Can a project survive obsolescence? Lessons from Fun Palace and Kawasaki

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As one of the leading figures in cybernetics, Gordon Pask (1928-1996) has had an extensive impact in the field of architecture through his close connections with architecture/design communities in the UK and the USA from the early 1960s onwards. He promoted his ideas in architecture on several occasions including his collaborations with Cedric Price (1934-2003) as one of the most prominent exemplars of this strong relationship. The paper offers a comparative reading on two particular instances of their joint work, the frequently-cited Fun Palace project of the 1960s and the little-known Kawasaki project of the 1980s with a discussion on the ability of architecture driven by computer technologies in escaping obsolescence although the nature of technological progress dictates otherwise. It posits that rather than being conceived as incorporating the cutting-edge computer technologies of their time, these projects enjoy enduring significance and relevance stemming from a deep exploration of human-machine relationship based on certain cybernetic ideas that aim for genuine interaction between buildings and their users.

Introduction

Any artifact that relies on a certain technology is generally regarded as destined for obsolescence. As its technology falls from grace with the advent of new ones, so does the artifact itself in a process that gradually yet inevitably strips it from the contemporary and turns it into a relic from the past. The history of technology is brim with examples of this pattern. For instance, steam-powered vehicles, as strong embodiments of the steam engine technology that dominated marine and land transportation throughout the latter half of the 19th and first quarter of 20th centuries, went virtually extinct in a short span of about twenty years between the World Wars. The internal combustion engine, previously hindered by practicality and efficiency issues that could only be solved around then, started to see widespread interest and wiped out the long-standing dominance of the steam engine, rendering its use confined to some specific areas. Telephone replacing telegraph, transistors superseding vacuum tubes, or DVDs ousting videocassettes are all examples of this pattern of technological change. Yet, as inescapable as this process seems, a question remains: Can an artifact designed based on a certain technology withstand obsolescence even as its technology is replaced by new ones? Or, when translated to the realm of architecture, what would be the means to ensure the long-term relevancy of projects envisioned with/for a certain technology despite changes in the technological context?

The article reflects on this issue by looking into two projects developed out of collaborations between Cedric Price (1934-2003) and Gordon Pask (1928-1996): The extensively-studied Fun Palace from the 1960s and the remotely-appreciated Kawasaki from the 1980s. It argues that these computer-technology-driven projects have survived obsolescence and lays out the reasons why this is deemed to be the case. In doing so, the paper explores how these two projects used technology as a means rather than a goal, and how they have remained relevant until present with respect to some cybernetic ideas incorporated in their design. It proposes that their enduring significance does not arise from the fact that they were envisioned as the most technologically advanced projects of their time, as is the general tendency when this kind of computer-technology-driven piece of architecture is examined. On the contrary, it argues that this was precisely the reason why they were guaranteed to become obsolete. Instead, the paper suggests that their ability to survive obsolescence was due to a visionary cybernetic model of human-machine relationship that prioritised and were able to formalise genuine interaction between buildings and their users.

Yet, what is meant by computer-technology-driven architecture begs explanation. Broadly, it refers to projects that adopt the dominant technological paradigm of their time as the central driver behind their design, and that are legitimised through association with that paradigm. Since the 1950s and 1960s, architects have repeatedly drawn on several technologies at differing intensities — mainframe computers, microprocessors, personal computers, CAD/CAM, the internet, parametric design, machine intelligence, etc. In most cases, incorporation of these technologies follows a straightforward path where their use is often considered sufficient to validate a project as relevant, resulting in a pattern as though novelty of the technology alone assures value. Recent proliferation of tools and algorithms branded under the umbrella term 'artificial intelligence' both in the broader contemporary techno-culture as well as in architecture illustrates this pattern, mostly generating rapidly consumed outcomes that are justified by the mere us of the technology. Yet, projects such as the Fun Palace and Kawasaki stand apart. Their significance lies not in the plain adoption of technology but in embedding technology within a broader agenda, in their specific case, one oriented toward interaction and conversation, whose objectives extend beyond technological fashion.

