the intersection between two streets; in this sense, it could be considered part of the city fabric, part of the public space that was open to all. It is quite clear that the New Bourse was perceived as a place in the city, rather than as a building. Discussing the squares of Antwerp, Guicciardini notes that the square named the New Bourse is the most beautiful of the city's twenty-two squares (*places*).[30]

There were multiple entrances into the square through a double arch, where the column separating the two arches of the portico divides the approaching street in two. Above the arches, the words: '*In usum negotiatorum cujuscunque nationis ac linguae'* were engraved, welcoming traders of all nationalities and languages.[31] One feature of separation here is that there appear to be two steps leading up to the square itself, reserving the square for pedestrians primarily and effectively prohibiting vehicular traffic. Guicciardini is seemingly impressed with the fact that this *place* is unencumbered by wagons and chariots.[32] On the first floor, above the loggia or peristyle, there appears to have been shops or stalls selling merchandise relevant to the merchants – presumably luxury goods as well as trade supplies of various kinds.[33]

The city of Antwerp built a specific space for the merchants, which in some ways is a 'public' space – but which, as Harreld notes, was subject to a degree of increasing separation from the surrounding city from the start. Pedlars distracted the merchants, and were thus prohibited from the square itself within a year of operation, and later (1557) from the immediate vicinity as well, at the merchants' request.[34] They were considered to hamper and disturb the commerce through distraction, noise and other inconveniences.[35] The New Bourse started out as a 'public' space in the city fabric, but the relatively newly-formed interest group of foreign merchants for whom the space was designated almost immediately began a process of removing elements of the urban fabric perceived as a nuisance to their specific interests. In the New Bourse, a purpose-built place dedicated to commerce emerged, and its novelty was partly in the fact that it was aimed at merchants of all nations as a group, thereby at least partially bringing the group as a community into existence.

Antwerp's New Bourse is firmly embedded in the urban fabric. Not only is the New Bourse itself part of the street pattern and located within the street pattern, it is also a structure where the only 'exterior' is what is visible from the inside of the courtyard (or 'trading floor') itself. The structure's other side butted onto the existing street fabric;[36] the structure is thus only visible from the inside (except for the tower), so to speak. Consequently, in terms of representation,

the only possible 'face' of the structure is from inside of it, thus constituting two superimposed images of the structure, as both inside and outside, which were quite possibly viewed as an 'inside' by the merchants and an 'outside' by other inhabitants of Antwerp. This dual nature is part of what I argue is the sleight of hand (in distinction to the invisible hand); the private interests of the merchants were considered part of a very loosely defined 'public realm', but they saw themselves as essential to the public realm in the pursuit of their private interests.

London's Royal Exchange

The Royal Exchange in London was inspired by Antwerp, judging from the letter sent by the agent Richard Clough to his employer, Thomas Gresham, who ultimately came to build the exchange. [Fig.4, 5, 6] In London, Clough notes, merchants 'must walk in the rain, when it raineth, more liker pedlars than merchants', thereby introducing a clear distinction between the merchants and mere pedlars.[37]

Gresham imported not only the architect (Hendrik van Paessche) from Antwerp, but also the building materials, including ornamental stonework.[38] The form remained largely reminiscent of the New Bourse; the arcades around the sides and also the shops on the first floor were similar. A contemporary French traveller, L. Grenade, observed:

> You enter the exchange by two great portals or doorways, one on the South side, the other on the North. These portals are flanked on either side with a huge column of fine Jasper marble; each must be fourteen feet high, and in the middle of the aforesaid entrances is a similar column which divides them in two. The threshold of the aforesaid portals is of the same marble as the columns.[39]

There are however differences between the Royal Exchange and the New Bourse. While the New Bourse was constructed by the City of Antwerp, the Royal Exchange was constructed at the expense of a private citizen, Thomas Gresham (in 1566–1567), who also let the shops on the first floor. Only after his death, and the death of his wife, Lady Gresham, in 1596, was it donated to the City of London.[40] This was in spite of the fact that the City of London had assisted Gresham in acquiring the land. The royal connection implied by the name of the exchange is less direct than one would imagine. It comes from a famous visit by Queen Elizabeth in 1571, where she proclaimed that it should be henceforth be known as the Royal Exchange. Architectural historian Ann Saunders has suggested that she thereby robbed Gresham of the opportunity to make this a monument in his own honour, which he may have otherwise been planning.[41] The grasshoppers that adorn the building in contemporary engravings of the Royal Exchange were Thomas Gresham's crest. We know that at least one grasshopper was incorporated in the building – it was the weathervane in the bell tower; whether the others existed in reality is, however, less certain.[42] The image of the Royal Exchange covered by a swarm of golden locusts could perhaps be considered an appropriate representation in some circumstances.

Gresham's Royal Exchange is also different in another way, which could perhaps be connected with Gresham's aim of constructing a monument to himself. Where the Antwerp New Bourse described by Guicciardini was counted among Antwerp's *places* or squares, the Royal Exchange is described as being not only a very beautiful and sumptuous place, but also as comprising an '*edifice Royale*'.[43] The Royal Exchange is in that sense a different structure from the New Bourse. Rather than being embedded in the city fabric and visible only from the inside, the Royal Exchange has a 'front side', which is not quite a façade, if taken to mean designed as a composition to be experienced from the outside. In the Royal Exchange, the front side was instead still the result of the interior layout, but it had acquired a different kind of presence. What in Antwerp is

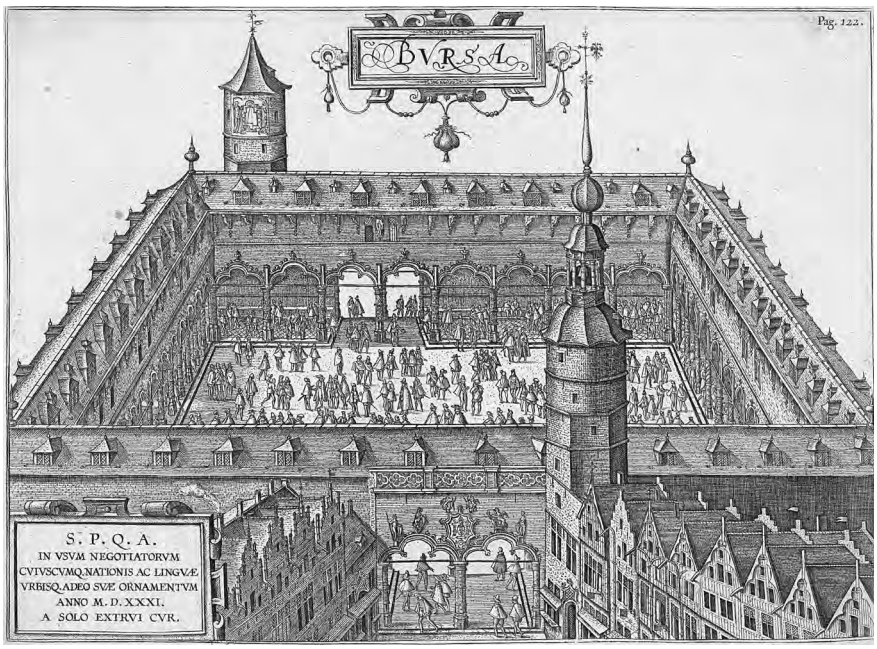


Fig. 2

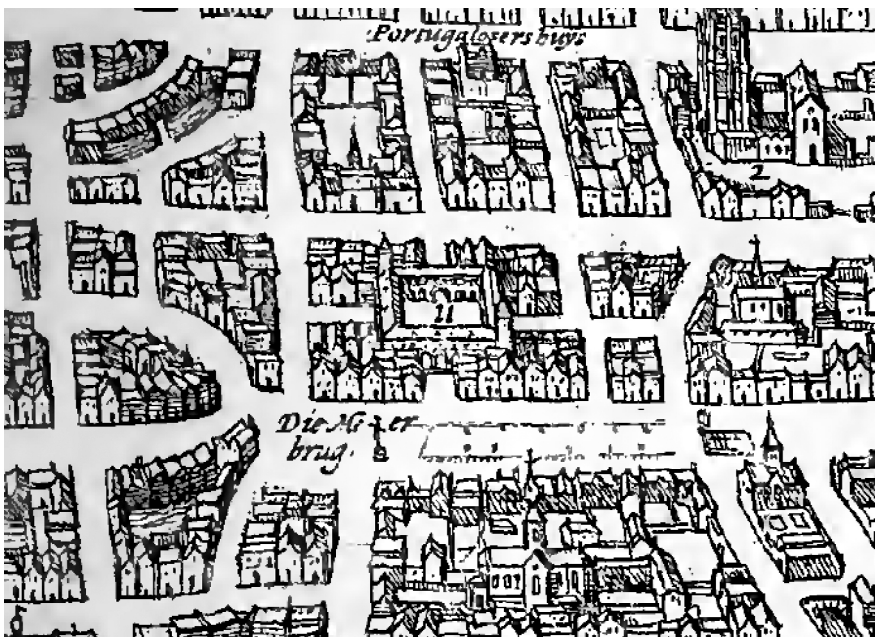


Fig. 3

Rijksmuseum.

Fig. 2: View of the New Exchange in Antwerp. From Guicciardini, *Descrittione Di Tutti i Paesi Bassi* (Antwerp: Apresso Christofano Plantino, 1581), 100–101. Engraving by Pieter van der Borscht. Courtesy of Collectie Stad Antwerpen, Museum Plantin-Moretus.

essentially an interiority is in London acquiring characteristics of a building. The front provided the exchange with an exterior facing the outside as well. It began to acquire a representative nature and was subsequently drawn into maps, including the seventeenth-century reproduction of the map sometimes attributed to Ralph Agas: here, the Royal Exchange is seen from the south, and appears drawn in at a later date.[44] [Fig. 5] On other city maps, such as the map of London in Braun & Hogenberg's *Civitates Orbis Terrarum* (1572), the tower and the square/courtyard are emphasised rather than the front. The latter is shown in a slightly distorted perspective that permits the viewer to look into the interior of the exchange. [Fig. 6]

This changed after the Royal Exchange burned down in the Great Fire of London in 1666 and was rebuilt in the subsequent five years by Edward Jerman and Thomas Cartwright. The rebuilt exchange was now equipped with a composed façade centred on a triumphal arch, with the bell tower placed directly above the main entrance. The original exchange, apart from the front and a less articulated rear, butted onto other buildings, and the exchange itself constituted part of the city's street pattern, connecting Cornhill with Threadneedle Street.[45] When the Royal Exchange was rebuilt after the fire, it was set apart from the urban fabric with passages on either side of what was now effectively a free-standing building. Through these changes, the Royal Exchange became a building with a face, and the square of the exchange became an internal courtyard.

The Royal Exchange was also different from the Bourse in Antwerp in that it was primarily a commercial operation in itself, facilitated by the city's perceived need to cater to international merchants.[46] It was meant to generate income for Gresham, specifically through the shops on the upper floor, the 'Pawne', where a variety of luxury goods were for sale: 'armourers that sold both old and new armour, apothecaries, booksellers, goldsmiths, and glass-sellers, although now [1631] it is as plenteously stored with all kinds of rich wares and fine commodities as any particular place in Europe, into which place many foreign princes daily send to be best served of the best sort.'[47] The exchange dedicated to the merchants fostered luxury consumption as well as supplying the necessary wares and services for the merchants' trade, and thereby became the central locus of a world increasingly separate from the city around it. The differences between Antwerp's New Bourse, the original Royal Exchange and the rebuilt exchange might appear minimal (the addition of a front, and later of passages on either side, as well as a façade), yet I would argue that they are significant in that they signal different relations between the public and the private, between a place and an institution, a becoming-building of the exchange. It is in Amsterdam that we can begin to develop an understanding of how this institution worked in practice.

The Amsterdam Beurs

The design of the Amsterdam Beurs drew inspiration from the Royal Exchange. The city council decided to construct an exchange in 1607, and it was completed in 1611. The architecture is habitually ascribed to Hendrick de Keyser, who certainly was involved in the construction. The importance of the exchange in the development of Amsterdam has been highlighted by Engel and Gramsbergen, who discuss the particulars of the Amsterdam Beurs in relation to the previous examples. One particular is the central location, right by the Dam, the square with the city hall and the principal market. This was, according to Engel and Gramsbergen, made possible by decking over the Rokin canal. The Beurs trading floor was placed over the canal, and raised in relation to the surrounding streets so that ships could pass underneath. The 'ground floor' (as seen from street level) contained shops facing onto the streets that ran along the length of the Beurs on either side.[48]

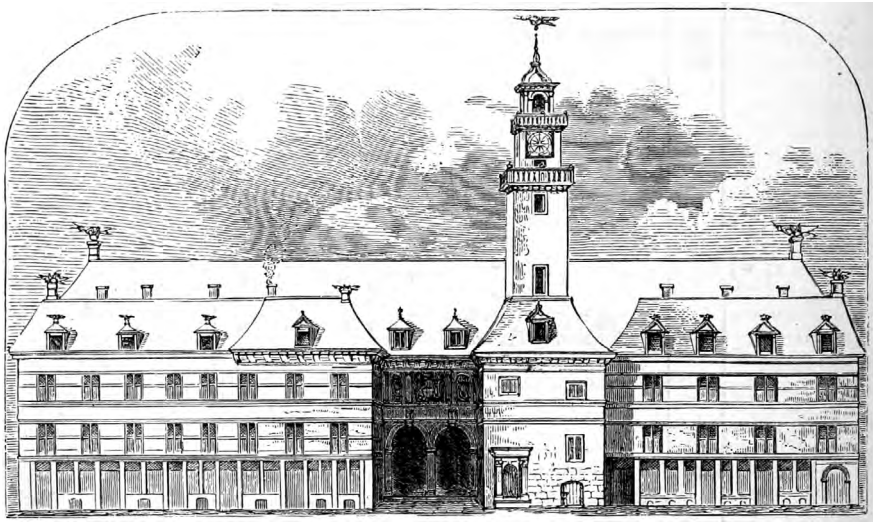


Fig. 4

Fig. 5

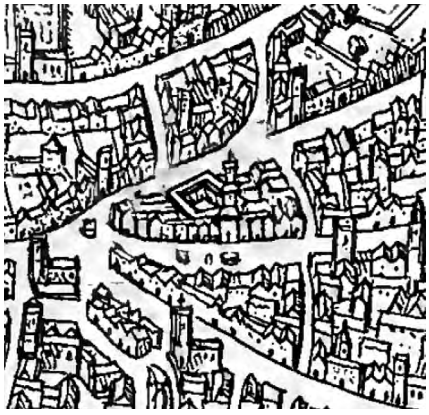


Fig. 6

Fig. 3: The Antwerp Bourse (centre) from Braun & Hogenberg, *Civitates Orbis Terrarum* (Cologne, 1572).

Fig. 4: The front of Thomas Gresham's Royal Exchange (later print). Note the grasshoppers. Image: George Walter Thornbury, *Old and New London* (London: Cassell, Petter and Galpin, 1879), 498. Courtesy of the British Library.

Fig. 5: The Royal Exchange. Detail from the so-called Agas-map, second half of the sixteenth century. Seventeenth century reproduction. Image: the London Metropolitan Archives *Collage*: the London Picture Archive, ref: 324941

Its central location and free-standing structure meant that the Beurs took on the character of a more *public building* than its Antwerp or London counterparts, with more in common with the town hall than the square. One could still pass through the Beurs along its length, but as there were streets on either side and the through-passage ended in the middle of a bridge over the canal, the Beurs was decidedly a building. The treatment of its exterior is worth noting. Along the sides, the walls above the shops on the ground floor were entirely unadorned. To the rear, in the direction of the Dam square, it seems almost hidden away, which appears in part to be the result of preserving an old building that obscured the approach to the Beurs from the Dam square, which meant that this side was less monumental than the front, i.e., the side that could be seen along the Rokin, where the bell tower was erected.[49] [Fig. 7]

Although historians refer to the façade as monumental, it could still be considered a front resulting from the internal organisation, in distinction from what later became a defined façade after the extension of 1668. [Fig. 8] A far more representative façade was then erected toward the Rokin, with pilasters and a statue of Mercury and a (smaller) tower centred above. This façade was a composition in the architectural sense, designed to be seen from the outside. On closer inspection, we note that the façade windows are blind; they are there as parts of the façade composition, rather than fulfilling any function. As in the case of the Royal Exchange, the façade bound the structure together into a clearly definable whole rather than an assembly of parts, which the old Beurs could still be read as.

In Amsterdam too, there appears to have been some perplexity as to whether the Beurs should be understood in terms of a place in the city or as a building, despite the above-mentioned distinctions that do more to articulate its character as a building. Early representations such as Visscher's aerial image of the Beurs from 1612 show both the interior and the exterior of the Beurs; however, after the extension of 1668, there is an increase in images showing the façade of the Beurs rather than both interior and façade.[50] [Fig. 8, 9]

Like the other exchanges, the Amsterdam Beurs was primarily for merchants to trade among themselves, and access was limited to specific times with the aim of keeping others out. Writing about the Beurs in a description of Amsterdam from 1701, an anonymous author observed:

> There are Three Entrances into this Place, which are all open till Noon; at what time the Porter shuts 'em up about One a Clock: after which Hour, there's no going in without putting a piece of Six Sous into a Box which the Porter presents ye; which Money is design'd for the Poor. This Imposition causes the Merchants that have Business at the *Change* to meet betimes, and hinders a Thousand People that have no Business from pestering the Place at that time.[51]

An engraving shows the Amsterdam exchange closed off to all but traders: the portico leading to the Beurs is divided by a fence, creating a definitive outside and inside, and effectively, as the anonymous observer above noted, keeping those without any business there out. [Fig. 10] Just like in the Royal Exchange's Pawne, the space above the loggia/peristyle contained shops purveying luxury goods for the affluent.[52]

The Beurs developed into an institution of sorts, but the institution was less orderly than the composed façade suggested. If speculation was already rife in Antwerp, it acquired new dimensions in Amsterdam. While speculation had previously been primarily in commodity futures, the foundation of the VOC (the Dutch East India Company) in 1602 and the concept of shares, primarily in

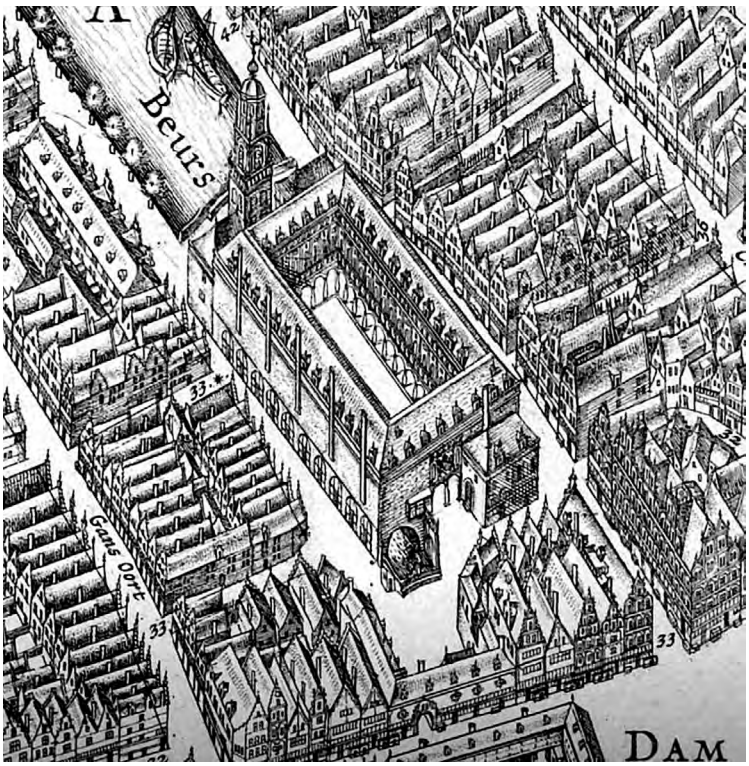


Fig. 7

Fig. 8

Fig. 6: The Royal Exchange (centre). Detail from Braun & Hogenberg, *Civitates Orbis Terrarum* (Cologne, 1572).

Fig. 7: From Map of Amsterdam, Balthasar Florisz van Berckenrode, 1625. Image courtesy of the Rijksmuseum.

the VOC, produced another layer of speculative economy. Speculators soon invented the notion of shorting shares; i.e., selling shares that one does not in fact own, speculating that the value of those shares would decrease in value before one had to deliver the shares to the buyer on a specific settling day. The city outlawed such practices, but this ban appears to have had little impact on the ground.[53] Instead, the Beurs seems to have considered itself largely self-governing, with its own customs and rules that did not apply anywhere else.

One fascinating account of how the Beurs actually worked stems from the tellingly named *Confusion of Confusions*, a book published in 1688 by Joseph de la Vega which counts among the first descriptions of the stock market and the development of its own peculiar community and language.[54] De la Vega's account is presented in the form of fictional dialogues between a philosopher, a merchant, and a shareholder (speculator); de la Vega describes the highly specific groups of individuals in the exchange. The philosopher has no experience of the Beurs, whereas the merchant is mostly confused about his experiences, the workings of the Beurs appear incomprehensible to him; and the shareholder explains the ways of the Beurs to the other two.

De la Vega's shareholder-character divides the users of the exchange into three distinct groups: *princes* (the very wealthy), *merchants* (who invest savings long-term in shares, and for whom the daily ups and downs of the share price matter very little) and *speculators*. The latter form a group which in turn is subdivided into bulls and bears in familiar fashion. De la Vega describes the activities of the speculators as '*el juego'*, or the game.[55] The point of the game, it is implied, is to win, making the interest of the speculator relative to the environment of the Beurs rather than to society at large. The Beurs becomes its own world, defined primarily by this game. De la Vega compares the action at the exchange to partaking in a game of *pelota*, where he claims that one loses one's dignity even before the game commences. Yet this is of little consequence, as the game itself is everything. In this sense, the shareholder-character notes, speculation is like death: we are all equals before it, both high and low.

In another passage, the character of the merchant discusses the specific language of the exchange, an amalgamation of various tongues incomprehensible to the outsider:

> [As I gather from your description], the terms used on the exchange are not carefully chosen.[56] I notice that the language there is Arabic grafted upon Greek, and that even the most experienced person needs a new dictionary to understand it… There is no expression which is not as incomprehensible as God. I really thought that I was at the construction of the Tower of Babel when I heard the confusion of tongues and the mixture of languages on the stock exchange.[57]

The exchange forms the space of congregation that produces its own chimeric language, a language unique to a specific group of people, and the question is whether the physical space of the exchange designated especially for the foreign merchants may have enabled the development of the rather specific language of the stock exchange through concentrating the traders – but this is conjecture.