However, this inevitably raises the question of why ability to withstand obsolescence should matter in the first place. One might argue that it would be sufficient for a computer-technology-driven project to be relevant at the moment of its conception, even if it becomes outdated later. While this might be a valid argument, it does not take into account the fact that withstanding obsolescence poses a more difficult challenge as computer technologies change at a far faster pace than other domains, thus making designing within their limits a double-edged sword: it guarantees contemporaneity at the moment of production, yet it almost all the time ensures rapid irrelevance. Hence, merely deploying the latest technology does not secure significance unless its use is not substantiated by other ideas that are more persistent.

The Fun Palace and Kawasaki projects cannot be considered artifacts in the literal sense of the word, since they were never realised. Yet, they still reflect the respective technologies incorporated in their design. As with Price's many projects, they were ambitious attempts that ultimately remained unbuilt due to various issues. Even if they had been built, they would likely have been demolished in accordance with Price's intentions, as evidenced by his remarks advocating for the Fun Palace's decommissioning after ten years[1] and by his broader view that 'buildings should be designed with a limited life'.[2] The view that Fun Palace would need to be demolished, had it ever been built, must have stemmed from the assumption that its technology would render it obsolete after a certain period. As Mathews notes, Price thought that the Fun Palace was 'specific to its time and place', and disputed 'revisiting it in light of contemporary practice'.[3] Similarly, Hernandez emphasises that 'the project was originally designed to have a ten-year life cycle after which technological advancement and variations in social requirements would render it obsolete'.[4] Price's position on this issue becomes even clearer with the fact that he argued for the demolition of another one of his projects, the Inter-Action Centre, which is regarded a less ambitious version of the Fun Palace, on the ground that it would make room for a new building that was 'better suited to the demands of today's users'.[5] It seems reasonable to think that these projects would have become obsolete in terms of their technology and, by extension, their ability to fulfil the needs of users after a certain period if they were built. As discussed in detail later in the article, the computer technology of Fun Palace would have clearly been outdated by the mid-1970s, and that of Kawasaki by the mid-1990s, although they were state-of-the-art at the time of their development. Hence, the argument follows that the value of these projects does not stem from their use of the latest computer technology available at the time. It rather lies in the enduring cybernetic ideas embedded within them, which remain significant regardless of whether they were ever built.

The paper juxtaposes these two projects to offer a comparative history of Pask's role in conceptualizing the human-machine (user-building) relationship in architecture. It not only provides a narrative concerning particular features of each project as individual attempts set apart by twenty years but also explores the reflections of the respective techno-cultural contexts in their design. Overall, it aims to acknowledge the Fun Palace and the Kawasaki as significant exemplars of research on interaction in architecture inspired by cybernetic ideas.

In doing so, the paper also aims to identify a particular approach to the adoption of computer technologies in architecture exemplified by these projects and acknowledge its value among other approaches that put overemphasis on the technology itself. Rather than extolling computer-technology-driven architecture as embodiments of technical novelty or portraying their authors as pioneers, it suggests to evaluate such work with respect to their long-term performance, examining their aims and objectives against the test of time.

Controlling self: Fun Palace

Decoding nuances of the model of human-machine relationship in the Fun Palace demands an in-depth look into its complex system of interaction. Such an examination cannot rely on the several iconic drawings of the project that convey the familiar impressive architectural imagery of moving parts, cranes, steel shafts, escalators, etc. Rather, it involves dealing with some visually less attractive and relatively obscure organisational diagrams and accompanying text produced by Pask and his colleagues. Though this material has been of interest to architectural historians from different points of view, they remain unexplored in terms of the specific features of the model of human-machine relationship proposed in them due to a couple of reasons discussed subsequently. Through a detailed exploration of these documents, the paper scrutinises the meaning of the word 'control' and challenge the idea of the Fun Palace as a social control mechanism, a view seemingly shared by some scholars. Instead, it acknowledges the Fun Palace as a machine capable of learning from its users and engaging with them in generating new configurations of itself.

The idea of the Fun Palace originated from a desire by the renowned theatre director and producer Joan Littlewood to create novel techniques that would allow individuals to experience theatre not as mere spectators but as active participants. This idea was a continuation of Littlewood's earlier efforts in trying to facilitate new ways of audience participation with her company, The Theatre Workshop.[6] While the project began with this relatively modest objective, it evolved into a broader endeavour aiming not only to fulfil its original purpose but also to include diverse forms of user participation with the involvement of several actors from various fields.

Littlewood met Price in 1960, which led to a long-term collaboration on the Fun Palace in the subsequent years.[7] Littlewood's 'desire for a new theatrical venue […] became the inspiration for Price's architectural imagination' where he saw an opportunity to explore how users could control their own environments.[8] Achieving such a goal would require expertise from other fields; thus, they recruited new figures, among whom Pask became highly influential as the project developed. Owing to his contributions and those of other such figures from the fields of cybernetics, psychology, engineering, sociology, history, art, politics, etc., the project transformed into an interdisciplinary endeavour that went far beyond the original intentions. The focus gradually shifted from an experimental theatre venue that allowed audience participation to a cybernetic interactive machine that both served its users and controlled their behaviour at the same time.

In an early article written to publicise the project in 1964, Fun Palace was described by Littlewood as 'a laboratory of pleasure, providing room for many kinds of action' with 'informality' and 'flexibility' as its two essential features.[9] The same features were also emphasised by Price in the same article with further reference to the 'transient/impermanent' character of the project.[10] They gave examples as to what kind of activities were to take place, which ranged from a 'fun arcade' of games and tests devised by 'psychologists and electronics engineers' to a 'science playground' where visitors could attend lectures and demonstrations supported by teaching films, closed-circuit television, and working models. There would be no 'permanent structures' and 'segregated enclosures', instead the activities would be 'experimental,' and the building would be 'expandable and changeable'.[11]

Without a doubt, the technological context and the cultural landscape of the UK at the time were significantly influential in the adoption of this kind of framework. During the early 1960s, the so-called forthcoming automation and its possible consequences on society had already become a broad concern in the country. By 1963, in a famous speech, Harold Wilson, then the leader of the opposition and later prime minister, was already identifying the change the country was going through as a 'scientific revolution' and famously envisioning that Britain was going to be 'forged in the white heat of this revolution'.[12] In the same speech, Wilson was talking about the possibility of a 'conscious, planned, purposive use of scientific [and technological] progress to provide undreamed of living standards and the possibility of leisure ultimately on an unbelievable scale'.[13]

Automation and its consequences, especially on the leisure activities of citizens, were a primary concern for Littlewood and Price as well. However, they were positioning themselves against the idea of 'increased leisure' and were rather anticipating that the distinction between work and leisure would become obsolete.[14] Fun Palace was a response to this kind of change where entertainment would take place through a multitude of other activities, especially educational ones, a reason why the project is also referred to as 'a university of streets'.[15]

Although Littlewood and Price had obvious differences with Wilson about automation and its consequences on people's lives, their attitude mirrored a common desire to utilise new capabilities offered by this process. This attitude was a particular reflection of a broader sentiment, prevalent in the UK in the 1960s as demonstrated in Wilson's speech, that put confidence in science and technology in transforming people's living standards for good. This context is particularly significant in understanding the involvement of Pask and several other figures from various disciplines in the project as pioneers of scientific and technological development.

Littlewood met Pask through mathematician Maurice Goldsmith in 1963.[16] Conversely, Price's acquaintance with Pask dates back to the early 1950s when they were both at Cambridge University.[17] They recruited Pask for the Fun Palace project in 1963,[18] and in turn, he established the 'Cybernetics Committee', which served as a platform to recruit other such figures from several disciplines mentioned earlier. The committee had a number of meetings, minutes of which were produced by Pask as extensive reports. Price likened these reports to books rather than minutes[19] and they constitute the primary sources about the committee's activity.

In an early document produced as a preparation for the committee's first meeting, Pask described the Fun Palace 'as an attempt to provide a form of environment that is capable of adapting to meet the possibly changeful needs of a human population and capable, also, of encouraging human participation in various activities'.[20] To be able to satisfy this goal, he defined the role of the cybernetics committee as 'to determine an attitude, a philosophy, and a manner of control for the Fun Palace organization' and sketched out ten problem areas for the committee to work on.[21] These problem areas would require a number of systems, each responding to a specific need in developing the project into a cybernetic machine that could interact with its users on many levels. These systems would perform tasks such as determining the expected visiting patterns and loads, recommending available capacities and procedures for the structural arrangements, enabling activities that involve feedback from an audience, controlling communication and information systems such as sound and television channels, and combining conventional entertainment media and facilities with less conventional ones. In addition, there would also be adaptive teaching machines and cybernetic art forms, the likes of both of which were argued to have already been developed by himself and his colleagues.[22]