Furthermore, de la Vega stresses the peculiar logic of the exchange, where the reception of bad news may end up raising the share prices rather than lowering them. The internal logic of the Beurs is presented to the reader (the outsider), and is made clear by the shareholder-character's explanations to his partners. The game consumes the speculator's time and mind, as de la Vega illustratively explained:

Fig. 9

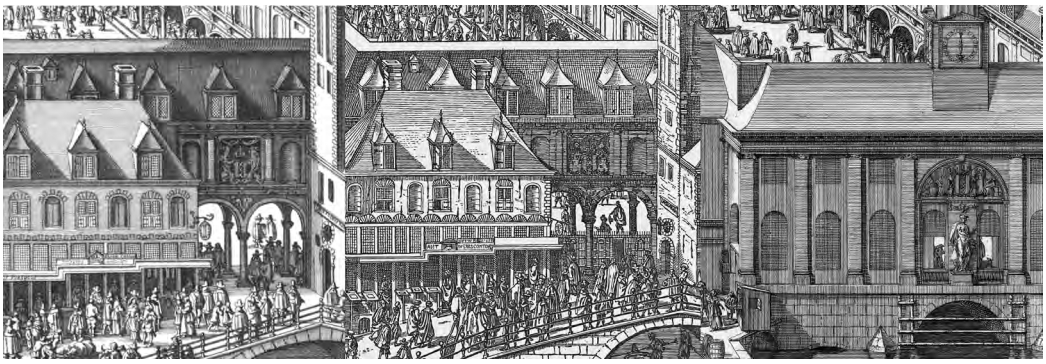


Fig. 10

Fig. 8: C.J. Visscher, The Amsterdam Beurs, 1612. Image courtesy of the Rijksmuseum.

Fig. 9: One example of the representation of the Beurs as a façade. J. de Beijer, J. Folkema - *Gezigt langs het Rokin, op de Nieuwe-Zyds-Kapel en Beurs*, 1765. Illustration in Jan Wagenaar, *Amsterdam in zyne opkomst, aanwas, geschiedenissen, voorregten, koophandel, gebouwen, kerkenstaat, schoolen, schutterye, gilden en regeeringe* (Amsterdam: Isak Tirion, 1765), 30. Image courtesy of the Rijksmuseum.

Fig. 10: Details from three different representations of the entrance to the Amsterdam Beurs, dated around 1612, 1663, and after the 1668 extension. Images courtesy of the Rijksmuseum.

> When the speculators talk, they talk shares; when they run an errand, the shares make them do so; when they stand still, the shares act like a rein; when they look at something, it is shares that they see; when they think hard, the shares provide the content of their thoughts; if they eat, the shares are their food; if they meditate or study, they think of the shares; in their fever fantasies, they are occupied with the shares; and even on the death bed, their last worries are the shares.[58]

This sounds like an unhealthy relative of *homo œconomicus* in many ways. De la Vega also presents a fanciful, if possibly incorrect,[59] description of the exchange as the site of this game:

> The name "exchange" [*Bolsa* in Vega's Spanish original] is explained by the fact that it encloses the merchants like a purse [*Bolsa*] or because here everybody makes eager efforts to fill his purse. As the word "purse" means skin in Greek [perhaps not surprisingly][60] it is that many players leave their skins at the exchange.[61]

The Beurs as a place/edifice is connected with the game of speculation, even though de la Vega describes trade taking place elsewhere as well, notably on the Dam. However, the architectural setting associated with this game is the Beurs. De la Vega makes the connection between the name, activity and the architectural form, an institution housed in a building that is increasingly (compared to London and Antwerp) separated from the surrounding city.

The game of speculation takes place in the progressively enclosed courtyard of the exchange. Here, ever-more complex financial instruments and practices are developed over the course of the century. This environment is not without its addictive qualities, as de la Vega notes in relation to the Amsterdam Beurs: 'He who has entered the [charmed] circle of the exchange is in eternal agitation and sits in a prison, the key of which lies in the ocean and the bars of which are never opened'.[62]

The winnings here are elusive, as de la Vega notes: '*Profits on the exchange are the treasures of goblins*. At one time they may be carbuncle stones, then coals, then diamonds, then flint-stones, then morning dew, then tears'.[63] There is no stability, and neither profits nor shares owned should be relied on. Hence, the earnings acquire a certain unreal quality; they become a way to keep score in a highly addictive game. One could ask what kind of desires are produced, whether it is a desire for wealth, or, rather the desire for winning that is a motivating force. If the latter, consumption could be considered a marker of success in a game where dignity and honesty are preyed upon by the other players in the interiorised world of the stock exchanges.

This would, by extension, define a different ethos that would presumably be largely disconnected from civic ethics and Christian morals, being confined to the realm of the exchange. The exchange as a space then becomes a territory for a new shared ethos within a specific societal group, a group whose interest subsequently grows in importance and seems to encompass more and more of society. The final function, that of high-end consumption, should be understood in relation to the 'unreal' qualities of the speculative trade. These make luxury into something almost as unreal as speculation itself, extending beyond the arena of speculation.

Homo œconomicus in the Beurs

The three purpose-built exchanges introduced here underwent a process whereby the exchange as a structure was transformed into an increasingly definite institution materially, if not administratively. There was a process of wresting the structure of the exchange out of the city fabric step by step,

isolating the merchants and their commerce from the general public. This happened by using gates to restrict access to the exchange exclusively to merchants; it happened by gradually isolating the structure of the exchange itself, which had been integrated in the city fabric in Antwerp, but became a free-standing building in Amsterdam; and it happened through the articulation of the exchange as a form by giving the structure a face, a façade, which made the building into a self-contained 'whole' that turned it into a discrete entity separated from the city in ways that the square/courtyard had not been. While the structures and internal organisation of all three exchanges presented here resemble one another, one could understand them as fundamentally dissimilar on less apparent levels; they all show very different relations between the city and the group of merchants. These relational and processual perspectives are readily forgotten when architectural historians categorise architecture by building types.

Parallel to this, additional measures were taken to distinguish the merchants from 'pedlars' and other less venerable groups: regulations were imposed on the activities of the exchange, an entrance fee was levied. Furthermore, a specialised language developed – whether spontaneously out of practical need or deliberately to take advantage of the secrecy it afforded – that made the exchange appear like a foreign territory to outsiders. Together, all of these measures, material and immaterial, transformed the exchange, turning it inside out: what was exterior in Antwerp's exchange became an interior in Amsterdam's, especially after the extension. Commerce had previously been a private matter taking place in an unspecified public space, and the transformation initiated by the stock exchanges rendered commerce at once more public and more private. On the one hand, commerce became more public (open) as it moved into a specific dedicated domain, a public building of a kind (an institution). Additionally, commerce became more of a public activity, as one was acting in public (openly) in order to establish oneself in the exchange; credit was achieved through credibility within the restricted public sphere with a presence there (a paradoxical public). Simultaneously, it also became more private (closed), as this domain became isolated from the rest of the city through the measures described above. It is in this rather complex interweaving of private and public into which we have to imagine the emergence of *homo œconomicus*, a subject of interest who becomes associated with the merchant in the eighteenth century.

At the same time, the merchants can by no means be considered a homogeneous group, even if they probably appear so from the outside. The merchant is a fundamentally different character from the speculator. The merchant exists both within the exchange and outside of it, putting money presumably acquired elsewhere into the exchange, saving and building a fortune that to some extent acts in line with the vision of *homo œconomicus*. The merchant is a guest at the exchange whose fortune stems partially from other sources and other types of commerce; this is one of the features that separates him from the speculator. The speculator is here a creature of the exchange, a native in the world that emerged as the exchange detached itself from the city generally. The speculator is conditioned through the exchange, his ludic approach to the market acquires a definite game-board-quality on the chequered exchange trading floor. Merchants and speculators in the exchange play different roles. The merchant can have a reputation from outside the exchange, whereas the speculator has gained his reputation within the exchange itself. *Homo œconomicus* would appear to be imagined in the form of the merchant rather than the speculator, but both are subjects pursuing their interests. However, these interests are for the speculator largely contained within the exchange itself – the

ludic aspect of the speculation is relative to the stock market, not wealth in general – and can thus not be considered beneficial to society at large, or at least I would rather doubt this to be the case. Yet, the merchant and the speculator are intertwined, the emergence of *homo œconomicus* require both, and the locus where the speculator was formed and the figure of the merchant transformed was the exchange.

The exchange is a different institution than other institutions of trade that emerged at the same time. The weigh house, in Amsterdam located in the Dam Square, served a regulatory function. The exchange did not have a comparable regulatory function, even though its institutional character would suggest otherwise. Nor was it itself regulated in practice, operating instead through trust and reputation.[64] Such an arrangement would presumably also require a delimited territory in which operations would be seen and contracts could be confirmed, and here the exchange again becomes important as a public institution, with its own population that was part of the same specific 'public' of the exchange. In this sense, the Beurs operated without any central authority; the hand here remained invisible, and this lack of enforcement could be considered central to the Beurs as the territory of *homo œconomicus*. Since the merchant, at least since Antwerp, is considered instrumental to the well-being of the city, it is essential that the merchant is left to pursue his own interests as much as possible. This was, as Harreld noted, the message communicated in Antwerp through active propaganda.[65] The merchants' interests then converge with the interests of the city at large. The exchange as a structure for merchants to trade among themselves makes sense from such a perspective. It is interesting to consider how the public good of merchants in Antwerp's propaganda relates to the *homo œconomicus* and the public good supposedly arising from his activity. Yet, we should not forget that *homo œconomicus*, as Foucault emphasises, is a subject defined by interest; i.e., advancing his own interest. The primacy of interest remains no matter how much one imagines him to be a legal subject defined by a social contract of rights and obligations in relation to the state. Nowhere is this clearer than in the figure of the speculator who takes the subject of interest to the extreme.

The exchange as a building type emerged over a period in a seemingly straightforward manner that becomes increasingly complex on closer inspection. Its form was altered and updated in a continuous renegotiation of space, public and private territories, interests, and so forth. In hindsight and seen from the outside, the exchange appears perhaps as yet another of modernity's regulatory building types, like the weigh house for instance. However, if one looks closer, it becomes apparent that it is an institution that emerges in parallel with the other public institutions that emerged at this time, but one that works according to its own rules, becoming its own world, and becomes home to its own tribes. The three exchanges discussed here form part of the *milieu* that actively produced *homo œconomicus*. However, examining the development of the exchanges as urban and architectural structures adds nuances, twists and layers to help move us beyond a schematic understanding of how that thing we call the market took shape and what role architecture played in this process and in the conditioning of its natives.

Notes

1. Ludovico Guicciardini, trans. and quoted in Richard Ehrenberg, *Capital & Finance in the Age of the Renaissance: A Study of the Fuggers and their Connections* (New York: Harcourt, Brace & Company, 1928), 243.
2. See, for example, Sven-Olov Wallenstein, *Bio-Politics and the Emergence of Modern Architecture* (New York: Princeton Architectural Press, 2009).
3. Ibid., 20. Wallenstein's text is a discussion on Foucault's work on biopolitics.
4. I will use the term 'exchange' in English; since the nature of the trade taking place varied between the instances, the common denominator is that trade was conducted in exchange notes rather than commodities.
5. Mill's economic man, see John Persky 'The Ethology of *Homo Economicus', Journal of Economic Perspectives* 9, no. 2 (Spring 1995), 221–31.
6. Michel Foucault, *The Birth of Biopolitics*, trans. Graham Burchell (Basingstoke: Palgrave McMillan, 2004).
7. Ibid., 291.
8. Ibid., 275–6.
9. David Hume quoted in Istvan Hont, *Jealousy of Trade: International Competition and the Nation-state in Historical Perspective* (Cambridge, MA: Harvard University Press, 2005), 366. It is also the period when political economy emerges as an idea in seventeenth-century France, and becomes popularised through thinkers such as Adam Smith over the course of the eighteenth century.
10. Donald Harreld, who argues that 'public institutions such as the Antwerp Bourse took on a private character when public traffic was restricted.' See 'Trading Places: The Public and Private Spaces of Merchants in Sixteenth-Century Antwerp', *Journal of Urban History* 29, no. 6 (September 2003): 667.
11. Edward Stringham, 'The Extralegal Development of Securities Trading in Seventeenth-Century Amsterdam', *The Quarterly Review of Economics and Finance* 43, no. 2 (2003): 321–44. On the role of public buildings and the exchange structure, see Henk Engel and Esther Gramsbergen, 'Het eerste beursgebouw en de vorming van het centrum van Amsterdam', *Overholland* 2, no. 3 (2006): 59.
12. Vogl, *The Specter of Capital* (Stanford: Stanford University Press, 2015), 28.
13. This extent is limited since the exchange did not emerge ex nihilo, but with reference to other architecture. Nevertheless, the exchange itself soon came to represent the market in the public eye. For an overview of the predecessors of the exchange, see Engel and Gramsbergen, 'Eerste beursgebouw'.
14. The relation between them has been widely studied.
15. John William Burgon, *Life and Times of Sir Thomas Gresham*, vol. 1 of 2 (London: Robert Jennings, 1839), 409.
16. Harreld, 'Trading Places', 666.
17. Even though Charles V was called on to resolve controversies regarding the exchange, the exchange was constructed by the city rather than the Emperor. See ibid., 663. It is therefore difficult to see Antwerp's exchange in the light of the 'mercantile systems' of which Adam Smith wrote. The aims were associated with the well-being of Antwerp rather than that of the Empire as a whole.
18. Ibid., 666.
19. Ibid., 662.
20. Jean Imray, 'The Origins of the Royal Exchange,' in *The Royal Exchange*, ed. Ann Saunders (London: The London Topographical Society, 1997), 20.
21. Annemarie Jordan Geschwend and KJP Lowe, eds., *The Global City: On the Streets of Renaissance Lisbon* (London: Paul Holberton Publishing, 2015), 24.
22. The term 'factory' here refers to an establishment or office of merchants from one place located in a foreign city, a trade representation, in other words.
23. Krista De Jonge, 'Bâtiments publics à fonction économique à Anvers au XVIe siècle: L'invention d'un type?' in *Public Buildings in Early Modern Europe*, ed. Konrad Ottenheym, Monique Chatenet, and Krista De Jonge (Turnhout: Brepols, 2010); Nikolaus Pevsner, *A History of Building Types* (Princeton: Princeton Architectural Press, 1976).

24. Pevsner, *History of Building Types*.
25. This discussion has been present in the architectural discourse since the 1700s, and along with programme, form is often invoked as the definition of a type (think of the basilica for instance, which can have many programmes, but is categorised through its form). For a succinct overview of this long discussion, see for instance, Mattias Kärrholm, *Retailising Space* (Farnham: Ashgate, 2012), 96. See also Aldo Rossi, *The Architecture of the City* (Cambridge, MA: MIT Press, 1982), 40–41. And for a discussion on the biopolitical implications of the notion of building type, see Wallenstein, *Bio-Politics*, 21–22. See also Christopher C.M. Lee and Sam Jacoby, eds., *Architectural Design* Vol. 1: Typological Urbanism, Projective Cities (2011).
26. Depending on whether we perceive this space as an outside or an inside, an urban space or an architectural space. I return to this topic below.
27. This is a conjecture made from representations. I have not come across any representations of the interiors and am therefore reading their layout from the representations of the exterior. Engel and Gramsberger come to the same conclusion, see 'Eerste beursgebouw', 66.
28. That the exchanges ignored outside rules has been argued by Edward Stringham in 'Extralegal Development of Securities Trading'.
29. Amy Thomas, '"Mart of the World": An Architectural and Geographical History of the London Stock Exchange', *The Journal of Architecture*, 17, no. 6 (2012), 1009. (I want to thank the peer reviewer for alerting me to this text).
30. Lodovico Guicciardini, *Description de tout le Païs Bas* (Antwerp: Guillaume Silvius, 1568), 91. This has also been noted by Krista de Jonge in 'Bâtiments publics'.
31. Inscription over the entrance of the New Bourse in Antwerp. Ehrenberg, *Capital & Finance*, 238.
32. Guicciardini, *Description de tout le Païs Bas*, 91.
33. Guicciardini emphasises paintings as the principal merchandise. Ibid., 91. Engel and Gramsberger note that this was a later development; the space was originally intended for storage, but later converted to retail space. Engel and Gramsberger, 'Eerste beursgebouw', 66.
34. Harreld, 'Trading Places', 664.
35. Harreld notes that purveyors of meat were banned from the immediate surroundings of the New Bourse. This could be related to smell, but also to cultural and religious differences, remembering that merchants came from different cultural and religious backgrounds. Ibid., 664.
36. Engel and Gramsbergen, 'Eerste beursgebouw', 66.
37. Burgon, *Life and Times*, 409.
38. Ann Saunders, 'The Building of the Exchange' in *Royal Exchange*, 36–47. Charles MacFarlane, *The Life of Sir Thomas Gresham, Founder of the Royal Exchange* (London: C. Knight & co., 1845), 188.
39. L. Grenade, 'Les Singularités de Londres 1576' in Saunders, *Royal Exchange*, 48–49.
40. Saunders, 'Building of the Exchange', 46–47.
41. Ibid., 44.
42. Ibid., 41.
43. Guicciardini, *Description de tout le Païs Bas*, 92. See also De Jonge, 'Bâtiments publics', 190.
44. Considering that the map was originally published in 1561, this would seem a fair assumption.
45. See for example the Royal Exchange in, Braun and Hogenberg's map of London in the 1572 edition of *Civitates Orbis Terrarum* (Cologne).
46. The essentially private enterprise behind the construction of the Royal Exchange appears to have been repeated in the New Exchange, in the City of Westminster in the early seventeenth century, which was meant to compete with the Royal Exchange.
47. Edmund Howes, *Annales, or, A Generall Chronicle of England. Begun by John Stow: Continued and Augmented with Matters Foraigne and Domestique, Ancient and Moderne, unto the End of This Present Yeere, 1631* (London: Impensis Richardi Meighen, 1631).
48. Engel and Gramsbergen, 'Eerste beursgebouw', 57, see also illustration on p. 79.
49. Ibid., 82.
50. I have gone through a number of representations of the Beurs, and although the different types of

representations exist at all times, the use of the façade of Beurs as an identifiable object appears to increase after the extension. This could be taken to indicate that the Beurs becomes a more clearly identifiable object through its composed façade, but I should emphasise that it could also be the result of other changes in artistic fashion.

51. Anonymous, *A New Description of Holland And the Rest of the United Provinces in General*, (London: H. Rhodes, 1701), 72.
52. Donatella Calabi, *The Market and the City: Square, Street and Architecture in Early Modern Europe*, trans. Marlene Klein (Aldershot: Ashgate, 2004), 181.
53. Stringham, 'Extralegal Development of Securities Trading', 322–4.
54. Joseph de la Vega, *Confusion de Confusiones*, trans. Hermann Kellenbenz (Cambridge, MA: Baker Library, Harvard, 1957). [It should be noted that this translation is rather fanciful, and appears primarily aimed at communicating the spirit of the Beurs rather than de la Vega's words].
55. Ibid.,98.
56. Translator's abbreviation of text.
57. Ibid., 14.
58. Ibid., 22.
59. According to other accounts, the term derives from the owner of an inn in Bruges centuries earlier whose establishment and adjacent square became the centre of commerce in the city during its commercial heydays. Guicciardini, *Description de tous les Pays Bas*, 91–92.
60. Comment by the translator.
61. The English translation does not convey the original meaning very precisely here. See de la Vega, *Confusion de Confusiones*, 98.
62. Ibid., 18.
63. Ibid., 10. Emphasis in the original.
64. Edward Stringham, *Private Governance: Creating Order in Economic and Social Life* (Oxford: Oxford University Press, 2015), 56–57.
65. Harreld, 'Trading Places', 666.

Biography

Fredrik Torisson is a postdoctoral researcher at the Centre for Privacy Studies, which was established with support from the Danish National Research Foundation. The research centre is based at the University of Copenhagen and at the Royal Danish Academy of Fine Arts Schools of Architecture Design and Conservation. Fredrik's research focuses on renegotiations of privacy and the private in early modern Europe with a particular focus on the development of new institutions and their spatial transformations in this era. Fredrik has a background in architectural theory and defended his doctoral dissertation *Utopology: A Re-interrogation of the Utopian in Architecture* at Lund University in 2017.

Action Office, or, Another Kind of 'Architecture Without Architects'

Phillip Denny

Action Office, a popular line of office furniture launched in 1964, remains in production today. In the opinion of its inventor, Robert Propst, it was a system devised for organising information in multiple formats. Indeed, more than a collection of office furniture, the system comprises a network of 'information products': books, publications, audio-visual materials, conferences and architectural models, which, in concert, produce an optimal environment for knowledge work in the information age.[1] This integration of diverse formats characterises 'systems furniture', of which 'AO' (as it is called according to the managerial shorthand) is the best-known example. Moreover, the heterogeneity of the line's parts reflects the elasticity of the 'system' concept at this historical moment; in this instance, a collection of things that form a complex whole. The range of multimedia elements which compose the AO galaxy adheres to what computer scientist Herbert A. Simon called a complex system, 'a large number of parts that interact in a non-simple way'.[2] As an object of historical reflection, Propst's system exceeded furniture design, management theory, and for that matter architecture too, in its capacity to form connections between its many material, informational, and human elements. This standardised system of partitions, desks, chairs, shelves, racks, and organisers aligned to produce a complex, efficient human interface for knowledge work.

As a means of setting out, it would seem apparent that AO should be thought of alongside other historical interventions in the workplace, such as Frank and Lillian Gilbreth's time-and-motion studies in scientific management. As a point of comparison, the Gilbreths' work sought to standardise labour processes toward the predictable, streamlined performance of repetitive actions.[3] The vast majority of the Gilbreths' interventions disciplined the performance of a labourer's work with the intention of reducing movement and physical exertion by means of scientifically-derived workplace choreography.

Propst devised an altogether different approach. AO sought to streamline the working environment in order to optimise a user's ability to perform a slew of non-standardisable tasks efficiently. What distinguishes this difference in approach is not only a question of method or context, but especially differences in the changing nature of work. Rather than optimising the laying of bricks or the assembly of widgets on an assembly line, as was the case with respect to the Gilbreths' subjects, Propst's office workers confronted, on a daily basis, a constantly changing roster of informational tasks, and moreover, the tools of their labour had changed. The factory and the modern office, principal sites of production in the twentieth century, ultimately share fewer similarities than differences.[4]

What did office labour look like in 1964? The modern office worker employed an array of novel information technologies in order to perform a host of bureaucratic workflows: recording, transcribing, calculating, typing, copying, calling, receiving, filing, storing, shredding, and so on. Of course, these

actions represent entirely different varieties of manual work than those that were studied by the Gilbreths, such as bricklaying. Moreover, this form of analysis discretised the performance of work to such an extent that the optimisation of multi-process, complex tasks would have been beyond the means of the Gilbreths' abilities.[5]

How then ought one to improve productivity in an environment that plays host to complex, elastic workflows? Historical examples of an alternative approach are numerous. One tradition of particular relevance is the perennial introduction of improvements to the organisation and equipment of the domestic kitchen. Innovators such as the American Christine Frederick (1883–1970) and Austrian architect Margarete Schütte-Lihotzky (1897–2000), conceptualised the kitchen as a site of industry and 'industriousness'.[6] Accordingly, the kitchen was predisposed, in their thinking, to adjustment along the lines of scientific management and efficiency theory that were applied in factories. Despite a considerable chronological interval separating them, their work shared a common result: the organisational rationalisation of space in order to improve the efficiency of work.