In the same document, Pask also raised two critical points that presented a broader perspective for the committee. He offered a reflection on Littlewood and Price's approach described above regarding automation and its consequences on people's lives by pointing out the necessity of determining 'what role the organisation should play in relation to the leisure of an automated society', while he also attempted to provide a direction for the project based on the idea of the Fun Palace 'as a self-organising system wherein a set of facilities […] develop in a fashion that is inherently regulated'.[23] In proposing this idea, Pask was, in fact, promoting the dominant research agenda in cybernetics, which was largely spearheaded by Heinz Von Foerster and his colleagues at the Biological Computer Laboratory (BCL) at the University of Illinois Urbana-Champaign around the same time.[24] As an esteemed member of the cybernetics community, Pask was also conducting research on self-organizing systems there.[25] He reformulated Littlewood and Price's Fun Palace in such a way that the building and its users would constitute a self-organizing system that could sustain itself via the feedback provided by each.

Pask provided a model for Fun Palace in the form of an organisational plan in the minutes of the first meeting of the committee.[26] He illustrated his model with two diagrams (Fig. 1, Fig. 2) and a complementary text that explained the basic layout and terminology for such a system. Even though they were meticulously produced, both the diagrams and the text presents challenges in terms of expressing the internal structure of the system. Examined separately, the diagrams make little sense because each contains some information about the system that the other omits. The first diagram provids detailed information about the individual components of the system while it does not depict some of the feedback mechanisms essential for understanding the flow. In contrast, the second diagram offers a more detailed view of these feedback mechanisms but it represents some components of the system more abstractly. Thus, one must piece together both diagrams to be able to fully understand the system, a balance disturbed with over-emphasis of the first and the neglect of the second diagram in previous scholarship. Moreover, the diagrams and the accompanying text were conceived in a technical language largely incomprehensible to those in the field of architecture. Pask used mathematical notation in describing a large number of intricate functions, sequences, constraints, parameters, etc., that contributed to the system's elusiveness.

[Figure 1 and Figure 2 near here]

These challenges might be the reason behind the lack of research on the system's operation. While Pask's role in transforming the Fun Palace from a modest experimental theatre to a much more ambitious cybernetic machine has been praised by many, little is known about the internal structure of his organisational plan, which was supposedly a crucial component in realizing that feat. Thus, unpacking the details of the system becomes pivotal if the dynamics of the proposed relationship of the Fun Palace to its users are concerned. To that end, a simplified new version of the two diagrams was produced by combining the separate information included in each (Fig. 3).

In Pask's model, users would be able to provide feedback for a set of complex electronic devices that would dynamically organise the Fun Palace by matching activities to be held with the available facilities at a particular moment. There would be a collection of facilities (Z) and a collection of possible activities (R) that the system would use to automatically decide which individual activity should be assigned to which individual facility for a certain time based on the data gathered from the users.[27] The system would involve three different levels of complex procedures (Fig. 1, Fig. 2, Fig. 3). On the lower level, the users (F_{im}) would provide two different types of feedback: At a certain instance (n), they would rate a certain activity that they performed in a certain facility ($T_i[z_j(n)]$), and they would indicate their next activity choice ($r_i(n)$). On the upper level, the data of individual ratings and choices coming from the lower level would be fed into two pattern recognition devices (V_1 and V_2), respectively. Then, a program (P) would assign certain facilities to the activities determined by V_2 by comparing the valuations provided by V_1 for different activity-facility pairs with the help of its memory unit (M). Its output (Λ), which was in the form of a sequence of certain activity-facility pairs, would be disclosed to the users, and the process would repeat recursively.[28]

In deciding the activity-facility pairs, P would also take two constraints as input, a mixing measure ($\mathbf{\Omega}(n)$) and a utilisation measure ($\Phi_{z1z2\Lambda}(n)$) that are produced based on the usage patterns of sub-groups of facilities according to the assigned sequence. The goal of the system would be to maintain the values of these two measures high while organizing/reorganizing itself. In addition, there would also be another constraint called variety measure (J(n)), which could be used to keep the environment of the inhabitants 'varied or novel enough to sustain [their] interest and attention but not so varied that it is unintelligible'.[29] Although the mixing and utilisation measures can be regarded as specific to the Fun Palace project, Pask explored the idea of a variety measure in other projects as well. Prior to the Fun Palace, he had already implemented the idea of a complexity regulator attuned to the perception of the user in the Musicolour project, which he developed with Robin McKinnon-Wood in the early 1950s. In a later paper titled 'A Comment, A Case History and A Plan', he identified this idea as the first attribute of what he termed 'aesthetically potent environments'. He argued that humans tend 'to seek novelty in [their] environment' and 'to learn how to control it' when such novelty is encountered, which in turn would generate a sense of pleasure for them. In other words, he asserted that an environment should be sufficiently challenging in the sense that it should present a certain level of uncertainty that compels individuals to ‘come to terms with’ it, and in so doing, to enjoy it.[30] In Musicolour, this kind of an environment was created based on the idea of boredom. The system — an adaptive light show that would interact with a performer playing a piano — was designed to ‘get bored’ and stop responding, if it was fed with repetitive input such as the performer remaining in the same range for too long, which, in turn, would prompt the performer to play in a different range to attract its interest back.[31] The same idea, though articulated in less detail, was proposed in the Fun Palace project to maintain the complexity of the environment within certain limits so that it would be plausible to the users.

[Figure 3 near here]

While this system was complex, its underlying model of interaction was quite straightforward. It would facilitate interaction between its human and machine participants and components through circular feedback mechanisms. Users could adapt the organisation of the Fun Palace by providing their choices, while the Fun Palace could adjust the experience of its users by offering different options. In this system, the feedback from the users would not merely be used to trigger a pre-established response on the Fun Palace’s end. Instead, the Fun Palace and its users could effectively modify each other’s behaviour through learning. In other words, the users could regulate the behaviour of the Fun Palace, and the Fun Palace could regulate the behaviour of its users at the same time.

This model was criticised as reflecting ‘a vast social control system’ where ‘human beings were treated as data’.[32] It is without doubt that Pask talked about the idea of control over people — not only the users but also the society in general — several times as documented in the reports of the Cybernetics Committee. For instance, he discussed the possibility of using communication channels and data displays to control the users while entertaining them.[33] On another occasion, he talked about the 'degree of control that can be and should be exerted upon local population' when discussing the relationship of the Fun Palace with society.[34] He even used the terms 'modified people' and 'unmodified people' in the middle procedure of his organisational plan (Fig. 1), suggesting control over users in the literal meaning of the word. Considering statements such as these, one can conclude that Pask envisioned the Fun Palace as a device for social engineering, where a superior control mechanism would make decisions on behalf of people. However, the term control used in the context of the system described here should not be confused with the common use that implies an authoritative power of one over another. Rather in a narrower sense, control refers here to the ability of an environment to learn from its users and interact with them in creating novel arrangements of itself. Pask's organisational structure reflects this narrow definition through a series of nested feedback loops and a total of five parameters — four employed in the upper-level procedure, and one in the middle procedure (Fig. 3). These parameters, informed by the system's prior operations and the new data from the users, enable the Fun Palace to learn and adapt its behaviour over time. Taken as a whole, the structure creates a circular system between the Fun Palace and its users, where both are able to modify their behaviour according to what other offers, hence eliminating hierarchy and fostering genuine interaction between them.

From a broader perspective, this particular system reflects Pask's understanding of what architectural design should be concerned with when it is informed by system-oriented thinking. According to him, architects ought to consider themselves as designers of systems where the building and the users are recognised as interacting components of a whole. He provided a full manifestation of this view in an article in 1969, titled 'The Architectural Relevance of Cybernetics,' where he argued that 'a responsible architect […] cannot merely stand back and observe evolution as something that happens to his structures'.[35] Instead, he proposed that 'structures make sense as part of larger systems that include human components' and urged architects to design these larger systems instead of 'just the bricks and mortar part'.[36]

If we concur with Pask in attributing equal significance to the design of organisational relations and the built form to achieve a dialogue between the architectural environments and their inhabitants, given his role in designing the relationship between the Fun Palace and its users through his organisational plan, he might be acknowledged as an architect of the project in his own right.