We should consider how AO fits (and does not fit) into the historical lineage of these other projects. Insofar as Propst envisioned a spatial paradigm cultivated from the specific demands of a certain kind of work, the resemblance seems rather apparent. Propst designed an environment that immersed knowledge workers in a space augmented with technologies necessary to engage diverse forms of informational labour. At the same time, the comparison might elide patent differences. For instance, both Frederick and Schütte-Lihotzky's projects were motivated by the particular context in which they were situated, that is, the domestic home, and the historically moralistic imperatives that enlisted women as managers of household economies. By contrast, Herman Miller's AO essentially greased the wheel of an advanced division of labour endemic to late capitalism. The rationalisation of workspace according to the spatial consequences of workflows and 'paper trails' was a process undertaken in the interest of satisfying the managerial desire for increased worker productivity; office planning consultants such as Quickborner, Francis Duffy, and Herman Miller's own 'Facilities Management Institute' all claimed to improve worker performance.[7]

We must not fail to understand the particular social historical situation of the individuals who functioned in these spaces. It is not coincidental that Christine Frederick, Margarete Schütte-Lihotzky and Robert Propst designed environments intended to be used, principally, by women. In each case, the design of women into a given spatial environment and form of labour is conditioned by and enforces a vast complex of patriarchal structures.[8] Herman Miller's advertisements for AO of the mid-1970s, such as the short film *Beautiful Girls*, make this point painfully clear.[9] From the perspective of the marketing team tasked with advertising AO, women appeared in AO environments solely as clerical workers – the film spots are addressed to unambiguously male supervisors:

> in just six years, you businessmen in America are going to equip your secretaries with eight billion dollars' worth of typewriters, dictation equipment, copiers, typewriter ribbons – and furniture… Someone is going to have to meet her environmental needs on the job, and that someone is Herman Miller.[10]

What does this piece of corporate propaganda tell us about the designed situation of women in the modern office? The film's narrator later continues to emphasise the pivotal value – an eight billion dollar industry, after all – of secretarial work: 'Doesn't it make sense to keep her efficient and happy? She operates a machine… She indeed is the heart of the machine age… but she is not a machine:

Fig. 1: An Action Office 2 installation used in Herman Miller advertising, circa 1975. Photo from Ralph Caplan, *The Design of Herman Miller* (Zeeland, Michigan: Herman Miller, Inc., 1976). Reproduced by permission of the Herman Miller Corporate Archive.

She's an action secretary, and she needs Action Office.'[11] The narrator's verbal elision of women labourers and their environment (action secretary/ Action Office) belies the project's grand ambition to create a frictionless, integrated system in which 'a large number of parts… interacts in a non-simple way'. Here, furniture, architecture, machines, and their operators are designed to work in concert to properly direct the flow of memos, presentations, documents, contracts – information of all sorts. In this light, AO manifestly appears as yet another form of information technology, as one system dissolving into a larger one that includes 'people, processes, and place': the organisation, its work, and its spatial context, that is, its architecture.[12]

AO is thus a difficult object for design history insofar as it displaces the functional definitions of either architecture or furniture. As introduced here, AO reconfigures the subject at the same time that it configures space, all the while remaining both not-architecture and not-furniture. This double negation leaves AO floating freely in and between architecture and design history. The relative dearth of extant scholarship on this case, moreover, suggests the extent to which architecture's critics and historians have so far been unable to grapple with its slippery multiplicity.[13]

To treat AO only in the terms of an object, that is, as either furniture or architecture, would be to neglect the 'informational dimension' of the design, that is, the designed set of behaviours that ensured AO's proper deployment and use, the software laid out in manuals and other 'information products' and thus set the preconditions for the free movement of papers and messages, that is, information, through AO. In Propst's own words: 'information is at least fifty percent of the system'.[14] AO was furniture in excess of architecture, the former absorbing the latter's basic claim to spatial organisation, and as such, it represents a thorny problem for history confronting the limits of design. Below, we will trace the history of this system's development and deployment in the context of transformations occurring within and among larger systems of labour and technology, and attend to how these mutations were reinscribed in this complex set of designed objects.[15]

Prehistory of Action Office

Propst had worked on the AO system for almost four years by the time it launched in 1964. Before joining Herman Miller in Michigan, Propst had studied chemical engineering at the University of Denver, later switching into a program in fine arts. He entered the navy during World War II, during which time he served in the South Pacific arena. After the war, he served as the head of the art department in a Texas college. Soon after, Propst formed an eponymous industrial design firm, Propst Co., in 1953, in Denver, Colorado. As an independent contractor in search of work, Propst often offered his design innovations to potential clients 'on spec'.[16] On one occasion, Propst marketed a novel connection system for furniture components to Herman Miller, a furniture company based in Zeeland, Michigan. Soon after, the company retained Propst as a consultant, then hired him on a full-time basis in 1960 as head of the Herman Miller Research Corporation (HMRC). A distinct corporate entity, the corporation served as Propst's home base until his departure in 1980. In the first year of his tenure at Herman Miller, Propst initiated a study of human behaviour in the workplace, supposedly in response to his dissatisfaction with the furnishings of his workspace. After four years working in collaboration with the designer George Nelson, the first iteration of AO was offered for sale to the public.

As the founding director of HMRC, Propst established the culture of research that led to new product development. Propst's methods included observational techniques that sought to unpack the logics and frustrations endemic to the office.[17] As such, Propst's time-lapse studies introduced an ethnographic valence to the study of the workplace.

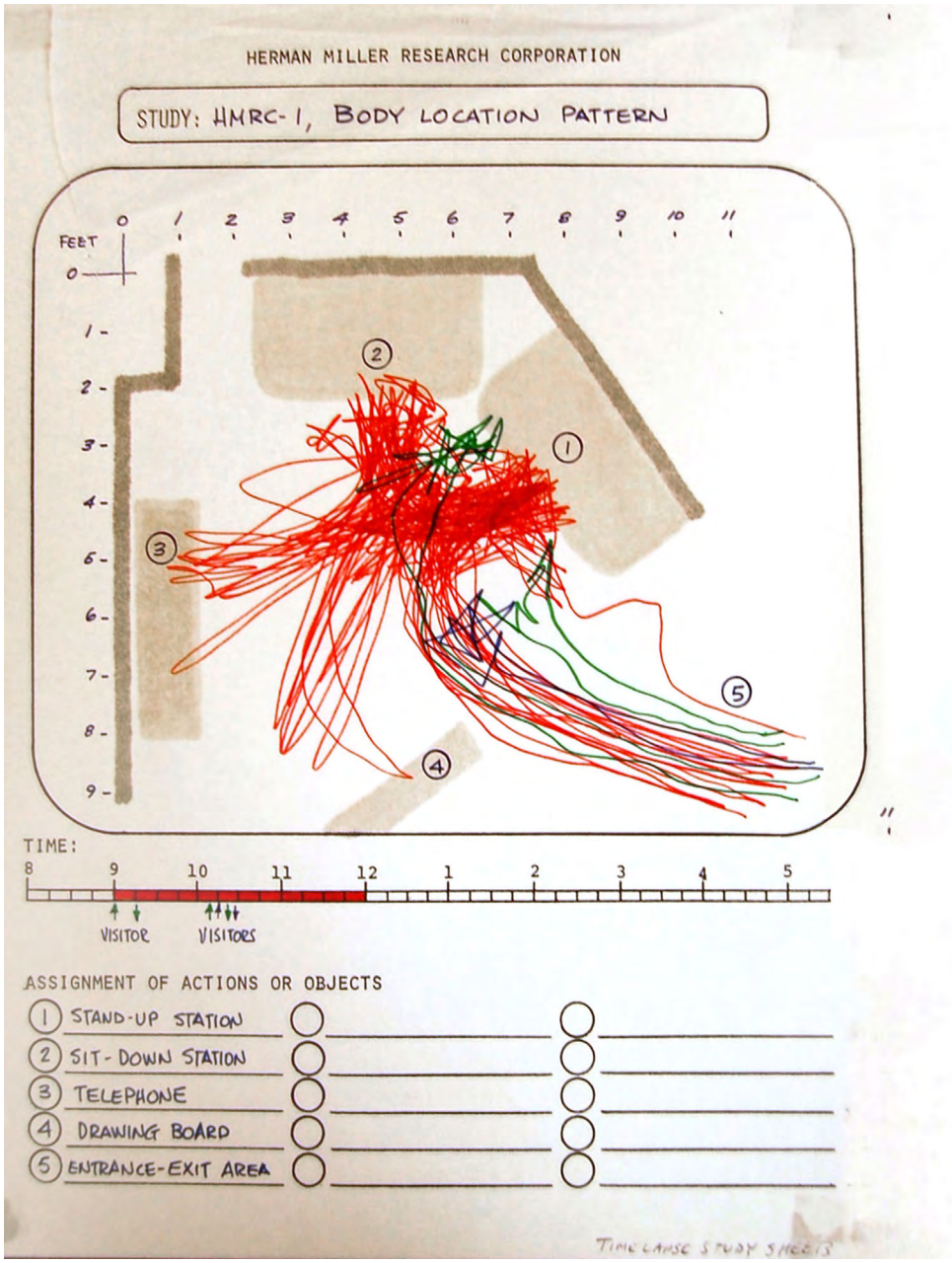


Fig. 2: 'HMRC-1, Body Location Pattern' research trial sheet, undated. Chart on paper. 8.5 x 11 in. 2010.83.649, Robert Propst Papers, from the Collections of the Henry Ford. Gift of the Family of Robert L. Propst. Reproduced by permission.

Fig. 3: Propst Housing System prototype houses under construction in Lake Sammamish, Washington, 1984. Reproduced by permission of the architect, William “Bill” Miller.

Fig. 4

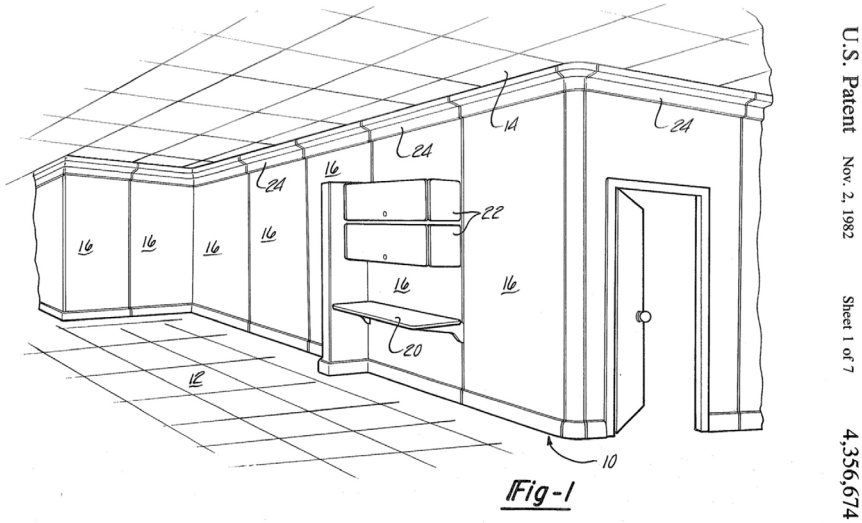


Fig. 5

Fig. 4: Robert Propst, interior of a Propst Housing System prototype. Sketch on paper, undated. Reproduced by permission of Claudia Berg Propst.

Fig. 5: Robert Propst, US Patent 4,356,674, Free-standing Space Divider Assembly with Acoustic Upper End Border, filed 1980. US Patent Office.

Although studies of everyday contexts such as the office, urban plaza, or home would not become mainstream until the late 1970s, the need for such a study seemed self-apparent in the particular context of Herman Miller Research.[18] Propsts's work represented the state-of-the-art in mid-century evidence-based design. But what exactly motivated Propst's placement of these research methods at the heart of product development? We can start to answer the question by first looking to his founding mission statement for HMRC:

> (1) avoid all research which is connected to the defence industry (this is about 80 percent in the USA), and (2) not to be involved in any projects in which relation to human environmental design are meaningless and worthless.[19]

Insofar as rejecting the defence industry meant turning down '80 percent' of research work in the US at mid-century, HMRC was founded with an almost counter-cultural mission, unexpected for a company that has since been renowned for introducing the world to the office cubicle, an artefact that is also a modern-day emblem of conservative corporate culture and workplace tedium. But in the 1960s this wasn't yet the case.

Propst endorsed the Bürolandschaft or 'office landscape' paradigm developed in the early 1950s by the Quickborner Team of management and space planning consultants.[20] Transparent and open, Bürolandschaft represented everything that offices of the day generally were not. Quickborner-designed workspaces featured few fixed walls, with desks arranged in loose groupings. Plans were a clash of seemingly arbitrary geometries. Visually chaotic and yet hyper-organised, these spaces reflected the organic relations that underlay complex social structures like the mid-century corporate office. More importantly, what the office landscape negated was not rational order – quite the contrary – but rather the symbolic function of the office, that is, a logic which, for instance, traditionally correlates large corner offices with organisational importance.[21]

Propst's own words echo Quickborner's rejection of the office as either determined by, or reinforcing a hierarchy of organisational status: 'organizational life can't stand environments that confer nothing but status, in which you can't do anything but pose. The healthy organizational effect washes all the baloney away.'[22] Rather, both Quickborner and Propst's organisational paradigms subsumed symbolic considerations into the common currency of informational transfer: an executive may occupy a privileged node in the network of office communications, but in this light, the proverbial corner office is recast as an entirely inappropriate disposition of space. Documents like the 'word processing resource manual' demonstrate the functional logic that subtended spatial decision-making in these paradigms. Work- and information-flows, and interpersonal communication patterns prevailed as determinants in organising the interior.

Even so, perhaps the second half of HMRC's mission statement is more radical; the organisation would focus not on architecture, and not on furniture, but rather 'human environmental design'. Indeed, the environmental sentiment uttered in Propst's statement connects Herman Miller's decidedly 'square' aims – producing the optimum environment for working, after all – with the countercultural discourses du jour. As we will see below, the notion of 'environment' developed in the research and products of Herman Miller was markedly different from the 'environmentalism' of contemporary environmental activists.[23] Although the new office landscape's rejection of status-symbolism may have engendered both egalitarianism and environmentalism in the very heart of organisations that operated on principles of devolution and exclusion, Propst's notion of environment was specifically inflected by a devotion to information, and a concept

Fig. 6

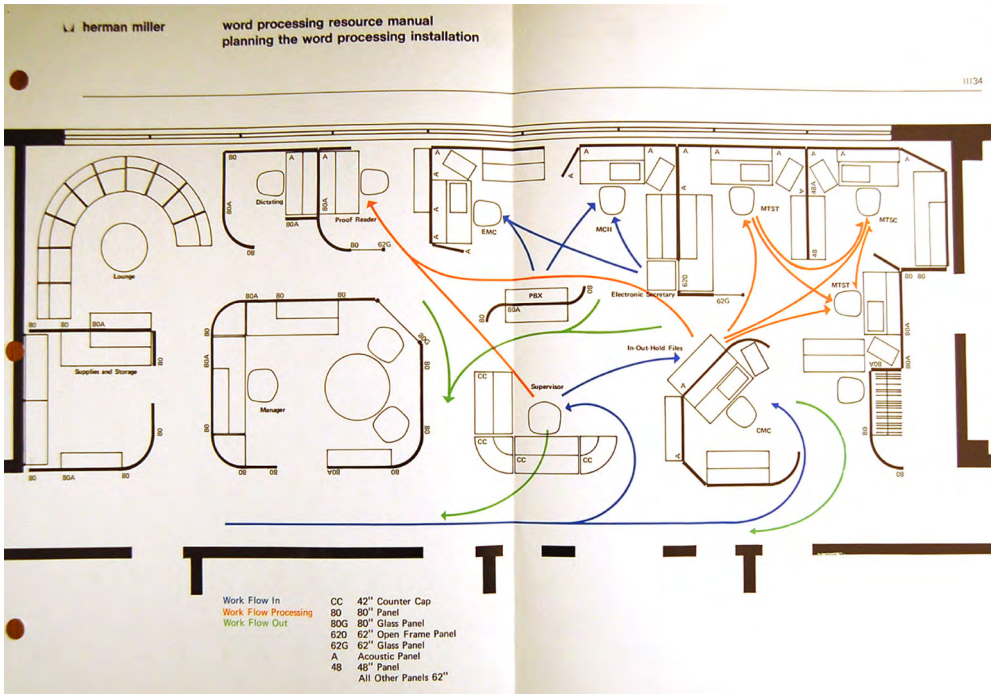


Fig. 7

Fig. 6: Foster + Associates, office interior featuring AO 2 furniture, Fitzroy, London, circa 1975. Reproduced by permission from Toshio Nakamura, ed., *Norman Foster: 1964–87* (Tokyo: a+u Publishing, 1988).

Fig. 7: 'Word Processing Resource Manual: Planning the Word Processing Installation', Herman Miller, Inc., c. 1974. Reproduced by permission of the Herman Miller Corporate Archive.

of the corporation as a body for processing information.[24] AO would thus aim to offer the optimum material conditions for working in a new variety of abstract space such as, in Herman Miller's corporate jargon, 'the word processing installation'.

By inscribing the human as a processor of information intimately connected by posture and position to the environment at arm's reach, Propst's office joined the human to the apparatus. Such a connection updates the Taylorist notion of a worker whose use of tools and machines is made efficient by the intervention of consultants. Here, the office environment itself gains disciplinary cachet in the organisation of labour.

Devices like the 'perch', a high-seated, saddle-like, 360-degree-swivelling stool is one such element: it dictates the posture of its user by mobilising the precarity of the act of sitting upon it. The subject must either maintain her focused position or get off the perch altogether. Indeed, a system of similarly difficult objects further enlists the human element in a supple man-machine relationship in which her comfort is precisely not the governing factor.

To what end? Not comfort, but rather the efficient performance of information work. At this juncture we ought to briefly return to where we began. We are now well prepared to summarise and cast into relief the differences of approach and philosophy developed in the context of AO and the counterpoints to this work in the efforts of the Gilbreths, Frederick, and the rest. Early proponents of Taylorist scientific management, whether in the workplace or the home, sought to minimise 'waste movement' and thus alleviate fatigue in the so-called 'human motor'.[25] In these models, objects like the perch appear literally unthinkable as effective interventions in the workplace precisely because they address not an economy of physical fatigue, but rather the limits of prolonged mental exertion. In the case of Propst's perch, a modicum of the user's attention is required even to perform the basic act of sitting. If the Gilbreths disciplined the movements of workers by means of strict choreographic routines, Propst designed this function as an ambient condition of the very environment of labour. In this way, the physical disposition of AO constrained the field of possible behaviours at the same time that it lubricated the smooth performance of a set of processing tasks.

To reiterate Herbert Simon's definition of a system, AO produces, in a 'non-simple way' the scenario for complex, organisational behaviour. Where office architecture traditionally offered fixed spaces defined by walls, ceilings, doors, and windows, systems furniture such as this set out 'arenas' – Propst's term for the workstation – of action that defined vectors for the movement of people and information through an organisation.[26]

Research and development: from Action Office to 'Action House'

AO sold poorly on its launch in 1964. With metal hardware and wood finishes, individual pieces were expensive, and would-be buyers did not understand the advantages over traditional office furniture. After the failure of the first iteration, Propst and his team decided on a more radical tack. What emerged was an integrated system that gave users the flexibility to transform their workspace on the fly. The basic ingredients of AO 2 emerged quickly: freestanding panels that could be linked together to form interior partitions, and modular work surfaces and storage cabinets that hooked onto the vertical panels.

The product line was introduced in 1967, and was shortly followed up with a publication that served as both user's manual and design manifesto: *The Office: A Facility Based on Change*. The thin booklet was a distillation of Propst's research, and, importantly, it offered space-planning methods and techniques that promised users new gains

Fig. 8: Robert Propst, ‘The Perch’ AO, Herman Miller, Inc., undated. Reproduced by permission of the Herman Miller Corporate Archive.

in productivity. The promise worked, especially for Herman Miller's sales figures. AO 2 has sold tremendously well – by one estimate, more than five billion dollars since 1967.

Throughout the 1970s, Propst continued to make improvements to the system, and by 1980, he was working on room-height divider panels outfitted with windows and doors, the partitions becoming increasingly wall-like.[27] The new components would allow facility managers to divide office spaces with fully-enclosed interiors. In effect, the new system offered a means to create architecture without architects. When Propst left Herman Miller in 1980, it was this innovation that he recognised as the basis for his next venture.

On leaving Michigan, Propst, along with his wife Leanore, purchased twenty-six wooded acres on Lake Sammamish outside of Seattle, Washington. They partitioned the land and established Propst Estates, a real estate development that would feature homes constructed in a prefabricated wooden building system of Propst's design, based upon his room-height AO partitions. Lacking a license to practice architecture, the inventor retained a local architect – trading one Miller for another – named William 'Bill' Miller to help him realise his vision. By the end of 1984, Propst Housing Venture, as the company was called, had erected four prototype buildings on the Lake Sammamish compound.[28]

Propst never called them Action Houses, but his architect did, and with good reason: the building system translated the logic of AO 2's space dividers into a means of architectural enclosure. Like the office partitions, the building panels were composite, and connected with the same mechanism used in the furniture line. Here, they were installed in a purpose-built architectural structure. Just like the best possible office space for AO 2 furniture, the best architecture for the Propst Housing System would allow spatial partitioning independent of any structural role. An inverted wood truss was sprung from a narrow, concrete foundation to create the floor platform. A wood-and-steel truss formed the roof, rising directly from the foundation on four piers. According to Bill Miller, this method of construction disrupted as little ground as possible, and thus preserved the site's mature trees, all the while providing an unencumbered space within which the enclosure panels could be freely arranged.

Stepping through a panel fitted with a door, the interior of the Propst's personal Action House comprised a single continuous space. And like the open-plan offices that made Propst a fortune in royalties, the residence featured AO 2 furniture throughout. Here, high-end wood finishes replaced the system's typical beige plastic. Low partitions defined a central living area with views of the forests beyond. A small library was enclosed by an octagonal ring of tall panels fitted out with the system's shelving. The furniture was even installed in the kitchen, utilising three-quarter partitions, cabinets, and counters customised with appliances and fixtures. The only space that wasn't AO was the bathroom. The house was a demonstration of AO's flexibility as a universal environmental system, appropriate for domestic and commercial applications alike. The houses were kept presentation-ready as Propst attempted to find investors. These were the houses that Action Office built.

Attempts were made to sell the system to building firms the world over until as late as the mid-1990s. However, potential buyers were concerned that Propst's approach was too limited in scope. Comprising only the wall panels, Propst Housing System required investors to grapple with how best to provide the structure that the non-loadbearing partitions would sit within. As the prototype structures demonstrated, this was no simple task. In the end, an investor willing to support the project's development was never found. Robert Propst died in 2000, and after Leanore passed in 2011, the

buildings fell into disrepair. An estate sale was arranged, the property was sold, and all of the houses were demolished in 2014. Soon after, the acreage was acquired by a developer who spec-built homes of 'contemporary' design on the wooded land still officially recorded in the city register as Propst Estates.[29]

Conclusions

Over and above AO's historical-theoretical treatment as either an object of architecture or of industrial design, the preceding has sought to demonstrate the appropriateness of an approach which emphasises its operational, processual dimension. Reconsidered in these terms, AO is a designed system that sought to intervene in space irrespective of the disciplinary boundaries that designers and historians have traditionally erected. In this sense, it is perhaps most useful to think of this case as an instance of information technology, that is, a device which intervened in the labour environment in such a way as to reconfigure the spatial codes and behaviours that define the office's operation.

Information, not objects: AO was a multimedia system whose components lubricated the circulation of data through the workplace. It was a working apparatus whose ergonomics reconfigured the body, and whose underlying conceptual bases – 'information transfer', 'signal' and 'bandwidth' –enacted the prevailing metaphors of the information age as governing concepts. Indeed, Propst spoke of AO as an active system, not a static, structuring apparatus, but rather something which could itself produce feedback. Notably, Propst minimised the filing cabinet, which he referred to as one of many places for 'paper to hide and die', instead reconceptualising the office as a display environment: 'You can see it, it is all signalled or marked and it will feed back a strong purge signal when it becomes overabundant.'[30] In this way, AO performed as a responsive environment.

At the same time, AO's informational agency only further aligned it with the many other informational devices and processors inhabiting the information-age office: IBM Selectric typewriters, Dictaphones, fax machines, slide projectors, calculators, and so on. For this very reason, AO remains a difficult object of historical scholarship: both not-architecture and not-furniture, but rather something more like infrastructure. As has been evoked here, the emergence of Propst's systems furniture produced the preconditions of informational labour. For this reason, it's no wonder that AO has been all but unrecognised in historical scholarship; as Marshall McLuhan noted of media environments, they remain invisible in the absence of a counter-environment.[31] AO has blended into this informational milieu as one system among many, and in the process, it destabilised known boundaries between architecture, furniture, and organisation.

Notes

1. Robert Propst cited in Ralph Caplan, *The Design of Herman Miller* (New York: Watson-Guptill, 1976), 76–77. Herman Miller hosted workshops to train facility managers in the proper use of the AO system; for instance, 'The Office and the Human Performer', held in Grand Rapids, Michigan, August 1968.
2. Herbert A. Simon, 'The Architecture of Complexity' in *Proceedings of the American Philosophical Society* 106, no. 6 (12 December 1962), 468. Robert Venturi cites Simon's definition of the 'complex system' in defining his concept of the 'difficult whole'; see Venturi, *Complexity and Contradiction in Architecture* (New York: Museum of Modern Art, 1966), 88.
3. Frank and Lillian Gilbreth's consultancy disciplined the body to conform to prescribed choreographic dictates that allowed human-machines to perform more work, more quickly, and more consistently. It is not surprising that the distinctive aesthetic marker of the Gilbreth's time-motion studies, the 'motion blur', is raised again as a graphic device employed in early advertising images for the Action Office system. The motion blur

simultaneously captures the human subject's rapid 'actions' while obliterating marks of personhood – the subjects face and other identifying details are seemingly lost in the shuffle.

4. Peter Galison and Caroline A. Jones, 'Factory, Laboratory, Studio: Dispersing Sites of Production' in Peter Galison and Emily Thompson, eds., *The Architecture of Science* (Cambridge, MA: MIT Press, 1999).
5. On the history of Taylorist thinking in architecture, see Mary McLeod, '"Architecture or Revolution": Taylorism, Technocracy, and Social Change', *Art Journal* 43, no. 2 (July 1982): 132–47.
6. Frederick is best known for two books she published between 1918 and 1823, during the interwar period in the United States. The first, *The New Housekeeping: Efficiency Studies in Home Management,* explicitly introduced Taylorist efficiency theory into the domestic sphere; chapters such as 'Applying "Standard Practice" and "Motion Study" to Household Tasks' and 'Standardizing Conditions in Kitchen Arrangement' refer to principles from Frederick Winslow Taylor, and praise 'the efficiency engineers who are called into large factories to find what is wrong, or suggest better methods' (16); See Christine Frederick, *The New Housekeeping: Efficiency Studies in Home Management* (New York: Doubleday, 1918) and Christine Frederick, *Household Engineering: Scientific Management in the Home* (Chicago: American School of Home Economics, 1921).
7. This term refers to the physical path of a document through a given organisation's plant. For example, an incoming letter might enter a headquarters' centralised mailroom before being delivered to a desk on another floor. The document might then be transcribed by a clerk before being duplicated, filed, and sent on to a manager in a separate location. In the case of a document sent from one staff member to management for authorisation, the entire process is likely to be repeated in reverse. The movement of a single document through any organisation entails its serial transfer among multiple actors, and spaces.
8. On the intersection of technological efficiency and the gendered division of domestic labour, see Ruth Schwartz Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (New York: Basic books, 1983).
9. It is unclear how *Beautiful Girls* was presented to the public. It is unlikely that the film was ever broadcast to a television audience. According to Herman Miller archivist Amy Auscherman, it is probable that the film was screened at tradeshows and similar events. *Beautiful Girls* is held, unprocessed, in the Herman Miller Corporate Archive in Zeeland, Michigan.
10. *Beautiful Girls,* 01:30.
11. Ibid., 04:10.
12. *People, Process, Place* describes the constituent factors for correct implementation of the AO system according to the Herman Miller Research Corporation and is the exact title of a film made by the company advertising the consulting services of its in-house Facility Management Institute.
13. The vast majority of scholarly and general audience literature on AO has been authored by either representatives and employees of Herman Miller or recipients of its munificence. The latest contribution to this discourse is no exception; see *Herman Miller: A Way of Living*, ed. Auscherman et al. (London: Phaidon, 2019).
14. Ralph Caplan, *The Design of Herman Miller* (New York: Watson-Guptill, 1976), pp. 76–77.
15. See, for instance, Bruno Latour, 'Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts' in Bijker and Law, eds., *Shaping Technology/ Building Society: Studies in Sociotechnical Change* (Cambridge, MA: MIT Press, 1992), 225–58.
16. This refers to the development of a product before a buyer has been secured. In the United States, residential housing production often proceeds 'on spec', with the expectation that buyers will be found after construction has begun. See Ralph Caplan, 'Robert Propst' in 'Nelson, Eames, Girard, Propst: The Design Process at Herman Miller', *Design Quarterly* No. 98/99 (1975): 40–49.
17. Robert Probst, 'Time Lapse Study Sheet for Action Office System, HMRC-1, Body Location Pattern'.

From the collections of The Henry Ford (2010.83.649, Robert Propst Papers).

18. Well-known examples include Bruno Latour's *Laboratory Life: The Construction of Scientific Facts* (Beverly Hills, Calif., and London: Sage Publications, 1979), and William H. Whyte's study of civic space with the *Street Life Project* (1971–80), and the associated milestone book and film *The Social Life of Small Urban Spaces* (Washington, D.C.: Conservation Foundation, 1980).
19. Caplan, 'Robert Propst', 43.
20. The name Quickborner was coined in reference to the town of Quickborn on the outskirts of Hamburg, where Wolfgang and Eberhard Schnelle founded the company in 1958.
21. Notable examples of early Quickborner-designed offices include the OSRAM Headquarters in Munich, Germany, (1963), designed by architect Walter Henn.
22. Robert Propst quoted in Caplan, 'Robert Propst', 41.
23. For instance, Rachel Carson's *Silent Spring*, a wellspring of the environmental movement, was published in 1962 while the first iteration of AO was in development. See also Reinhold Martin, 'Environment, c. 1973' in *Grey Room* 14 (Winter, 2004), 78–101.
24. See John Harwood's extensive work on the meeting of biopolitical subjects, corporations, and corporate space: 'The Interface: Ergonomics and the Aesthetics of Survival' in *Governing By Design: Architecture, Economy, and Politics in the Twentieth Century,* ed. Aggregate Architectural History Collaborative, (Pittsburgh: University of Pittsburgh Press, 2012), 70–92.
25. Anson Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (Berkeley: University of California Press, 1990).
26. Jean Baudrillard, 'Structures of Atmosphere' in *The System of Objects* (London: Verso Books 1996 [1968]), 30–69. See also Beatriz Colomina, 'Enclosed by Images: The Eameses' Multimedia Architecture' first published in *Grey Room* 2 (Winter, 2001): 5–29.
27. Robert Propst, Free-Standing Space Divider Assembly with Acoustic Upper End Border. US. Patent, 4,356,674, filed 31 March 1980.
28. In the late stages of his career, Propst founded Propst Housing Venture with his spouse, business partner, and editor, Leanore, in Bellevue, Washington. The company was not extraordinarily successful, but did produce 'four prototype buildings', including one that served as the Propsts' home, built in 1983, and another, 'their workplace'. Both structures were demolished in 2014, according to building permits filed with the city of Sammamish. See 'Leanore June Propst' *The Seattle Times* (1–2 April 2011).
29. 'Surveyor's Certificate: Propst Estates, Sec. 18, Twp. 25 N. Rge. 6E., W.M.', 17 January 1984. *Department of Permitting and Environmental Review,* King County, Washington.
30. 'More Action in the Office', *Industrial Design* 15 no. 10 (November 1968): 32–33.
31. Marshall McLuhan, 'The Invisible Environment: The Future of an Erosion', *Perspecta* 11 (1967): 161–67.

Biography

Phillip Denny is a PhD student at Harvard University. His research focuses on prefabricated architecture in the twentieth century. His writing has most recently appeared in *Harvard Design Magazine*, *Volume*, *Metropolis*, *The New York Times*, *CLOG*, and *PLAT*. He edited *The Art of Joining: Designing the Universal Connector* (Leipzig: Spector Books, 2019), an anthology of research on architect Konrad Wachsmann. Phillip contributed to the catalogue for Architecture Itself and Other Postmodernist Myths, curated by Sylvia Lavin at the CCA. In 2019, he received a Graham Foundation grant to support his work on an English-language translation of Nicolas Schöffer's 1969 urban manifesto *La ville cybernétique*.

Visual Essay

In Praise of Cybernetics: Office Landscaping and the (Self-)Conditioning of Workers

Andreas Rumpfhuber

Nimm dir einen Regelkreis
und tu dich mittenrein
Schnell erhältst du den Beweis
besser kann die Welt nicht sein.
(Freiwillige Selbstkontrolle, *Lob der Kybernetik*, 1984)

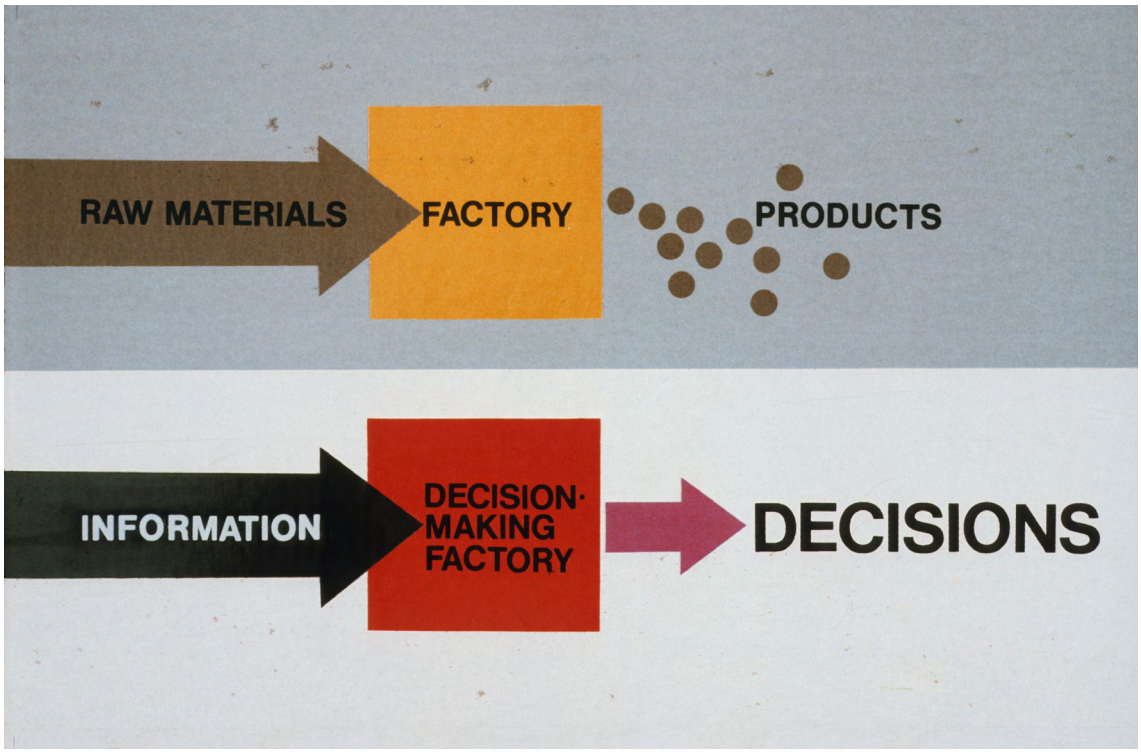
Praise of Cybernetics, a song by German avant-garde band F.S.K. (*Freiwillige Selbstkontrolle*) first performed in 1984, plays with the German cliché of thoroughness and its obsession with technology. The song is a telling account of what can be called self-conditioning through reason: 'Take a control-circuit and put yourself right into it. Swiftly you have the proof, a better world cannot be', as a jolty translation of the refrain reads. 'Games are for play', so the song starts. 'Yet life is *one* algebra, and is solved through reason'. The idiosyncratic use of the indefinite singular article here defines Algebra as a thing, an object. It no longer literally means the reunion of broken parts, it is no longer the study of equations and relations in their multiplicity. Multiplicity is metaphorically reduced to one equation and to one relation: the control-circuit of cybernetics, to which subjects voluntarily subordinate themselves in order to realise how good life is. The song narrates surreal and dreary life-situations of people with cliché German names like Edgar, Heinz, Senta or Horst, balancing self-determination and self-control in the search for a better world.

The song came out in 1984, at a time when political figures like Ronald Reagan and Margaret Thatcher, but also German chancellor Helmut Kohl just came into power, signifying what is commonly referred to as a new political and economic regime, circumscribed as neoliberal, consumerist, and informatic. Yet, the coming to power of such political figures was merely an interim symbolic culmination of an ongoing process of alteration and restructuring of Western industrialised societies from disciplinary societies towards societies of control: a process that needs to be traced to the immediate Post-War years and can be witnessed today in its full extent. The emergence of such a new, pervasive regime, able to organise and govern society at large, can be attributed neither to a single political ideology, nor to a specific cultural shift. However, the development of new technologies and their accompanying logics did have a significant impact on this process, as the rise of cybernetics can be seen as a fundamental factor in the construction of new forms of social control highlighted by the song.

Diagrams

Decision Making Factory
The Quickborner Team understood the office to be a factory for decisions (administering the production and distribution of goods), that ultimately led to an altered form of organisation. Quickborner Team USA, Decision Making Factory, slide, ca. 1967.

Simultaneous Evaluation
Quickborner Team's planning methodology aimed to evaluate and quantify as many aspects of an administration as possible. The key focus of the analytic phase of a given organisation was information flow within an organisation and its interfaces with the outside world. Members of the QT literally would accompany co-workers of an organisation and note each communication and interaction with other workers and clients. Quickborner Team USA, Simultaneous Evaluation, slide, ca. 1967.


RAW MATERIALS
FACTORY
PRODUCTS
INFORMATION
DECISION-MAKING FACTORY
DECISIONS

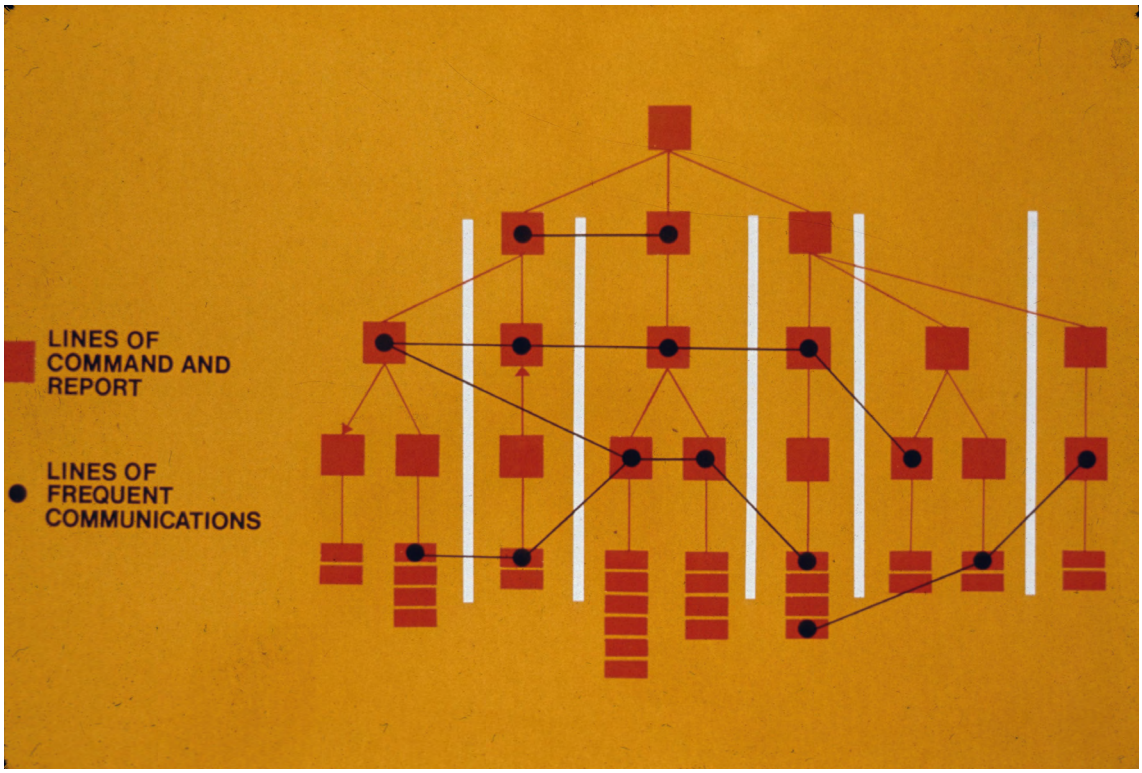

SIMULTANEOUS EVALUATION
ENVIRONMENT
ORGANIZATION
ECONOMICS
PLANNING TEAM
INFORMATION
PEOPLE
FACILITIES

Cybernetics, in its formative years following World War II, proved very attractive to the political left.[1] Its hypothesis promised a new form of governance that could overcome despotic and hierarchic authority and finally free humans from tedious labour through the implementation of flat hierarchies, or the introduction of digital machines, known today as computers. Soon, a popular strand of cybernetic thought, obsessed with information flow in machines and biological systems, permeated and influenced numerous disciplines, also entered the architectural discourse.[2]

One spatial application of cybernetic principles that was less explored by architectural historians, is Bürolandschaft (office landscape). Bürolandschaft was invented by Eberhard and Wolfgang Schnelle, two German management consultants, and their transdisciplinary team of mathematicians, information scientists, artists, and initially without architects.[3] From its founding moment in 1956 the so-called Quickborner Team (QT) was engaged in developing what they would call a scientific design methodology to optimise administrative organisations. *Organisationskybernetik* (cybernetics of organisation), as they initially called their method, was the foundation for the design of a series of office landscapes between 1959 and the late 1960s, and would later include the spatio-organisational concept for the Federal Chancellery of Germany in

Evaluation Hierarchies
Through participant analysis of information flow the Quickborner Team would compare (in various ways, sometime spatially, sometimes organisationally) a traditional hierarchic organisation and its line of command with the actual information flow within an organisation. This helped them to establish what they had in mind: a flat hierarchy for decision-making. Quickborner Team USA, Command vs. Communication slide, ca. 1967.

Participatory Design
The design process involved, beyond members of the Quickborner Team, other specialists such as architects or lighting experts and top management, but also representatives of different existing work groups staffing the organisation. That kind of participation guaranteed on the one hand that knowledge about the needs of workers could be incorporated into the design, but also the minimisation of potential opposition to what was being planned. Quickborner Team USA, Design Process, slide, ca. 1967.


LINES OF COMMAND AND REPORT
LINES OF FREQUENT COMMUNICATIONS

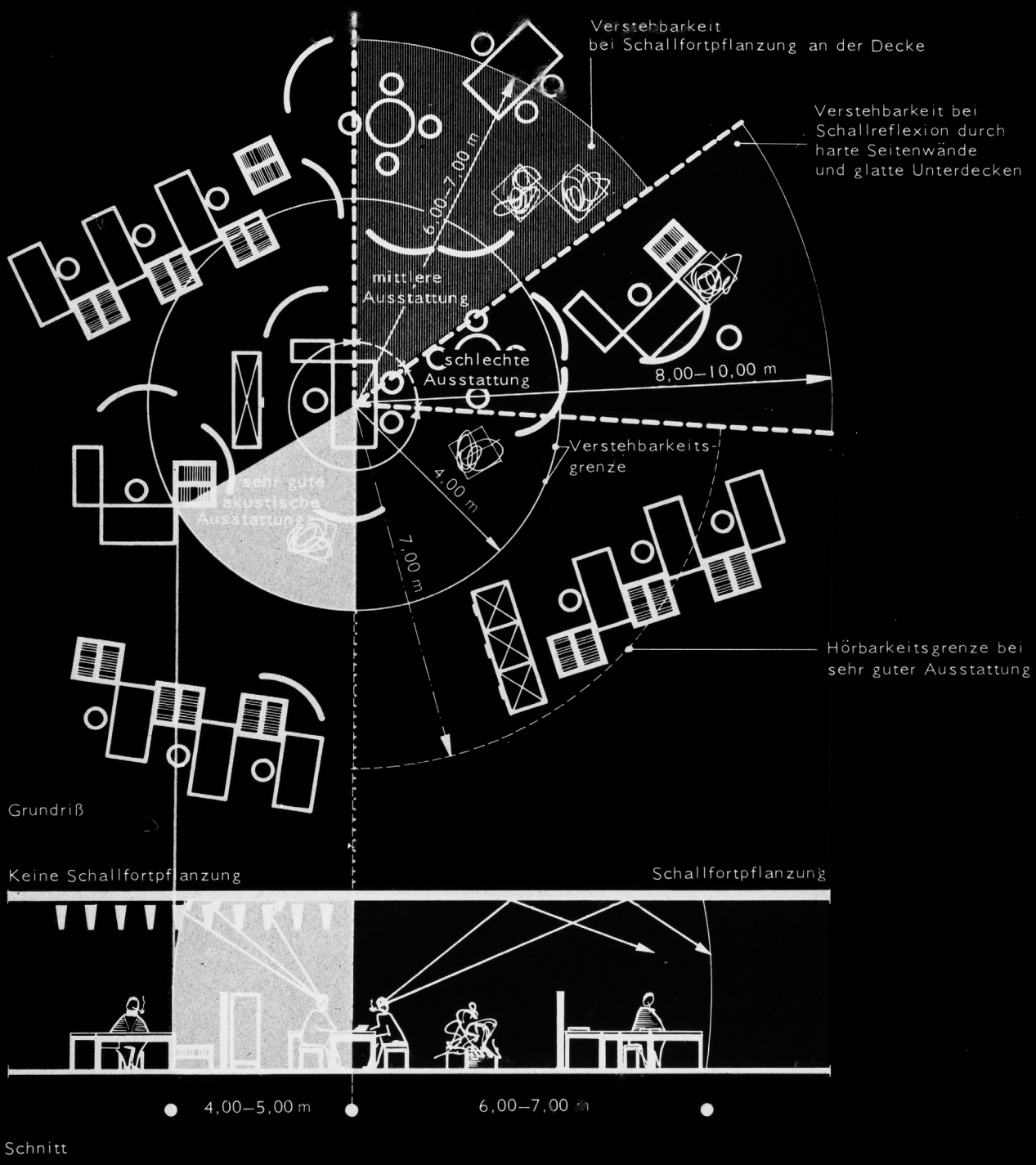

PLANNING COMMITTEE
PLANNING TEAM
SPECIALISTS
EMPLOYEE INFORMATION GROUPS
TOP MANAGE-MENT

Bonn and Hans Scharoun's infamous state library in Berlin.[4] Their method for administrative organisations was based on the meticulous quantification of all aspects within an organisation, putting an emphasis on information flow through participant analysis and counting interactions, like phone calls and meetings. The design process included the participation of representatives of a given organisation, and aimed to optimise information flow. Following the popular promise of cybernetics to render all men redundant in the work process, QT's explicit goal was to fully automate all work-processes and to free all workers from tedious labour and to dismiss them into everlasting leisure.[5] QT would even go so far as to predict that office space would become redundant in the future, and its two founding members, Wolfgang and Eberhard Schnelle, subsequently left QT in the early 1970s, establishing Metaplan, a consultancy firm specialised in applying their methodology on a broader scale not limited to office design.