As the project was designed to take advantage of the latest computer technologies of the period, it was inevitably constrained by them. An IBM System/360 Model 30 computer was to be used in the Fun Place.[37] This mainframe computer was the lowest-end member of a highly successful family of new-generation computers announced by IBM in 1964, which transformed the computer industry with the idea of 'compatibility' across products. System/360 offered a number of computers with small to large processing and storage capabilities incorporating the same microelectronics and programming instructions that allowed them to work with each other.[38]

Although these computers were state-of-the-art and brought several innovations to the computer industry, they were haunted by some problems common to all computer systems in the 1960s. They were quite expensive, which made them affordable for only big companies and institutions. According to the text of an IBM Data Processing Division press fact sheet published online, a System/360 Model 25 was rented for $5,330 a month or sold for $253,000 in 1968.[39] More advanced systems such as Model 75 were even more expensive with a monthly rental range of $50,000 to $80,000 and a purchase price range of $2.2 million to $3.5 million.[40] Furthermore, the computers could only be operated by trained staff and needed high maintenance due to their sheer scale. Although they offered significant advantages in terms of size when compared to first-generation vacuum tube computers, System/360 computers could easily fill in a sizeable room with its 'peripherals' such as magnetic storage devices, visual display units, communication equipment, punched card readers, printers, etc.[41] Under these circumstances, the Fun Palace project was conceived as a centrally organised system that aimed to put limited computational resources to the service of the people with a strong emphasis on the role technology could play in increasing the socialisation of individuals.

Shaping information: Kawasaki

Another attempt by Pask at promoting his cybernetic concepts and ideas in architecture came after approximately twenty years in 1986 when Pask and Price indulged in a competition project for the city of Kawasaki in Japan. However, on this occasion, Pask was also involved in designing tangible structures and buildings alongside organisational relations. The following section dwells on various aspects of this little-known project,[42] touching upon issues such as the competition context, the nature of collaborations between Pask and Price, and their distinct approaches to the design problem. With respect to its model of human-machine relationship, the project is presented as yet another instance of a cybernetic approach to architecture.

The competition, titled 'The International Concept Design Competition for an Advanced Information City', was organised by the Japan Association for Planning Administration (JAPA) and Mainichi Newspapers.[43] According to the brief, it aimed to solicit proposals for the revitalisation of Kawasaki from 'a long term major industrial city' to 'an information-intensive and humanistic city'.[44] Kawasaki was chosen as the subject of the competition due to its qualities common to established industrial cities around the world. The participants were asked to use the city of Kawasaki as a model so that their proposals could be applied to other redevelopment efforts for similar cities.[45] The jury of the competition was comprised of several members of JAPA alongside the chief architect of the French Government Joseph Belmont, architect Arata Isozaki, fashion designer Hanae Mori, the director of the National Museum of American History Roger Kennedy, and the chancellor of the United Nations University Soedjatomoko.[46]

The competition centred around the idea of 'campus city', envisioned as a distributed and interconnected urban environment that would technologically be made possible through the implementation of advanced information systems. It aimed to develop a plan for the rebuilding of Kawasaki through the use of high technology as a tool of revitalisation.[47] The participants were asked to develop proposals for at least one of the four themes defined by the competition organisers: Intelligent Plazas, The Kawasaki Institute of Technology (KIT), The Campus City Festival, and The Intelligent Network.[48] The first three themes were proposed as a part of a scenario where the Intelligent Plazas — existing or newly created individual public or private buildings/spaces that can serve as urban facilities for a variety of activities — would act as both the units of the Kawasaki Institute of Technology and the sites for the events of the Campus City Festival.[49] The Intelligent Network, on the other hand, would be conceived as a connector of urban facilities, which would be made possible by the effective utilisation of information systems and telecommunication technologies.[50] Online, real-time interaction among the Intelligent Plazas provided by the Intelligent Network would distinguish the KIT from a 'centralized university'.[51] As opposed to a traditional university campus where a portion of urban land would be allocated to some specific educational activity, this model aimed to take advantage of new technologies in creating a decentralised university whose components were distributed around the city in the form of mixed-use nodes, hence turning the whole city into a campus.

The competition was, in fact, proposed as a small-scale urban reflection of a country-wide effort to furnish Japan with a new information and communication infrastructure that involved huge projects such as laying fibre optic cables, launching broadcasting satellites, and developing super computers.[52] Characterised by an extremely positive sentiment towards technology, the competition brief proves that the organisers were primarily driven by the power of this transformation on Japanese society.