To Eberhard Schnelle, cybernetics was an emancipatory conceptual model that had the potential to transform the heteronomy of labour into the autonomy of every singular human being. By overcoming imposed moral standards such as honour, duty, loyalty, and diligence, that are 'in the position to exact performance from the lower ranks without the return of any material value'[6], Schnelle argues, a new pragmatic and goal-oriented society could be constructed, with the 'aim of making the entire system more creative, in other words more rapidly adaptable and more capable of learning'.[7]

Organisational Diagrams

Acoustics
In addition to the Quickborner Team's analysis of information flow, they produced a series of detailed manuals for the design and organisation of office landscapes. Quickborner Team: Acoustic Fittings, slide, ca. 1963.



Verstehbarkeit von Gesprächen in Abhängigkeit von der akustischen Ausstattung

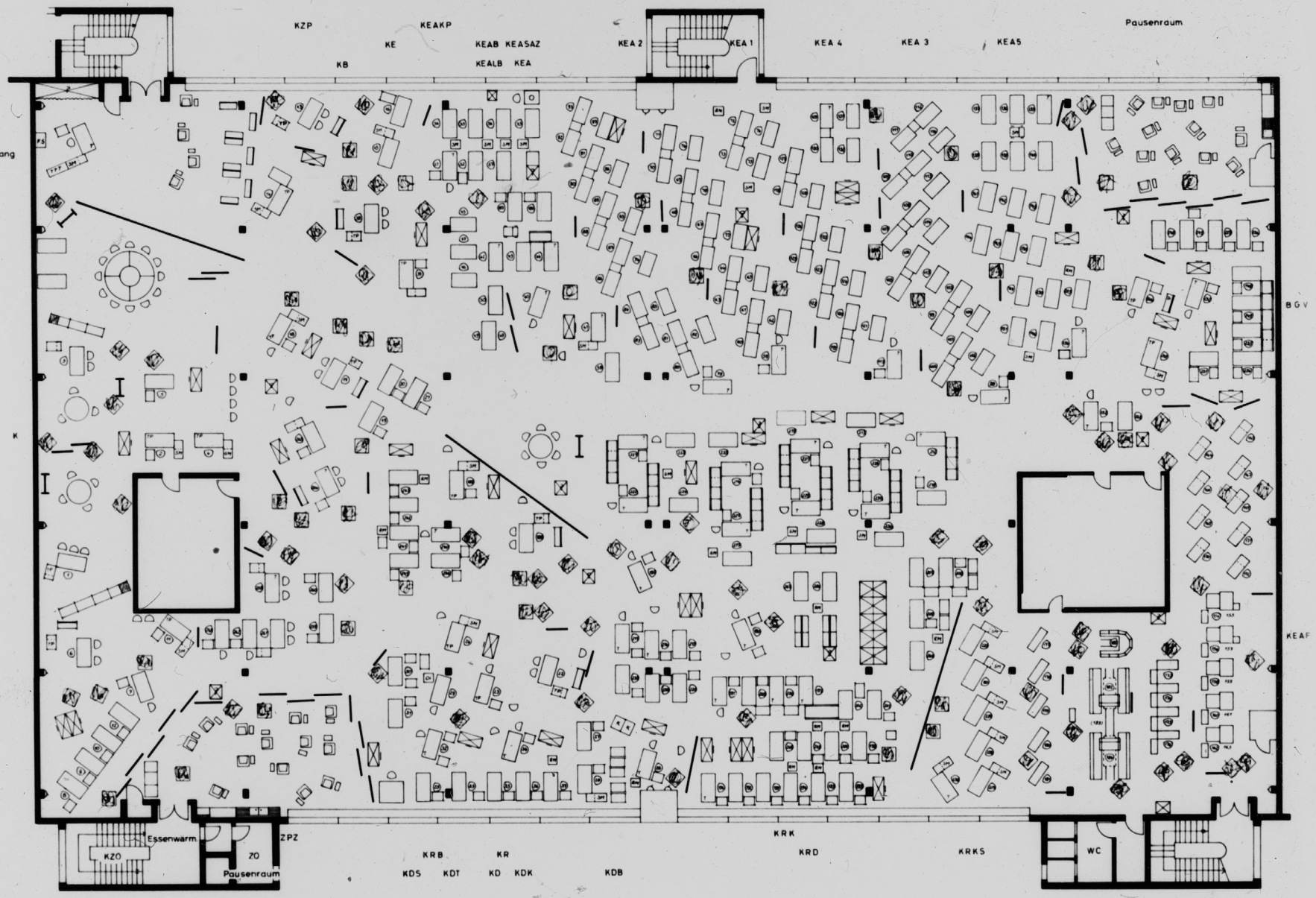
Bürolandschaft designs explicate this idea of a creative and potentially rapidly and constantly adaptable organisation and space. On the one hand, it is the very organisation of administrative work itself that was aimed at fostering creativity, understood as the active participation of all workers in finding solutions for a problem, and the adaptability, or learnability, of the organisation in relation to feedback from within and from outside of the organisation. It was QT's conviction that there is enough knowledge and creative potential within a given organisation to deal with and master any complex problem, indeed aiming to establish a workers' community were everybody had the same rights and obligations. Hence, the idea was to confer everyone within the organisation the same freedom and the same equal status within the decision making process, in order to make available that very knowledge. The only limitation to the granted freedom was the 'restraint to cooperate'.[8] In that sense, the organisation of office landscapes considered all co-workers on the same hierarchical level, be it the owner, a group-leader, or someone only assisting in a work process. An important asset of office landscapes' organisation of work was the introduction of calculating machines, like punch-card apparatuses in the late 1950s, that took over repetitive work, considered tedious. In the QT rhetoric, co-workers were addressed as experts, as scientists, and as creatives. They were no longer

Layout Buch und Ton

Office landscape layouts could easily be rearranged at any given time in relation to new parameters, be it the introduction of new technology, or the need for a different composition of teams within the organisation. The very first office landscape for the Bertelsmann mail-order business Buch und Ton was initially conceived as a temporary test space but then was operational for about ten years. Quickborner Team: Second adaption of Buch und Ton/Bertelsmann layout, Gütersloh. Slide, 1961.

BERTELSMANN DRUCKHAUS G.m.b.H. GÜTERSLOH | ORGANISATION SCHNELLE HAMBURG ST 170661 M 1:100

MOBILIARORDNUNG, 2. SKIZZE



ARCHITEKT: PROF. DR. ING. WALTER HENN

mere workers to fulfil a task through disciplinary guidance, but were addressed as autonomous subjects, who had to take on responsibility and become pro-active in problem solving. All the workers had expertise, no matter what their task had been in the former work hierarchy. And it was was important for the organisation's efficiency that this very knowledge be made available. At the same time, these autonomous human experts were incalculable entities for the cybernetic organisation. After all, the management would not know what and how an autonomous expert would decide in relation to a given problem, potentially even deciding against the given goal of the enterprise. Hence all experts were teamed up in small interrelated groups and bound to a normative decision-making process that involved consensual decision-making. Participation was crucial for the success of this form of organisation. Workers in that space, freed from the feeling that they were supervised by a gaffer, started to work from their own impulse, and at the same time would control other co-workers through defined participatory processes.

Spatial Experience

Buch und Ton

Buch und Ton was implemented on the top floor of a disused warehouse by the architect office Walter Henn, specialised in industrial architecture. The desks were specifically developed by the Quickborner Team. The space was the size of half a soccer pitch, with a ceiling-height of 2,9m. In full operation, with punch-card machinery distributed in the space, the noise level would equal driving a VW beetle built in 1950 at a speed of 50km/h. Quickborner Team: Buch und Ton/ Bertelsmann, Gütersloh, slide, 1959–60.

The design of the space itself allowed and fostered the permanent re-arrangement and adaption of the organisation. The seemingly endless, air-conditioned and artificially lit interior designs looked chaotic. Yet they were meticulously calculated, taking into account, for example, noise levels, sight lines, and team affiliations. The designs were set-theory-like temporary arrangements of custom-made, moveable furniture, partitioned by pot-plants and colourful shields, and included fully fitted break-rooms. As Kurd Alsleben, an early associate of QT, explained, the design intended to produce subjective spaces 'that were experienced by each individual from his respective position', in order to provide a somewhat intimate space for each worker within the vast, near-endless interior landscape.[9] Each worker was guaranteed an average overview or sightline of the total office landscape, achieved through the arrangement of tables and pot plants. Access to the individual work groups and the routes within the office landscape were marked by plants and were planned to never go directly through a work group. The orientation of the desks was programmed so that one was not looking directly at one's colleagues or 'forced' to observe one another. The spatial result aimed to afford privacy for each worker, as described in the QT's leaflet about its very first office landscape, Buch und Ton (1959–60):

GEG Interior

The office landscape for the not-for-profit corporation GEG's mail-order business included seven hundred co-workers in a new, single-storey, warehouse-like building, directly adjacent to the logistics centre. Quickborner Team: Gemeinnützige Einkaufsgenossenschaft GEG, Kamen, slide, 1966.


EK15
EK8
EK4

> Thanks to the construction of the furnishings, a transparent and spacious effect is achieved. The *irregular rhythm* of the layout and the range of colours in the space divide up each close range for the perception, so that each of the many workspaces forms a subjective space affording privacy.[10]

The paradoxical formulation of an 'irregular rhythm', a rhythm that does not follow any symmetry or controlled movement, but instead is acyclic, quite aptly articulates QT's intended ambition. The visually 'irregular rhythm' lays claim to realising a bureaucratic apparatus without bureaucracy. And no matter how improbable this ambition is, Bürolandschaft designs were successful as inasmuch they created an atmosphere in which workers felt valuable, and, to paraphrase Praise of Cybernetics, happily put themselves into a control circuit, and stopped questioning the very given goals set by a now invisible management. It is notably the ever-adapting organisation of the space with its relational arrangement of human and digital workforce through quantified information flow that can be understood as an early forerunner of today's highly successful new business models based on big data and algorithms, aiming to potentially quantifying all aspects of human behaviour. Bürolandschaft's atmosphere lingers on in this new world full of ubiquitous computing. Further advancements in technology soon allowed the expansion of Bürolandschaft's logic beyond the limits of the office space, spilling out into the home, the city, and society at large.

GEG Break Room

In the office landscape designs, a strong emphasis was put on providing adequate break rooms. The participant analysis had shown that waiting at the copy machine, and having a break would be the most productive times for communicating with co-workers at the office. Quickborner Team: Break Room, Gemeinnützige Einkaufsgenossenschaft GEG, Kamen, slide, 1966.

Notes

All images courtesy of Bürolandschaft Archive, Andreas Rumpfhuber.

1. A significant example for the political reading of cybernetics in relation to architecture is the formative years of German architecture magazine *ARCH+*. See Jesko Fezer, 'Politik-Kybernetik, Arch+, die Studenten und die IG Bau Steine Erden zwischen 1967 und 1977', *ARCH+* 186/187 (2008): 95–105.
2. For example, Yona Friedman's diagrams on the organisation of society, or Cedric Price's Fun Palace are based on cybernetic principles. But projects by Archigram or Haus-Rucker-Co also mirrored cybernetic ideas of a new society.
3. Ottmar Gottschalk, an architect and initially a co-worker of Henn architects, who was responsible for the execution of construction work on site of the very first office landscape realised in 1959–60, only became a member of the team later.
4. Compare Merle Ziegler: *Kybernetisch regieren. Architektur des Bonner Bundeskanzleramtes 1969–1976* (Droste Verlag: Düsseldorf, 2016), 51–56.
5. As, for example, expressed by Constant Nieuwenhuys: 'The City of the Future: Betty van Garrel and Rem Koolhaas Talk with Constant about New Babylon', in *Exit Utopia: Architectural Provocations 1956–76,* ed. Martin van Schaik, Otakar Mácel (Munich, Berlin, London, New York: Prestel, 2005), 10–12. Here p. 10, Originally published in: *Haagse Post*, 6 August 1966.
6. Eberhard Schnelle, 'Organisationskybernetik', in *Kommunikation* 1 (September 1965): 19. Verlag Schnelle, Quickborn, pp. 1–26, here: p. 19. My own translation.
7. Ibid., 16
8. Peter W. Tügel, 'Portrait 3: Quickborner Team, Gesellschaft für Planung und Organisation mbH', in *Arch+* 2 (April 1968): pp. 9–13, here: p. 10.
9. Kurd Alsleben, 'Bürolandschaft und ihre subjektiven Räume' in: *Kommunikation* 11 (1965): 77.
10. Brochure 'Beschreibung der Bürolandschaft des Hauses Bertelsmann in der Firma Kommissionshaus *Buch und Ton*', no further information available in the Quickborner Team archives. My emphasis.

Biography

Andreas Rumpfhuber is an architect and theoretician, focusing on new forms of labour and housing. He is the author and editor of books like *Architektur immaterieller Arbeit* (2013), *The Design of Scarcity* (2014), *Modelling Vienna: Real Fictions of Social Housing* (2015), *Wunschmaschine Wohnanlage* (2016), and *Into the Great Wide Open* (2017). He holds guest-professorships, amongst others at the State Academy of Fine Arts, Stuttgart, Muthesius Art Academy, Kiel, and University of Technology, Vienna. Between 2009 and 2015 he was able to acquire an extensive archive about office landscaping, including around two thousand original slides, all publications and many internal papers of the Quickborner Team. He is currently preparing a bigger publication on office landscaping.

Visual Essay

From Exigent to Adaptive: The Humans of Air Architecture and Beyond

Elizabeth Gálvez

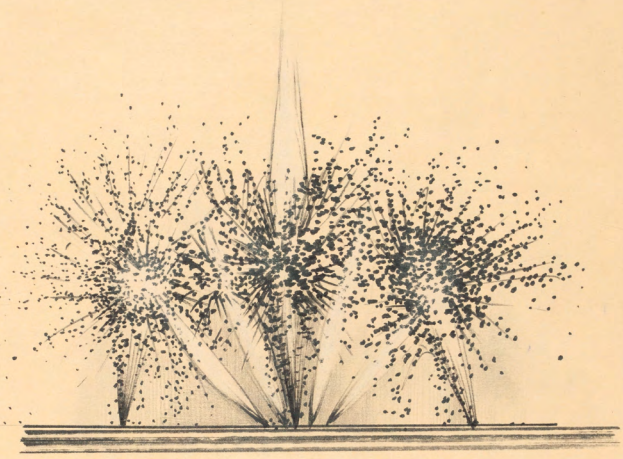
Architecture today has experienced a historical rupture that divorces the art of architecture from the climatisation of buildings. Rather, 'another culture' of builders – comprised of plumbers, subcontractors, and consulting engineers – constructs absolute comfort within buildings through the design of interior, man-made weathers.[1] The divorce between the disciplines of architectural design and systems engineering in conjunction with the scientisation of comfort-standards encourages a year-round and day-round comfort routine to the contemporary human. Yet, coordinated central-air, mechanical and utility systems date back no more than seventy years. Human adaptation has been replaced via strict reliance on mechanical systems – temperature, lighting, and purification machinery support an exigent-human. The scientisation, acceptance, and deployment of comfort-standards have displaced the critical relationship between environment and human.

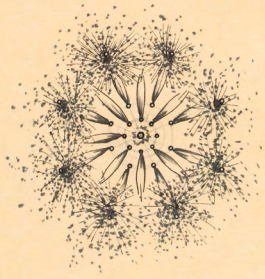
In his proposal for an Air Architecture, French artist Yves Klein proposes the opposite: an architecture devoid of the responsibility to temper human environs.[2] Klein envisions an architecture of air where humans adapt to their environment. He positions architecture as the 'air conditioning of vast geographic residential spaces'. While mechanical equipment is an important piece of the proposal, human needs become 'former obstacles'.[3] Prior requests for functionality are supplanted by a change in human sensitivity. Rather, mechanical equipment is used towards the architectural. Klein's imagination supplants the conditioning, architecturally insignificant, puffs or air emitting from wall vents for 'walls of air' – wind gusts forming a wondrous immaterial enclosure.[4] In opposition to the spirit of science fiction, where technology and machinery aid humans in coping with their environment, for Klein, it is the human who yields to her milieu.[5] Mechanical machinery enables an architecture to come, while Air Architecture imagines a future adaptive-human.

In his essay 'Cell Block, Egospheres, Self-container: The Apartment as a Co-isolated Existence', Peter Sloterdijk describes the modern dwelling unit as a 'cellular world-bubble', providing the complete and preferred climate for performing our 'self-care cycle'.[6] The dwelling unit operates as an autonomous entity, isolated from the exterior. At its most basic form, the unit permits its dweller, or rather host, to accomplish her circadian tasks. The human is placed at the centre of her individual world-bubble, which provides 'sleeping and cooking facilities, a bathroom and toilet, a table to eat at, storage, air-conditioning or heating, a mailbox, a telephone, and a media cable or antenna'.[7] The qualities for the home are read, simply-put, as a separation from the exterior furnished with a series of mechanical equipment. While Sloterdijk describes these provisions as 'the minimal, basic and elementary architectural and sanitary conditions necessary for autonomy', interestingly, these fulfil not only basic necessities, but uninterrupted comfort via man-made weather, connectivity, and entertainment.[8]

With increased accessibility to interior comfort from the 1950s on, the ordinary dweller values the quality of the air-conditioning and technological services within, equally if not over that of the architectural container itself. [9] For example, popular design magazines of the time, such as John Entenza's *Arts & Architecture* magazine promoting mid-century housing, contain a plethora of advertisements for interior equipment. As an antithesis to the individual architectural unit, a series of radical architectural provocations envision an environmentally conscious world that critically repositions the relationship between human and architecture. Archizoom's No-Stop City explores an infinitely conditioned interior while Superstudio's Supersurface projects a continuous and homogenous surface across the various regions of the earth. Both proposals connect nomadic humans to an infrastructural grid that provides for basic needs of comfort and connectivity. Both worlds project alternative models for living while questioning various possibilities for climactic and cultural adaptations, yet neither is willing to question human reliance on standardised, generic mechanical systems – ventilation for interior air, water supply and disposal, and electrical grids.

Yves Klein, *Jets d'eau et de feu* (Water and Fire Jets), ca. 1959. Ink on paper. 33 x 31 cm. © The Estate of Yves Klein c/o ADAGP Paris / Claude Parent.





The logic of such proposals can be read as an allegory for the generic quality of the individually comfort-controlled dwelling unit already embedded in cultural value systems worldwide taken to its extreme – all that the exigent-human needs is a grid to plug into. The egospheric human continues to experience total and frictionless comfort via interior climatisation technologies like running water, plumbing, air-conditioning, and internet routers.[10] For the exigent-human, her daily confrontation with infrastructural technologies represents her most intimate relationship with architecture. In ever more drastic climactic and resource realities, the exigent-human's lost adaptive capabilities place her at a vulnerable disadvantage for survival without mechanical support.

While Archizoom and Superstudio focus on the infinite mechanical, infrastructural grid inhabited by the nomadic dweller, Constant's New Babylon focuses more precisely on the aspect of play. In *Homo Ludens*, Johan Huizinga argues that play and culture are inextricably intertwined – that play is involved in the creation of culture.[11] Play lies outside of practical, ordinary life; it has nothing to do with utility, duty or truth.[12] In the immaterial arts – music, poetry – play is bound up with the idea of mastery. Yet, the material or plastic arts pose an interesting challenge as their boundedness to matter, limitations of form, and functional responsibilities prevent an absolutely free play.[13] The architect is faced with a 'serious and responsible task: any idea of play is out of place', as her building must function. For New Babylonians, the self-directed creation of situations and atmospheres through mechanical systems control is encouraged. In Air Architecture, Klein imagines playgrounds of energies, enticing the human dweller to engage with new climactic situations through qualities of joy, wonder and play. In Air Architecture it is not considerations of utility and efficiency alone that inspire great works, invention, or human advancement, but rather it is the element of play. With Air Architecture Klein takes on the functional culture of mechanical systems through the lens of architecture.

Yves Klein, 'Empty' room dedicated to the 'Immaterial Pictorial Sensibility', Museum Haus Lange, Krefeld, January 1961. 440 x 160 x 290 cm. © The Estate of Yves Klein c/o ADAGP, Paris. Photo: © Kunstmuseen Krefeld, Volker Döhne.

The adaptive-humans of Air Architecture exist in a sensorial, playful world of mechanical apparatus. Yet, while the mechanical equipment of current architectural worlds is subservient to human comfort and inhabitation, Klein uses mechanical equipment for the creation of architecture itself. Through the use of underground mechanical apparatus, Klein explores energy as material for defining seemingly immaterial enclosure. Klein explores with walls of air and columns of fire in not only drawn, but also built formats.[14] Yet, the essence of lightness, air and the immaterial is conveyed only via a dramatic concealment of carefully orchestrated mechanics. A rejection of architecture as pure shelter, Air Architecture looks towards a progressive architectural future. The function of the mechanical apparatus is subverted to create an immaterial architecture for the adaptive-human, rather than to assist the exigent-human in coping with his environment.

As human demands become former obstacles, Klein utilises mechanical devices in service of architecture rather than the functional demands of humanity.[15] Klein uses mechanical air ventilation to create walls of air, architectural space defining elements as opposed to ventilation explicitly for servicing occupant comfort demands. Requests for functionality are supplanted by a change in human sensitivity. Klein's affinities lie in servicing architectural demands over human demands. He writes,

> The true goal of immaterial architecture: air conditioning of vast geographic residential spaces… Rather than being accomplished by technological miracles, this temperature control will become reality through a change of human sensitivity into a function of the cosmos.[16]

In the above passage, Klein describes human adaptation to climate and surroundings through advancement in human sensitivity. Although it is not clear if this would be a psychological or biological evolution, what is clear is that his architectural imagination challenges humans to welcome new forms of architecture over easy comfort. Thriving inhabitation of both excessively hot and cold climates have been recorded well before and after the advent of a climate-controlled world by native populations such as the Anasazi and the Inuit, in extremely hot and cold climates respectively. Before the popularisation of interior weather, native populations employed adaptations, or experience a 'change of human sensitivity', much like native plants

Yves Klein, *Le Feu* (The Fire) (D 91), 1959, with the collaboration of Claude Parent. Executed by Sargologo. Pencil, ink and watercolour on paper. 15 x 36 cm. © The Estate of Yves Klein c/o ADAGP Paris / Claude Parent.

TABLEAU DE FEU
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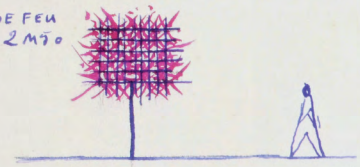


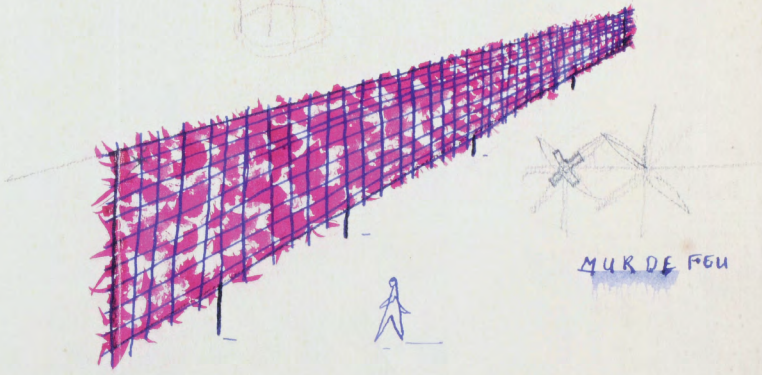
LE FEU ①

TABLEAU ET MUR DE FEU :

TABLEAU : 1 M² MATERIEL-INSTALL^N 750 $

CONS^TION PAR HEURE ; 18 M³ GAZ.

HONORAIRES : PAR M² -- 600 $



MUR DE FEU

COLONNE DE FEU.
HAUTEUR : 2 Mètres
SOL : SABLE. GALET
ENTOURÉ DE DOUVES.

LE FEU ②

COLONNES DE FEU (GAZ DE VILLE)

POUR UNE COLONNE :

MATERIEL. INSTALLATION : 800 $

HONORAIRES : - - - - 600 $

GAZ DE VILLE : PAR HEURE 300 M³

COLONNES DE FEU
SUR PIECE D'EAU

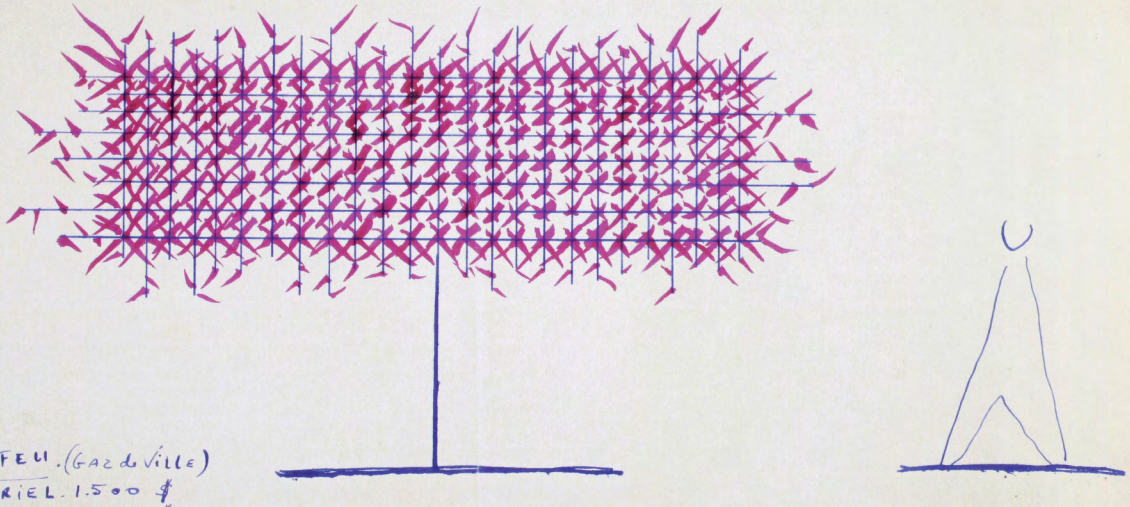


TABLEAU DE FEU. (GAZ de VILLE)
2 m² MATERIEL 1.500 $
HONORAIRES . - - 1.200 $

and animals do in order to survive their environment – very similar to the transformation that Klein describes. Desensitised humans today, in contrast, continue to flourish only by manipulation of regional climates through significant technological and engineering feats. Ironically, the advent and scientisation of indoor-climate has narrowed human understanding of climactic comfort.[17] With the proliferation of mechanical heating, cooling, and hygienic equipment, humans have experienced a loss of both acclimatisation capabilities and the willingness to accustom themselves to changing, varying or difficult climates.

Air Architecture employs a playful imagination to envision an architecture that rids itself of the age-old responsibility to temper human environs. Instead, Klein proposes that humans adapt to their environment by enticing them to play – reducing practical demands from mechanical machineries opens their availability to architectural thinking. Klein creates new playful situations for inhabitants. Contrary to current engineering values, as an architect, Klein focuses on the provision of new spatial experiences as opposed to restraint, practicality, or frugality. Such a world suggests the development of more playful acts – walls of fire may warm space while enticing us to approve of sweat, while evaporation fountains provide semi-private renewable, flexible architectures. In Air Architecture it is joy that makes such situations desirable to human inhabitation, while expanding acceptance to new forms of mechanical equipment and new understandings of comfort control. Walls, enclosures, interiority and exteriority become not only illegible, but also unnecessary. The borders of intimacy, the egosphere, and enclosure break down and displace the human from the centre of his delicate world-bubble into fluidity with an unbounded-world as Air Architecture gives way to a world that seduces the exigent-human into an adaptive-being. Can we imagine joyful situations that encourage less resource consumption by focusing on joy, play or conditioning rather than fear?

Yves Klein, *Sous-sol d'une cité climatisée*, (Underground Area of a Climate controlled City), (D 87), 1959. Ink and pencil on tracing paper. 73 x 48 cm. © The Estate of Yves Klein c/o ADAGP Paris / Claude Parent.

F
150 m/m

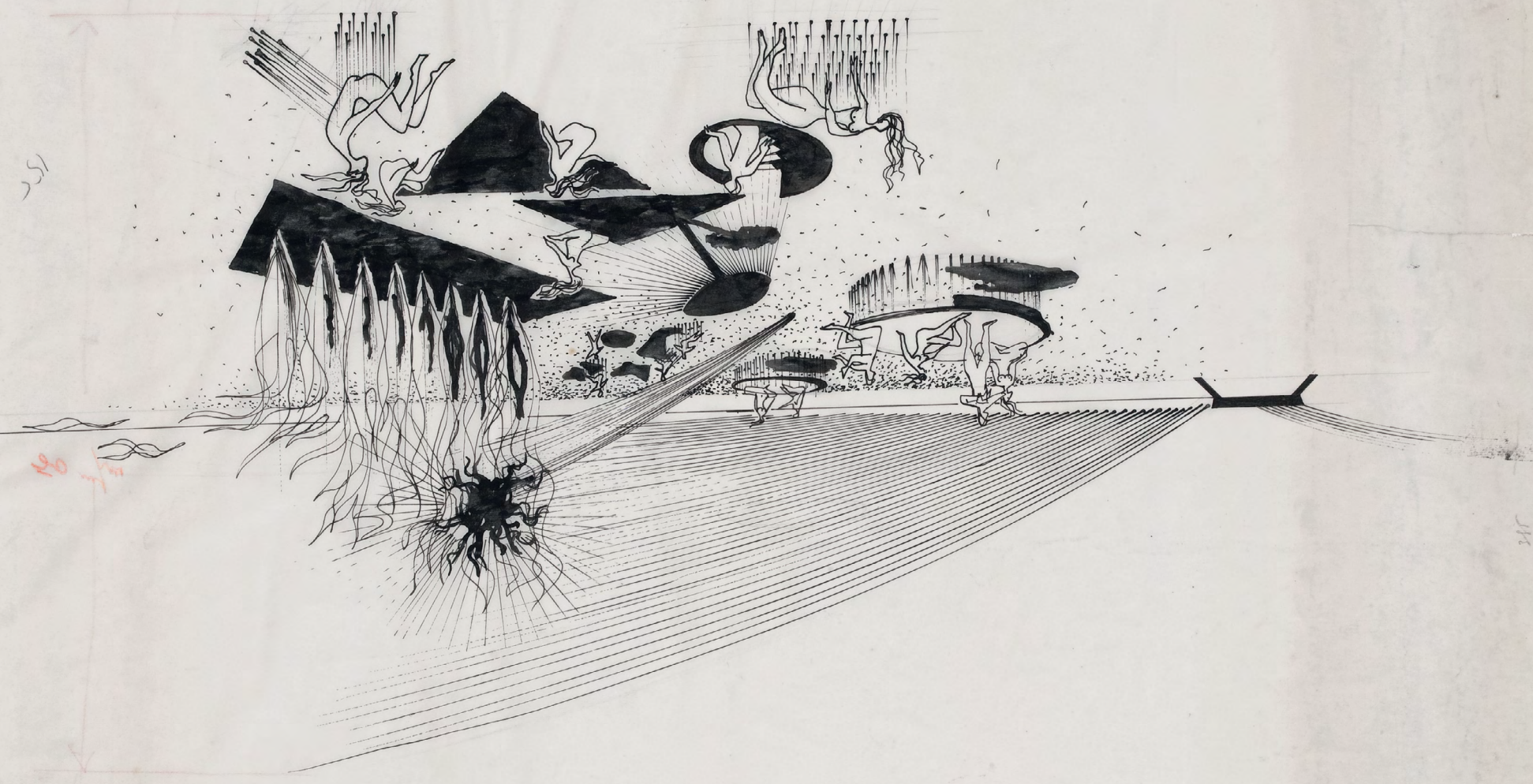
Milieu: 'man the scholar' versus 'living man'

In his essay 'The Living and its Milieu', philosopher Georges Canguilhem explores the relationship between humans and their environment.[18] Canguilhem points out three possibilities. The first is a median or in-between condition. The second exists as a fluid of suspension or unison. And lastly, the third relational possibility is defined as a life environment relative to a centre.

> The milieu that is proper to man is the world of his perception, that is to say the field of his practical experience in which his actions, oriented and regulated by values that are immanent to his tendencies, carve out certain objects, situate them relative to each other and all of them in relation to himself. This occurs in such a way that the environment he is supposed to be reacting to finds itself originally centred in and by him.[19]

In the passage above, Canguilhem concludes that the third relationship, that of the human as the centre of his or her universe remains our privileged view. Under this worldview, the milieu on which the organism depends is structured and organised by the organism itself and his or her demands on the surrounding environment.[20] Fluid symbiosis between human and environment is understandable only to the intellectual-human, or a character Canguilhem defines as 'man the scholar'. 'Man the scholar' constructs a universe of phenomena and laws held as absolute, yet 'living man' denotes a higher degree of reality to his own perception and demands.

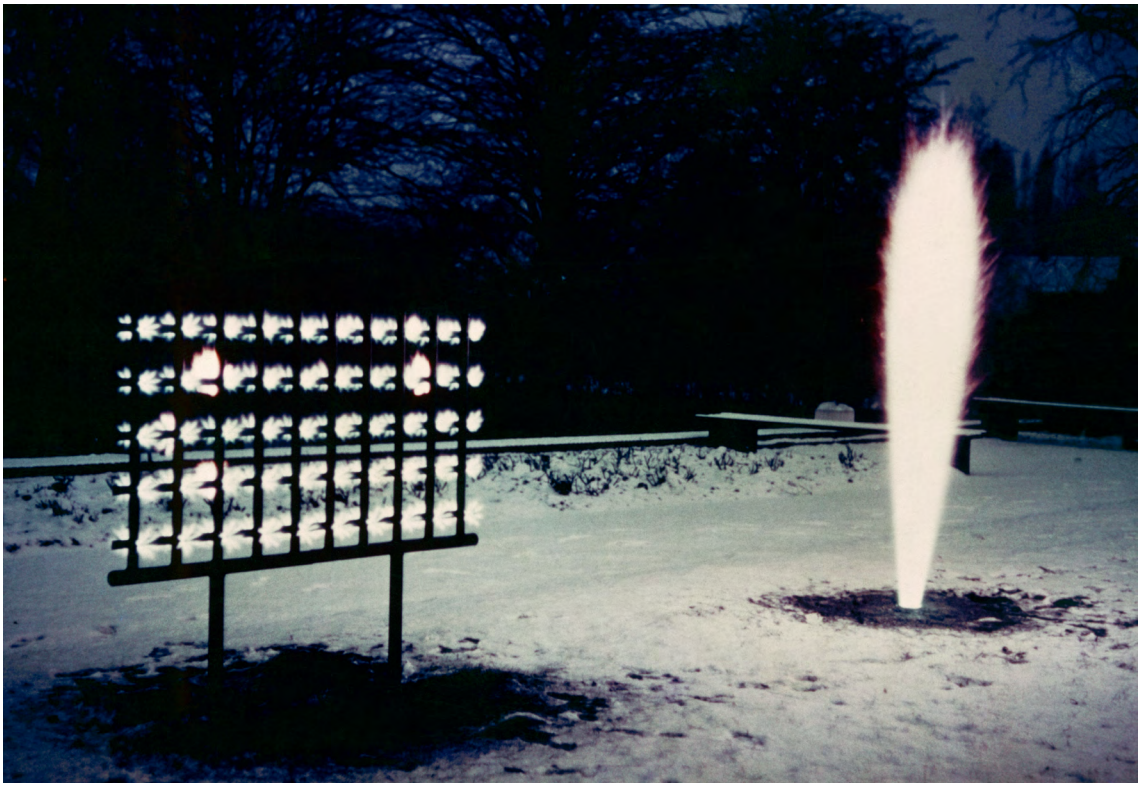
Yves Klein, *Cité climatisée, toit d'air, murs de feu, lit d'air*, (Climate Controlled City, Air Roof, Fire Walls, Air Bed), (D 93), 1961, with the collaboration of Claude Parent. Ink and pencil on tracing paper 50 x 68 cm© The Estate of Yves Klein c/o ADAGP Paris / Claude Parent.



The intellectual-human understands climate-change. Furthermore, the intellectual-human values the criticisms explored by Archizoom, Superstudio, and Klein as well as their vision for an adaptive-human. On the other hand, the living-human understands comfort and the reality of her existence. And, at present, she understands hunger, uncleanliness, coldness and hotness. She does not enjoy the tools necessary to regain her adaptive sensibilities. The living-human understands the convenience of her home, her environmental bubble. While the intellectual-human may understand himself and his decisions as part of an in-between or fluid relationship to his larger environmental system, the sentient living-human will, at large, continue to opt for the conveniences known to him through his perception as the centre of his world.

The architectural container speaks to the human understanding as centres of a subservient environment. Such technological advances can be most easily organised by the exigent-human and his demands immediately satiated by the surrounding environment. Air Architecture's vision appeals to the intellectual-human and his potential to become an adaptive-human. Can architects employ the architectural imagination, as Klein has, to develop the human inhabitant into an adaptive, yet, unquestionably self-centred human? Via play and giving rather than taking.

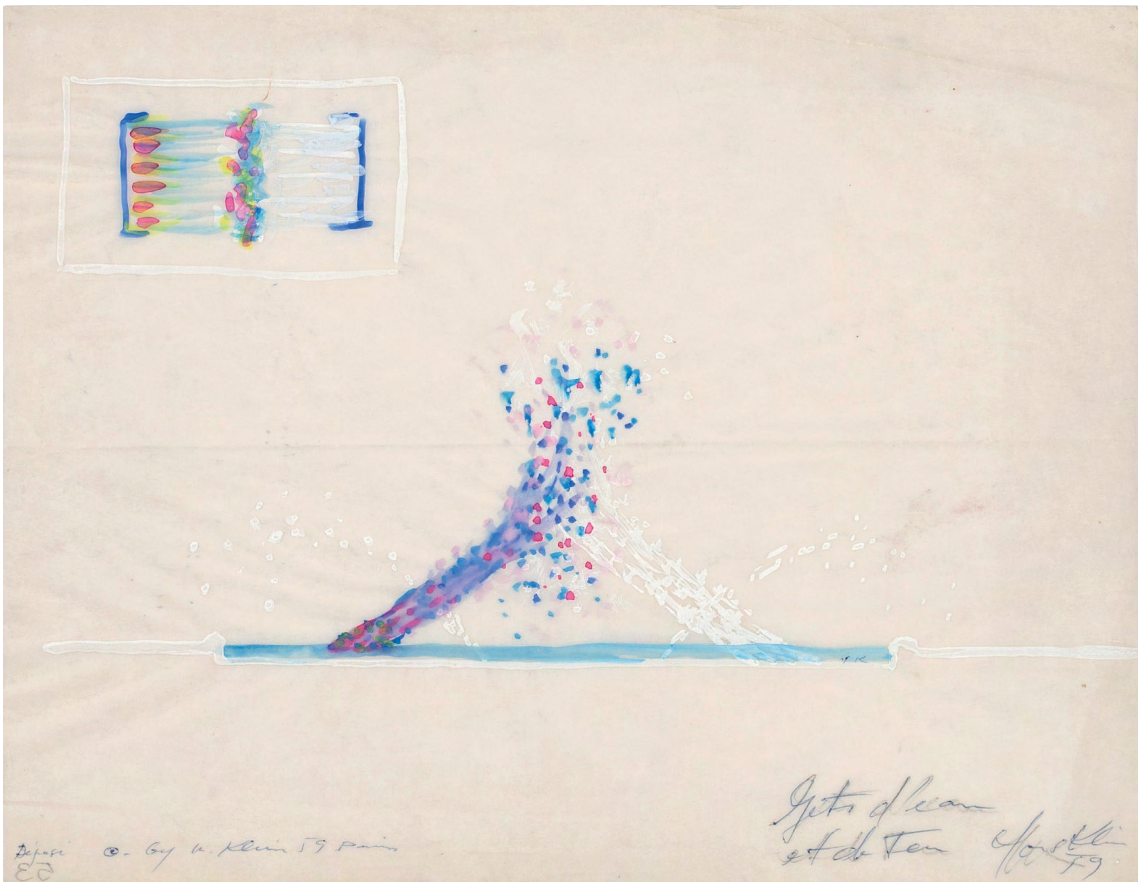
Yves Klein, *'Mur de Feu' et 'Colonne de feu' lors de l'exposition 'Yves Klein Monochrome und Feuer'* ('Wall of Fire' and 'Column of Fire' during the exhibition 'Yves Klein Monochrome und Feuer'), Museum Haus Lange, Krefeld, January 1961. 'Wall of Fire' composed of fifty Bunsen burners and gas, 'Column of Fire' composed of a burner and gas. © The Estate of Yves Klein c/o ADAGP, Paris. Photo: © All rights reserved.



Evolution through play

The transformation between the exigent-human and the adaptive-human becomes even more critical to our survival as established climate patterns become more drastic world-wide. Sloterdijk and Canguilhem help us understand the self-centred human, while Klein and Constant provide the playful imagination for enticing him into a new way of life – an adaptive-human. Based on the existing relationship between human and environment, the advent of a new society as foreseen by Klein will require taking the self-centred human into account. To transform shelter, Klein employs cultural, psychological, and biological engagement in order to find a playful space in which to intervene by giving rather than taking. If architecture enables human activity and behaviour, an understanding of current rules for social, political, and anthropological engagement is essential in the creation of a new epistemic condition. As Klein's vision for the climactic imaginary wishes to reclaim human sensitivity to their surrounding environment, Architecture can intervene through playful space to develop its inhabitant into an adaptive, yet, unquestionably self-centred human. As architects, we can influence space, not through utilitarian, purely technological or conservation proposals, which have fallen into the repertoire of the consulting engineer, but through a rethinking of formal, sensory, and spatial provocations. Air Architecture's minimal, immaterial architecture can only exist in a world where humans have acclimatised to their environment. Architecture must no-longer fulfil its practical role. Curiously, today, the challenge for realising Air Architecture is not technical, but rather cultural or ideological. The agency of architecture can only take on this challenge as a spatial, formal, and sensory feat and not a purely technological or systems based one. In a world where reduction and scaremongering tactics do not accomplish the necessary change to halt or reverse climate change we must think towards a more enriched human existence, for a thriving, strengthened human race. Klein uses architecture – the giving of a joyful experience, the imagining of a new worlds, to encourage human adaptation through an employment of playful mechanics.

Yves Klein, *Jets d'eau et de feu,* (Water and Fire Jets), 1959. Watercolor, gouache and pen on tracing paper. 23.7 x 30.7 cm.


Jets d'eau
et de Feu
Déposé © - Guy W. Klein 59 Paris

Our current architectural forms are recognised as containers for technological equipment that comforts, conditions, and leverages the current environment in service of its human host. Subverting the typical role for technology to serve humankind, Air Architecture utilises mechanical equipment in the service of the built environment itself. Leaving behind the human's practical needs, the project challenges architecture's foundation as the purveyor of shelter for a vulnerable human. Air Architecture imagines a world in which the human has advanced his or her capabilities, psychologically, culturally, or biologically, yet our current condition of architecture – a subservient force – weakens humanity's future survival due to reduced physical and psychological resistance to varying climatic situations. Architecture must function, and fulfil our current human needs, but can it at the same time stimulate the human capacity to adaptation? If world climate is changing, is architecture's role not only to temper our current environment, but also to temper the human to combat the difficulties of a future world to come?

Le Rêve du Feu (The Dream of Fire), ca. 1960. Black and white photograph. 24 x 18 cm. Photo: © Harry Shunk and Janos Kender J.Paul Getty Trust. The Getty Research Institute, Los Angeles. (2014.R.20) © The Estate of Yves Klein c/o ADAGP, Paris.

Notes

This project was made possible by funding support from the Taubman College of Architecture and Urban Planning at the University of Michigan.

1. See Ellen Lupton's discussion of Reyner Banham's use of the term 'another culture' in the introduction with J. Abbott Miller to their *The Kitchen, the Bathroom, and the Aesthetics of Waste: A Process of Elimination* (New York: Princeton Architectural Press, 1992), 8.
2. Air Architecture is a collection of works of art and texts describing an architecture project undertaken by Yves Klein and Claude Parent during the late 1950s and early '60s. There have been subsequent exhibitions and books titled *Air Architecture*, but I refer to more generally to artists' project and ideas.
3. Yves Klein and Werner Ruhnau, 'Project of an Air Architecture', in *Yves Klein: Air Architecture* (Ostfildern: Hatje Cantz Publishers, 2004), 77.
4. Yves Klein, 'Immaterial Dwellings, in *Yves Klein: Air Architecture* (Ostfildern: Hatje Cantz Publishers, 2004), 28.
5. Klein, 'Project of an Air Architecture,' 77.
6. Peter Sloterdijk, 'Cell Block, Egospheres, Self-container', *Log: Observations and the Contemporary City,* no.10 (Summer/ Fall 2007): 92.
7. Ibid.
8. Ibid.
9. Archizoom Associates, 'Residential Parkings: No-Stop City Climatic Universal System', in *Exit Utopia*, ed. Martin Van Schaik (Munich: Prestel Pub, 2005), 181.
10. See Peter Sloterdijk's use of the term 'egosphere' in 'Cell Block, Egospheres, Self-container', 92.
11. Johan Huizinga, 'Play-Forms in Art', in *Homo Ludens: A Study of the Play-Element in Culture* (London: Routledge and Kegan Paul, 1949), 167.
12. Ibid., 158.
13. Ibid., 166.
14. Klein, 'Project of an Air Architecture', 77–84.
15. Ibid., 77.
16. Ibid.
17. Gail Cooper, 'From Luxury to Necessity', in *Air-Conditioning America: Engineers and the Controlled Environment, 1900–1960* (Baltimore: Johns Hopkins University Press, 1998) 140–64.
18. For the purpose of clarity, Canguilhem's gendered terminology, standard at the time of his writing, has been retained here. '*Le Vivant et Son Milieu*' first appeared as a chapter in *La connaissance de la vie,* first published in French in 1952.
19. Georges Canguilhem, 'The Living and Its Milieu' in *Grey Room 03*, trans. John Savage (Cambridge: MIT Press, 2001), 26.
20. Ibid.

Biography

Elizabeth Gálvez is a Mexican-American architectural designer and educator. She served as the 2018–19 William Muschenheim Fellow at the University of Michigan's Taubman College. She received her Master of Architecture with a concentration in History, Theory and Criticism from the MIT School of Architecture and Planning, where she was awarded the Department of Architecture Graduate Fellowship. After completion of her graduate coursework, she studied in Austria as the recipient of the Seebacher Prize for the Fine Arts under sponsorship of the American Austrian Foundation. Since 2016, Elizabeth has taught at the Boston Architectural College and has served as a critic on reviews at MIT, the BAC, Taubman College, RISD, and the Harvard GSD.

Vissual Essay

On Display: The Strategy of 'Flattening' in the Selfie Museum and its Relevance for Architecture

Nitzan Zilberman

Welcome to the Selfie Museum!

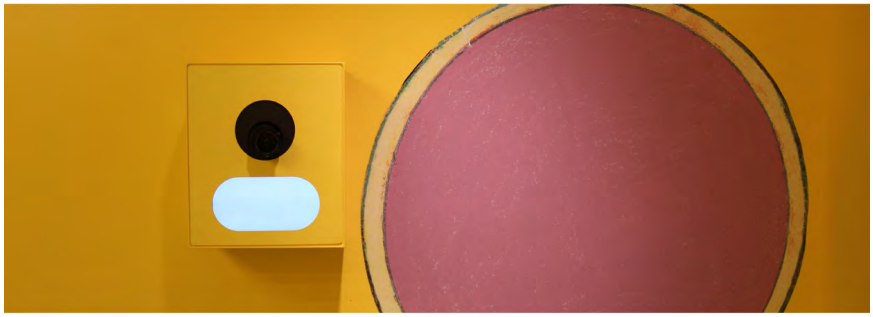
Traditional display systems, whether the theatre proscenium, museum diorama, cinema screen or shop vitrine, once served as a mediated moment between the spectator and the object on display. Holding two functions – division and camouflage – they separated the subject and the object on the one hand, and concealed all that is not meant to be seen on the other. In an increasingly digital world, governed by the 'experience economy', display systems necessarily transform two-dimensional representations into immersive experiences.[1] As these systems become increasingly enveloping, the division between subject and object is disregarded, yet the camouflage remains prevalent. This results in a world without a fourth wall but with a still-hidden backstage. Instead of attempting to rebuild the fourth wall, which has irreparably crumbled, I seek to fully dissolve a contemporary display system in order to reveal its apparatus. I will be doing this by dissecting the Selfie Museum, both as an architectural typology and as a socio-political entity.

The Selfie Museum is a physical building designed to produce virtual images. In the last three years more than twenty-five Selfie Museums have opened in the United States. These highly popular destinations consist of colourful sets that are arranged in a one-way maze typology, where visitors circulate from one room to another and take selfies against their chosen backdrops. Apart from the visitors' mobile phones, which participate actively in space, non-mobile cameras are placed in front of each set, inviting visitors to scan a card containing their personal data, have their photographs taken, and receive them branded with the museum and room logo moments later. [Fig. 1] These images are then distributed via social media, thereby creating an immediate distinction between the experience of the space and its sponsored representations. Due to the huge success of these museums, the distribution of these images, no matter what they display, are a way of claiming one's symbolic capital and stating 'I was here' while dissolving the very notion of what 'here' is since the selfie sets are, in actuality, nowhere and everywhere simultaneously.

Although the Selfie Museum as a typology has many precedents, the history of the contemporary Selfie Museum can be said to have started with the Museum of Ice Cream (2016), the first selfie destination to include the word 'museum' in its title. When asked why 'museum' was the appropriate word to use, the museum's founder Maryellis Bunn answered, 'We were looking at names and museum was something that people understood.'[2] While conventional museums most commonly display works of art, manufactured goods, and items from nature, selfie sets display rooms that have been commissioned to designers, sponsoring brands, and non-profit organisations.[3] The result is displays in which design, politics and advertising collide. The converging agendas of these three industries serve as a backdrop to the visitor's selfies, while actually embodying the foreground. For this reason, the Selfie Museum is not only a display of the museum visitors and their favourite selfie set, but a display of the consumerist society in the twenty-first century; our obsession with the image over the experience, our desire to make the physical look like the digital and our willingness to give our bodies to advertising and our data for archiving.

Fig. 1: Fixed cameras in the Selfie Museum: Flower People by James Rosa of LAND Gallery, selfie set no. 1, the Color Factory, New York, 2018. Photo: author.


SCAN YOUR
CARD HERE

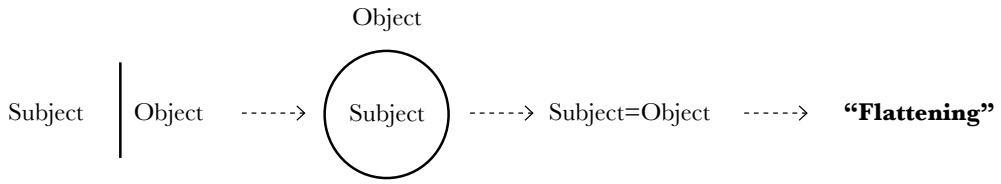



STAND HERE


FLOWER PEOPLE
JAMES

In her recent book *Surface: Matters of Aesthetics, Materiality, and Media*[4], the media theorist Giuliana Bruno describes the sensation of viewing works of art that use projection methods, such as Olafur Eliasson's *The Weather Project*[5] and James Turrell's *Ganzfeld*[6], as one of 'public intimacy'.[7] Bruno indicates how 'in the digital age we start thinking of the visual in a material way' and explains how two-dimensional surfaces have now been transformed into three-dimensional, emotional and affective experiences. I would argue the opposite: in the digital age, we have begun to think of the material in a visual way. Our bodies put on display demonstrates what I refer to as a 'flattening' rather than Bruno's 'materialising'. [Fig. 2] I see flattening as a liminal condition that helps describe material moments in the Selfie Museum and social moments in life. My definition of flattening is informed by computer graphics, in which flattening is a process whereby many separate layers are combined into a single image. This is in contrast to the more common binary view of flattening in which there is either a flattened or an unflattened state. I will highlight two examples from The Color Factory Selfie Museum in New York (2018) that illuminate my definition of flattening: the first is what I call the 'two- and the three-dimensional' and the second example is what I call 'pictorial and the panoramic'. [Fig. 3]

Fig. 2: Flattening diagram. Source: author.



Production

Material flattening:

1. To think of 3D in 2D (Shape)
2. Panoramic in pictorial terms (space)
3. The kinetic as a static moment (time)

+

Distribution

Social flattening:

1. The way we display (Culture)
2. The way we perceive our bodies (Self)
3. Tourism in the 21st century (Experience)

Chapter 1 - Material as Visual

The Selfie Museum as a cultural destination

Selfie set:
"Balloon wishes", Selfie set #4 The Color Factory, New York City, 2018
Historical display method:
Shop vitrine
Issue: Museum display, culture
Questions:
How is the Selfie Museum influencing the way we display art and the meaning of the cultural institutions at large?

Can flatness become an architectural opportunity? Can redaction, for instance, serve as a technique to blur the lines between two and three dimensions?

Chapter 2 - The exhibitionary complex

The Selfie Museum as a mechanism of display

Selfie set:
"Ball pit" The Color Factory, New York City, 2018
Historical display method:
Cyclorama
Issue:
Branding, Surveillance
Questions:
Who is on display in the Selfie Museum and how does this affect the way we perceive our bodies?

Architects are increasingly designing with the pictorial, instead of the spherical view in mind. How will this spatial shift in perception shape the aesthetics of future construction?

Chapter 3 - Staged authenticity

The Selfie Museum as a tourist destination

Selfie set:
"Complementary Compliments" The Color Factory, New York City, 2018
Historical display method:
Daguerreotype and diorama
Issue:
Symbolic Capital, Tourism
Questions:
What do we lose and gain by converting the temporal experience into a set of images and to what degree was an "authentic" experience ever desirable?

Nowadays many architects prefer to refer to themselves as "experience designers". How will this affect the agency of the architect?

Two- and the three-dimensional: the Selfie Museum as a cultural institution

In a classic shop vitrine, the transition between dimensions is vibrant, and there are several moments in which two and three dimensions merge, both in the image of the vitrine and in its commercial appeal. The shop vitrine became an integral part of city life in the early nineteenth century, first in London and Paris and later in Manhattan and Chicago. The very first displays were confined to the width of the standard shop and framed in decorative iron. Technological advancements such as the production of large sheets of plate glass widened storefronts, along with their displays, and, thus made the gap between the consumer and the products less apparent.[8] Concurrent to the emergence of these new technologies, urban boulevards became a popular phenomenon in the city and public life was relocated to the street. Among the first stores in Manhattan to develop window shopping as a distinctive leisure activity was the department store Macy's, whose annual Christmas window arrangement became a popular downtown attraction. In the 1940's, the Manhattan department store Bonwit Teller realised they could draw a wider crowd by commissioning artists to design their window displays. This led to collaborations with artists such as Salvador Dali [Fig. 4], Andy Warhol and Jasper Jones, whose famous representation of the American flag was, surprisingly, exhibited in a Bonwit Teller window display before it became the work of art *Flag on Orange Field* and only later exhibited in a conventional museum.[9]

Fig. 3: Layout of the Color Factory, New York, 2018. Source: author.

Fig. 4: Salvador Dali window display in a Bonwit Teller department store, New York, 1939. Photo: Google open source images.

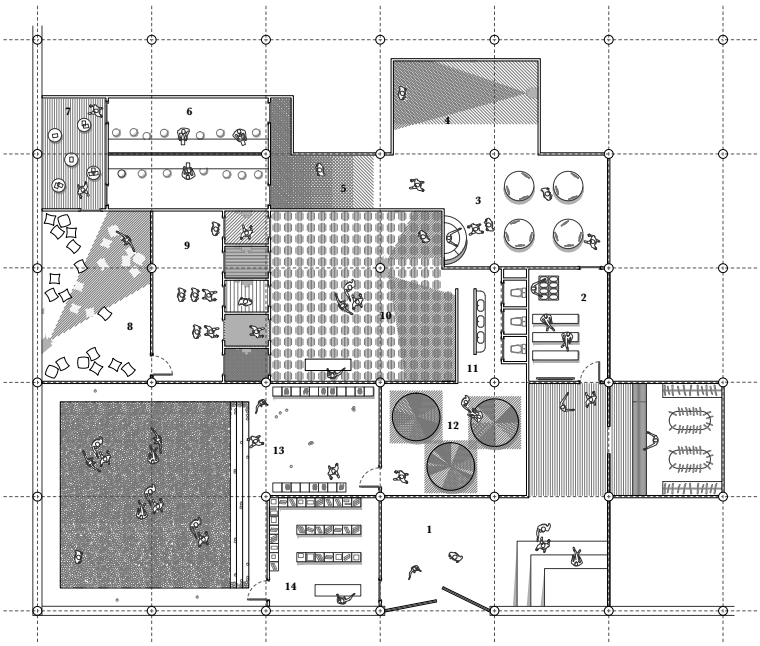


Fig. 3

Key:

1. Entrance and waiting hall.
2. Projection room showing a video that explains the selfie museum rules of conduct.
3. Data booths where you enter your details in order to receive a rectangular card you can scan in any one of the fixed cameras and get the picture sent straight to your e-mail account.
4. Room #1 by artist James Rosa.
5. Hallway shown in image (9).
6. Room #2 by artist Phillip Man.
7. Room #3 by artist and musician Lakwena+Abimaro.
8. Room #4 sponsored by children's clothing brand Gymboree.
9. Room #5 individual photo booths.
10. Room #6 sponsored by makeup brand Maybeline.
11. Restrooms.
12. Room #7 by artist Andrew Kuo.
13. Room #8 Ball pool.
14. Gift shop.

Fig. 4

This blurred line between space, image, commerce and art, is exemplified in the fourth room of the Color Factory Selfie Museum called Balloon Wishes, and which is sponsored by the children's clothing brand Gymboree and designed by the museum's three artistic directors. In this set, all features of architecture are treated with similar camouflage; doors, air conditioners, pipes and exit signs are washed away in hot pink and orange. The redaction of the space using colour eliminates detail and creates the illusion that the three-dimensional space is in fact a flat coloured canvas. [Fig. 5] The Selfie Museum also reverses this process by strategically placing the camera booths in front of a corner or a column to create an effect of a layered space rather than that of a flat backdrop, resulting in a photograph of a space resembling a bump-map.[10] [Fig. 6] By using this method, the Selfie Museums make the case that they are not simply a green screen into which anyone can Photoshop themselves, but a physical and constructed spatial occurrence. [Fig. 7] Just like the shop vitrine, the room and the photograph are flattened one on top of the other and are recognised as both a space and as an image; as two-dimensional and as three-dimensional; as both art and commerce.

Fig. 5: Photo: "Color Factory NYC - Balloon Wishes sponsored by Gymboree" (https:flickr.com) by Dave Pinter, CC BY-NC-ND 2.0

Fig. 6: A layered space rather than a flat backdrop: Branded photograph for Gymboree taken in the space by a fixed camera and sent directly to the visitor's email account. Photo: fixed camera.

Fig. 5

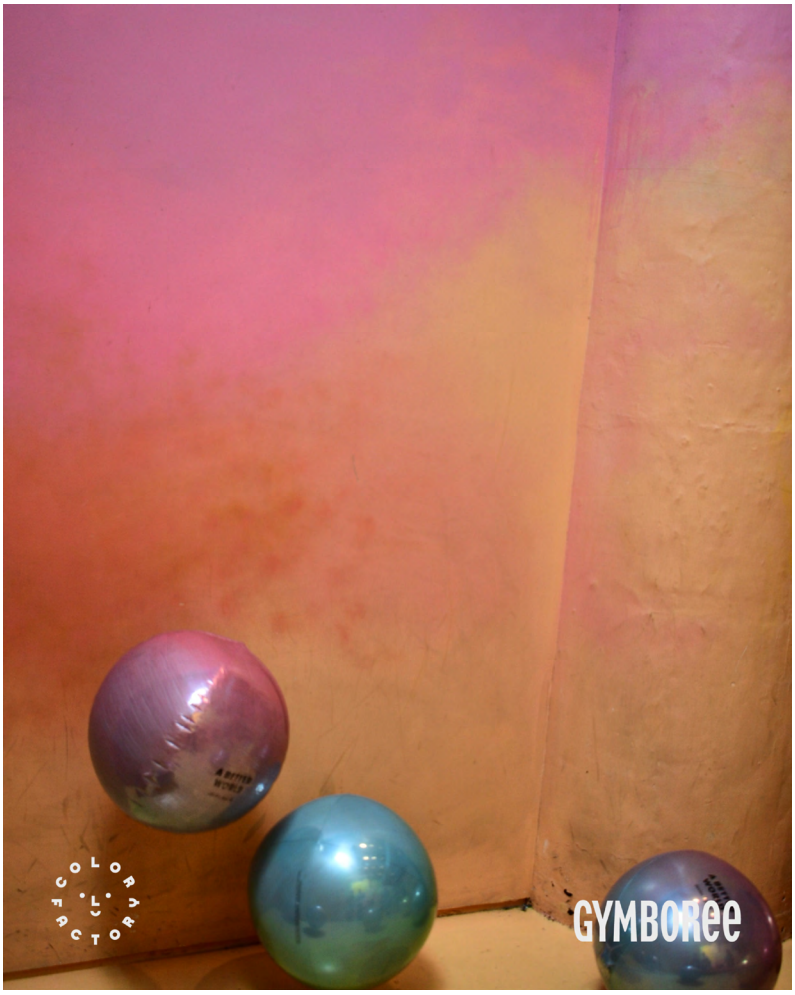


Fig. 6

While famous images from pop art are often a visual reference for the production of Selfie Museum sets, the displays of art museums are now influenced and shaped by the ever-changing circulation of these sets on social media. The Cooper Hewitt Design Museum, for instance, incorporated an 'immersion room' that allows visitors to browse the museum's wallpaper collection digitally, and project it onto the walls of the room, enabling a backdrop for visitor's selfies.[11] By contrast, in the Museum of Selfies in downtown Los Angeles (2018), a full-size version of Van Gogh's *Bedroom in Arles* that visitors can enter into has been constructed. Not too long ago, museums banned camera flashes due to possible harm the light might cause to the art; today, instead of penalising, museums capitalise on visitor's photos and use social media tagging to help promote and advertise the institution.[12] This commercial and cultural shift has significantly changed the curatorial process as museums leverage the allure of selfies to attract larger crowds. One might think that contemporary museums aim to display the museumgoers rather than the works of art and privilege the preservation of the photographed moment rather than that of the painting.

Fig. 7: Not simply a green screen into which anyone can Photoshop themselves, but a physical and constructed spatial occurrence: Instagram uploads using the #balloonwishes hashtag. Photos: Instagram.


stephanieroales • Follow
Color Factory
stephanieroales Color Factory pop up fun in NYC. Adult playground.
50 likes
Add a comment...

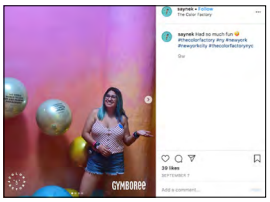

katherinealice • Follow
Color Factory
katherinealice Partied @colorfactoryco tonight with @mymemoirbiscoosa !! Such a happy place. 🎉 🎉 #ColorfactoryNYC
katherinealice .
174 likes
Add a comment...


blannie3331 • Follow
The Color Factory
blannie3331 Thanksgiving, the time when people learn to give thanks to the loved ones !!
157 likes
Add a comment...


dpophoric • Follow
Color Factory
dpophoric Feeling like a kid again celebrating my born day at this synesthetic color experience! #ColorFactory
152 likes
Add a comment...


truecolors_nyc • Follow
Color Factory
truecolors_nyc 今日も楽しかったな！ 最は連れても見ると嬉 🥰 ✨
110 likes
Add a comment...


juli.mm • Follow
Color Factory
juli.mm Volviendo a ser niña ❤
#ColorFactoryCo
27 likes
Add a comment...


saynek • Follow
The Color Factory
saynek tried so much fun 😍
#thecolorfactory #ny #newyork
39 likes
Add a comment...

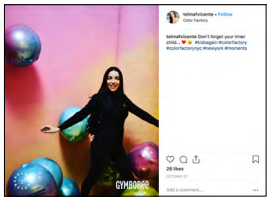

alexapassalacqua • Follow
Color Factory
alexapassalacqua ballooning around
#colorfactorynyc #balloonroom !!! ✨
caesy_kroffer This picture looks amazing!
chayamela GORGEOUS! We love your style Alexa! Would you consider yourself a statement earring or classic stud kinda girl?!
36 likes
Add a comment...


lkhaly • Follow
Color Factory
lkhaly Party of four 🎈 #colorfactory
#colorfactorynyc #nyc #newyork
#gondolove
designs4seasons @anagramballoons
50 likes
Add a comment...


molliparkermakeup • Follow
Color Factory
molliparkermakeup having a ball of a time
#colorfactorynyc
#colorfactory #colorfactorynyc
#thecolorfactory #nyc #newyork
#gondolove
designs4seasons @anagramballoons
56 likes
Add a comment...


modernginlmusings • Follow
Color Factory
modernginlmusings "When you wish upon a balloon, you find yourself in the ombré room?"
#colorfactory #nyc #colorfactorynyc
designs4seasons @anagramballoons
24 likes
Add a comment...


maxkhowe • Follow
Color Factory
maxkhowe A E R O
maxkhowe •
#colorfactoryco #colorfactory
#colorfactorynyc #colorfactory#
#thecolorfactory #colorfactorynyc
#nyc#yk #nyc1. #newyork #NYC
#newyork_world #beautifulbestinations
#nycnightlife #nycnightlife
#nycexploring #photooftheday
#thisisfashionweek #amfshiivuals
#aesthetics #earthfocus #neco
#travelling #instagood #primechots
#travelphotography #ignewd
#hypebeast #TWINIT #AISLT #HBT
105 likes
Add a comment...


telmafulcante • Follow
Color Factory
telmafulcante Don't forget your inner child... 💜 ✨ #colorgain #colorfactory
#colorfactorynyc #newyork #moments
29 likes
Add a comment...

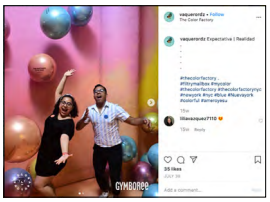

jordancreates • Follow
Color Factory
jordancreates The @colorfactoryco is my happy place 🎈 🎈 ✨ 🎉 ✨
#colorfactory #colorfactoryco
#colorfactorynyc #nyc #colorgain #soho
#happy #balloons #balloonwishes
#joyunrightotime #easily #newfun
#jordancreates #mondayinvitation
#colorfactory #colorfactorynyc #nyc#pink
#colorfactorynyc#nyc #What's a fun photo? Where is this located?
jordancreates @throwtheweirdgroup It's the Color Factory on Spring St. in NYC. I definitely recommend it!
creeditfriends ^^
peace.roots.reflexology
ice.cream.today great page!
jordancreates @ice.cream.today thank you!
96 likes
Add a comment...


nesiz • Follow
Color Factory
nesiz I completely forgot @erinsalychris was #colorfind until they made us draw each other 🤣 #halloweenglaze
#halloweenglazeinsanewe #colorfactory
#colorfactorynyc #whoopsie #fun #fetch2
#nyc #picture #picture #color #pop #gay
#lesbian #gay #gifts #rainbow #rainydays
#thecolorfactory
#colorfactorynyc#nyc #What's a fun photo? Where is this located?
nesiz @janeeeeeeeeeemusic lol we're never off the same date and they're always sold out at night!
29 likes
Add a comment...


arianna.paulina • Follow
Color Factory NYC
Edit
OR_OR_dawn Thai 3rd pic
6hw Reply
View replies (1)
OR_OR_dawn I JUST NOTICED YOUR NAILS
6hw Reply
View replies (1)
anagramballoons
6hw 1 like Reply
alicky_kaz @nikki.iversky @gabbs_iversky this place
23w Reply
115 likes
AUGUST 29, 2018
Add a comment...


laylaylana • Follow
The Color Factory
laylaylana Something colorful.
#thecolorfactory#colorfactorynyc #thecolorfactory
#funwithbeds
2d
10 likes
3 DAYS AGO
Add a comment...


swag_pajiyun • Follow
swag_pajiyun #thecolorfactorynyc 好!
#jiyunjiyun722 好活泼的样！
10 likes
JULY 23
Add a comment...


vaquerondz • Follow
The Color Factory
vaquerondz Expectative | Realidad
#thecolorfactory
#fittymalibus #myolor
#thecolorfactory #thecolorfactorynyc
#newyork #nyc #blue #bluenyork
#colorful #amelyaku
35 likes
JULY 20
Add a comment...


vaquerondz • Follow
Color Factory
vaquerondz Colors .
#thecolorfactory .
#fittymalibus #myolor
#thecolorfactory #thecolorfactorynyc
#newyork #nyc #blue #bluenyork
#colorful #amelyaku
22 likes
JULY 21
Add a comment...


_nacho.average • Follow
The Color Factory
#pop
#photography
#bichbaggin
#blackfamilies
#blackfamilygoals
#bestblackwomen
#bestblackmen
#mommyanddaughtergoals
#thebestliferevolution
#charmbaboinyhair
#badbrownwomen
#blackbeauty
#photography
#blackbeautyblog
#photoshoot
#thecolorfactory
#thecolorfactory
#mommyanddaughterphotoshoot
#mommyanddaughterfashion
70 likes
OCTOBER 14
Add a comment...


carolimartz • Follow
The Color Factory
carolimartz Wishes ar.
#colorfactorynyc
#NYC #thecolorfactory #newyork
#newyorkcity #manhattan #museum
#wishes #thecolorfactorynyc
#colorfactory #colorfactorynyc#nyc
#newyork #NYNCnewyorkcity #colors
#colorphotography #phoneshoot
#photography #instagrammers
34 likes
OCTOBER 7
Add a comment...


asadamonae • Follow
The Color Factory
View replies (1)
soleisam You're amazing!!
View replies (1)
lena_alkhadhi Hey what's up just checking in... Je did a just fish quote ursef
View replies (1)
call_mcg5wen Cool, kind AND BEAUTIFUL
View replies (1)
383 likes
SEPTEMBER 16
Add a comment...


allymcole • Follow
Color Factory
allymcole
allymcole #colorfactory
#colorfactorynyc
36 likes
AUGUST
Add a comment...


blancheeden • Follow
Color Factory
blancheeden VIDEO OF MY BIRTHDAY @colorfactorynyc OUT NOW! Link in bio #blancheeden
#thecolorfactory #thecolorfactorynyc
#thecolorfactorynyc#
5d
20 likes
Add a comment...


ivanmejiard • Follow
The Color Factory
ivanmejiard Todo es diversión!
#foto #city #fotografia #love #passion
#photography #photo #onephotoaday
#acting #actor #catalfo #nyc
#kellaporterualfo #happy
#ivanmejiard #ivanmejiard #bday
#newyork #usa #losangeles #NY
#colorfactory #color #newyork_ig
#newyorkcity #colorfactorynyc
#thecolorfactorynyc #color
39 likes
NOVEMBER 6
Add a comment...


bridgitk • Follow
The Color Factory Hat
bridgitk balloon wishes
#thecolorfactory #thecolorfactorynyc
#color #arrestlist #nyc #travelgram
#hiddentravel
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Pictorial and the panoramic: the Selfie Museum as a mechanism of display

A cyclorama is a panoramic painting on the inner facet of a cylindrical platform, designed to give viewers standing at its centre a 360° view of the painting. [Fig. 8, 9] From an observation gallery in the centre of the room, the cylindrical perspective creates the illusion that the viewer is on a beach overlooking the sea, on a hill overlooking a green field, or on a tower overlooking a city. A foreground of fake terrain around the viewing gallery hides the base of the painting and makes the illusion even more convincing. While the panoramic image encompasses the full extent of the circle, a pictorial moment is only one of its frames.

In 'The ball pool' selfie set in the Color Factory designed by artist Tamara Shopsin, the panoramic view is substituted with a pictorial view, transforming the complex space into one single image. [Fig. 10] An Instagram search for this specific room tag yields images that, although produced by different people, are nearly identical. [Fig. 12] Combined in photogrammetry, these images create a homogeneous overlap, while the few photographs that have captured a different perspective are dismissed. [Fig. 11]. Using the same tool to combine ordinary photographs taken during a site visit enables the reconstruction of the entire space. [Fig. 13] Just like the cyclorama, the panoramic and the pictorial views are collapsed into one another, thereby creating a flattened space where the solid physicality of infrastructure and dissipating magic are dismissed by the eye of the lens.

Fig. 8, 9: A large cylindrical tank-shaped building with a 42 feet high roof, the painting stretched around its interior wall: The Brooklyn Gettysburg Cyclorama, Paul Philippoteaux, Chicago, 1883. Photo: Google open source images.

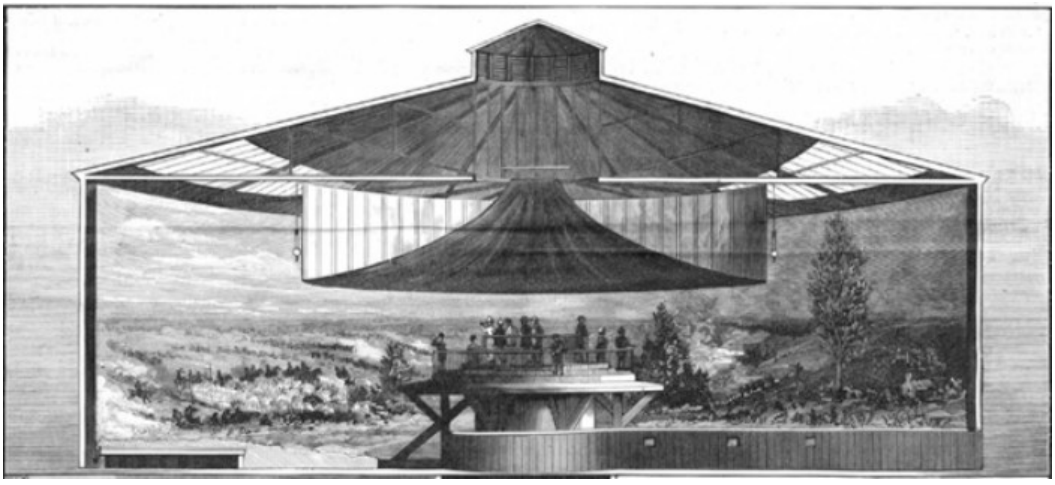

Fig. 8

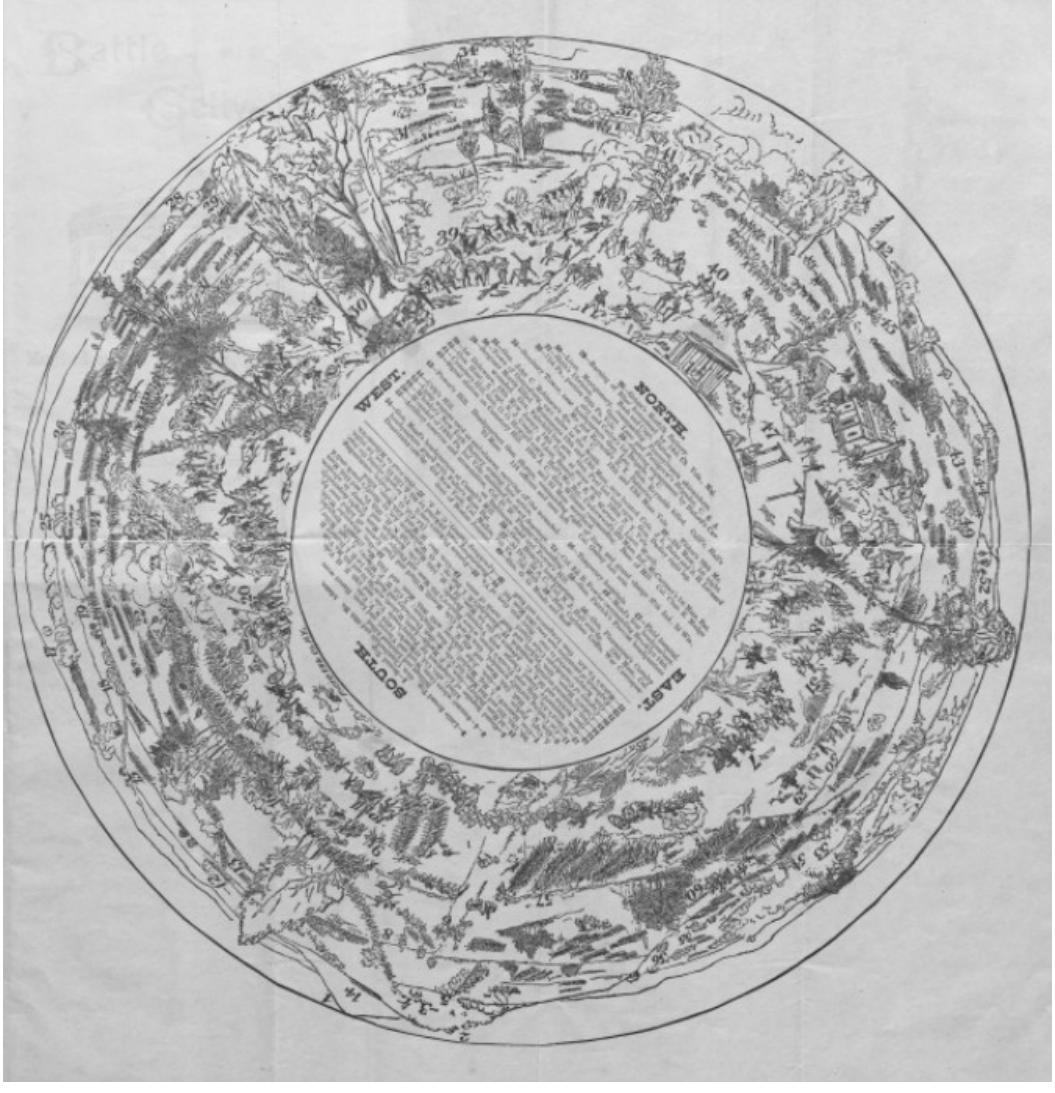

Fig. 9

The panoramic view has been addressed in some canonical projects in architectural history. The logic of the panopticon, a system of control designed as prison buildings by Jeremy Bentham in the late eighteenth century, derives from the efficacy of the panoramic view. Although the guard has only one pictorial view, the scheme of the design enables him to have a 360° observation of all inmates at once. In *Discipline and Punish: The Birth of the Prison*, Michel Foucault uses the panopticon as a metaphor for modern disciplinary societies and their normalisation of pervasive observation.[13] The Selfie Museum's cameras, symmetrical sets, and spatial objects are watchtowers that silently indicate where to place our bodies in space and how to enjoy our time. These elements reflect our subordination to the new regime – not to the gaze of a person, but to the gaze of the selfie.

In *The Birth of the Museum*, the sociologist Tony Bennett introduces the exhibitionary complex where the exhibition is curated in a dual manner: as an act of a public display of works of art and as the place where the display of the audience occurs.[14] Bennett describes how in the eighteenth century, both the museum and the department store served as places to view not only the objects on display but also the crowd of one's peers. This act of power and control is made possible by the display-like architectural features such as mezzanine floors and transparent materials. The Selfie Museum takes on similar complexity by merging the object and the subject, and by placing only our bodies on display, cunningly advertising brands that appear in the photo with us. In this way, the Selfie Museum replaces the glass of the conventional window display with the screen of our phones, and the illuminated products with our own bodies, narrowing the self into what it really is – circulation and advertising. However, the subject is not only objectified in the Selfie Museum. Rather, this new advertising technique can also be seen as a twisted manifestation of the Hollywood dream of fame: elevating visitor's identities by transforming them into celebrities for the price of an admission fee. Who, then, is on display in the selfie museum: are these our bodies, advertising the brands that sponsor the different selfie sets? Is it our data, which we willingly hand over to both the commercial entity and to the social media platform? Or perhaps it is the people, returned home, revisiting the photos they have taken on their phones within this contemporary flattened space of the Selfie Museum?

Fig. 10: Photo: "Color Factory NYC - Into the Blue illustrations by Tamara Shopsin" (https://flickr.com) by Dave Pinter, CC BY-NC-ND 2.0

Fig. 11: Photogrammetry constructed out of fifty Instagram uploads with the #ballpool hashtag. Source: author.

Fig. 10

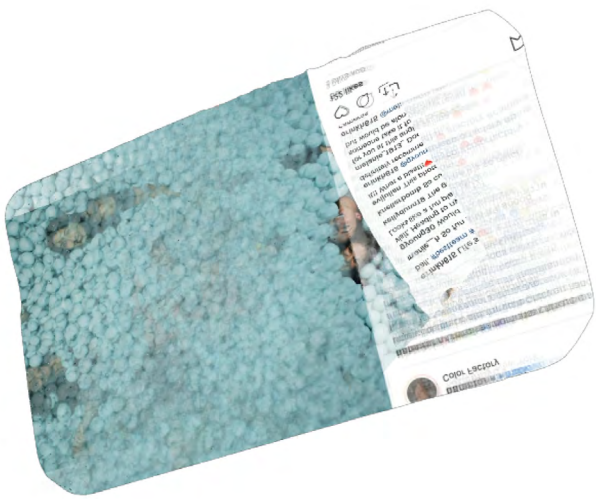

Fig. 11

Conclusion

Selfie Museums epitomise the popular turn from the display of objects to the display of environments, a change that blurs the line between the body and the display, and questionably absorbs the subject into the object. Immersive display systems now create ever-changing hierarchies between spectator and work of art, brand and consumer, and citizen and power structure. These nascent social and cultural dynamics result in conflicting object-subject relationships in which the main beneficiary is usually social media. In the Selfie Museum, subject and object are no longer the sole dichotomies that are conflated: physical space combines with virtual image; the still moment merges with the temporal experience; and two-dimensional projections are overlaid onto three-dimensional structures. This combination of apparent oppositions can be viewed as a potential new set of tools that can help rethink aspects of architectural design and offer terms such as 'redaction' or 'panoramic/pictorial' as legitimate types of aesthetics. Tying together the material flattening, which takes place in the production phase of the museums, with the social flattening, which happens during their distribution, can enable architects to materialise to the new complex social relations of our digitally-mediated world. Etymologically, 'to display' denotes to unfold, scatter, reveal. With this discussion, I hope to have unfolded new understandings about architecture using the Selfie Museum, as well as new observations on the Selfie Museum using the medium of architecture.

Fig. 12: The virtual space: Instagram uploads using the #ballpool hashtag. Photos: Instagram.

Fig. 13: Photogrammetry constructed out of fifty of my own photographs, taken during a site visit. Source: author.

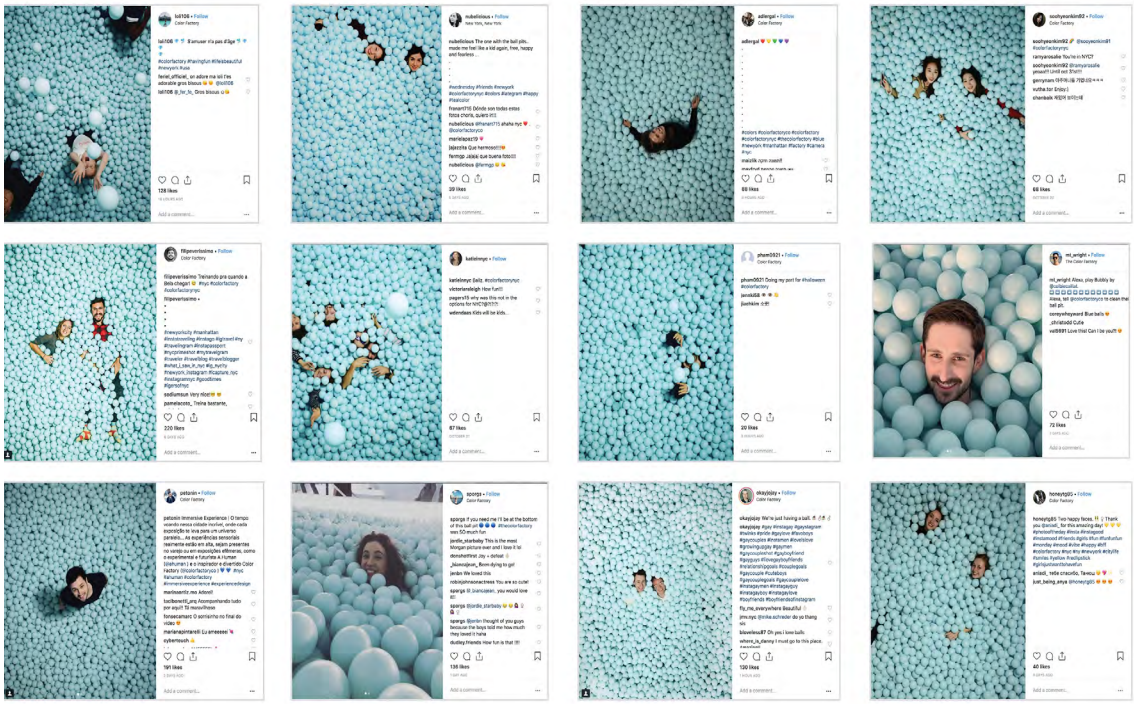

Fig. 12

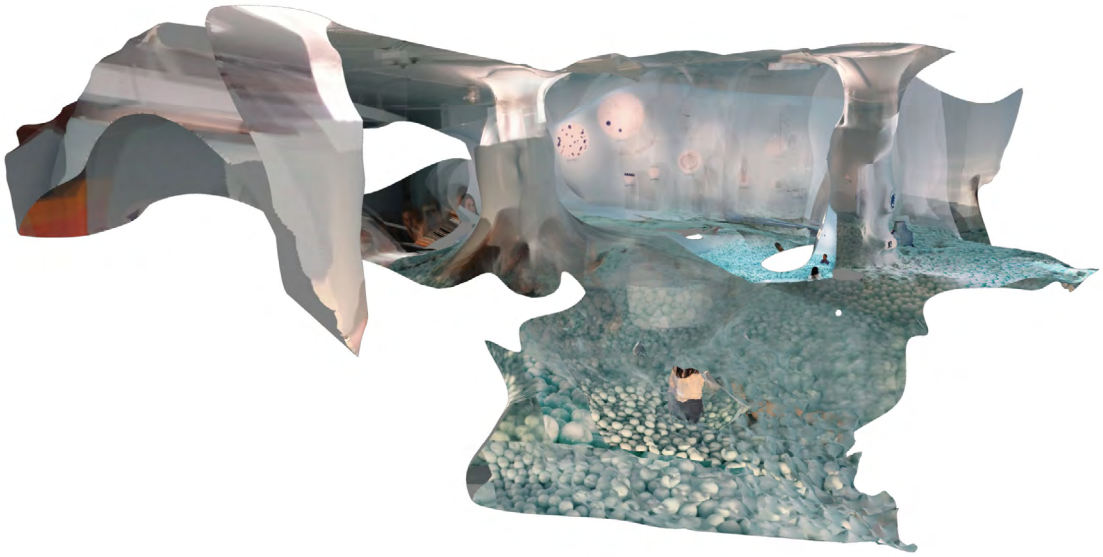

Fig. 13

Notes

1. Joseph B. Pine. and James H. Gilmore, *The Experience Economy* (Cambridge, MA, Harvard Business Press, 2011).
2. Susan Adams, 'The 25-Year-Old Behind The Museum Of Ice Cream', *Forbes Magazine*, 19 May 2017, https://forbes.com.
3. The non-profit organisation Planned Parenthood, for instance, was the sponsor of one of the rooms in the first edition of 29 Rooms, a Selfie Museum by digital media and entertainment company Refinery29, Brooklyn, 2017.
4. Giuliana Bruno, *Surface: Matters of Aesthetics, Materiality, and Media* (Chicago: University of Chicago Press, 2016).
5. Olafur Eliasson, *The Weather Project* (2003), Tate Modern, London.
6. James Turrell, *Ganzfeld* (2013), LACMA, Los Angeles.
7. Bruno, *Surface,* 143.
8. Wolfgang Schivelbusch, trans. Angela Davies, *Disenchanted Night: the Industrialization of Light in the Nineteenth Century* (Oakland, CA: University of California Press, 1998 [1988]).
9. Jasper Johns, *Flag on Orange Field* (1957), Museum Ludwig, Cologne.
10. Bump mapping is a technique in computer graphics for simulating bumps and wrinkles on the surface of an object. The result is an apparently bumpy surface rather than a smooth surface although the surface of the underlying object is not changed.
11. Cooper Hewitt, Smithsonian Design Museum, 'Immersion Room', 15 March 2016, http://cooperhewitt.org.
12. Vincent van Gogh, *Bedroom in Arles* (1888), Musée d'Orsay, Paris.
13. Michel Foucault, trans. Alan Sheridan, *Discipline and Punish: The Birth of the Prison* (London: Penguin Books, 1977 [1975]).
14. Tony Bennett, *The Birth of the Museum: History, Theory, Politics* (London: Routledge, 2009).

Biography

Nitzan Zilberman is an architect from Tel Aviv, currently based in New York. She has recently been awarded her Master of Science in Architecture Studies from the MIT School of Architecture and Planning where she has been researching different types of display systems, including the Selfie Museum. Apart from working in architecture offices such as Studio PEZ and HQ Architects, she has helped to curate, design and produce for various international exhibitions including the Brazilian Pavilion in the 2018 Venice Architecture Biennale and Countryside by Rem Koolhaas/AMO at the Guggenheim Museum. She is presently working on exhibitions for the designer Neri Oxman and the Mediated Matter Group at MIT Media Lab.

Footprint is a peer-reviewed journal presenting academic research in the field of architecture theory. The journal encourages the study of architecture and the urban environment as a means of comprehending culture and society, and as a tool for relating them to shifting ideological doctrines and philosophical ideas. The journal promotes the creation and development – or revision – of conceptual frameworks and methods of inquiry. The journal is engaged in creating a body of critical and reflexive texts with a breadth and depth of thought which would enrich the architecture discipline and produce new knowledge, conceptual methodologies and original understandings.

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