According to the jury report, the competition attracted a total of 213 proposals, 93 of which were from overseas.[53] The 'Grand Prix' award winner was Peter Droege and his team from the USA with their proposal titled 'Technology for People: A Campus City Guide,' which was described by Droege himself as based on the notion of '"purposeful transparency" of city networks and facilities' for the citizens of Kawasaki to collaborate in planning the introduction and evolution of technological innovations.[54] Pask and Price's proposal, if it was submitted,[55] was not among the fourteen award-winning projects.

Pask and Price's proposal consists of five A1-size presentation panels (Fig. 4) and an explanatory summary text.[56] Far less in number when compared to Fun Palace, the project documents also include some draft drawings and notes that provide information about the project itself but fail to disclose the relationship between the two figures during the design process, making it hard to draw insights into the details of the nature of their collaboration. However, the content of the posters offers enough evidence to assume that Pask and Price split the design work and developed their portions of the project rather independently, likely not in the presence of each other, without even aiming to integrate their individual design ideas. Pask came up with design solutions for the Intelligent Plaza and the Intelligent Network themes, whereas Price offered a different version of the latter, which he called an 'anti-matter network'.[57] In doing so, they gave little to no reference to each other, nor did they depict in any way each other's ideas/proposals in their own drawings. This sharp distinction was also reflected in the organisation of the poster contents. Photocopies of previously and most likely individually produced drawings and text were stuck to the presentation panels. The material produced by Pask was placed on the first four posters, while the remaining poster was allocated to Price's sketches and collages. Among all the materials, Pask's diagrams and drawings (perspectives, plans, sections, façades, and detail drawings) drafted all by himself are especially significant as peculiar architectural representations from someone without any formal architectural education. His engagements with architecture already spanning more than two decades by then must have helped him accomplish such a task.

[Figure 4 near here]

For the Intelligent Plaza, Pask proposed an installation that would be both the venue and the object of an exhibition called 'The Architecture of Knowledge' (Fig. 5).[58] Judging from the information provided by him about the scale of the drawings and the size of the presentation posters, this structure would sit on an approximately 12 m x 24 m base and would have a height of approximately 60 meters. It would be comprised of an intricate suspended mesh whose overall form would be defined by a series of connected toroidal shapes at different angles (Fig. 6) and a supporting structure to be built from slender masts and connecting cables. It would be a tensile integrity (tensegrity) structure where the compression elements (masts) would be isolated from each other with the arrangement of tension elements (cables) in such a way that they could provide continuous tension. The design would also incorporate a number of viewing platforms at different levels, access to which were not depicted in the drawing (Fig. 5).

[Figure 5 and Figure 6 near here]

Pask was likely inspired by Buckminster Fuller's work on tensegrity in proposing such a design. In an unpublished paper produced around the same time as the Kawasaki project, titled ‘An Initial Essay: Towards a Unification of Architectural Theories’, he referred to Fuller’s tensegrity structures with regard to their capacity in exemplifying a kinetic architecture[59] — a feature he tried to incorporate in the design of his own structure. Moreover, Pask was associated with Fuller through Michael Ben-Eli, who worked with Fuller as a close associate on a number of projects in the 1960s and later became a doctoral student of Pask at the Institute of Cybernetics at Brunel University in the early 1970s.[60] In a letter to the director of the institute about the progress of his doctoral students, Pask praised Ben-Eli’s research as ‘generating information theoretic ideas’ related to ‘Fuller’s concept of inherent stability’.[61] Ben-Eli acknowledged Fuller and Pask’s influence on him as particularly significant in his thesis.[62] Thus, even though Fuller was not mentioned in the documents of the Kawasaki Project, it would be fair to argue that his work was influential on the design of Pask’s installation. It should also be noted that Price’s London (Snowdon) Aviary, as a highly successful example of a tensegrity structure with its striking lightweight image, might have acted as an inspiration for Pask as well.

The intricate suspended mesh whose form was to be produced out of connected tori would represent ‘the design and the existing habitation of Kawasaki’.[63] A computer animation of the structure would also be built, the form of which was supposed to dynamically change as the city evolved.[64] This intricate structure, both in its physical and digital form, was a materialisation of an ‘entailment mesh’, a product of a specific knowledge representation model developed by Pask for his conversation theory in the 1970s. The entailment meshes were designed as a medium for interactive exchanges among different actors, whether they were humans, machines, or a combination of both. They would act as an interface in allowing the individuals who took part in the conversation to negotiate their own network of cognitive concepts with that of their counterparts. In the original conversation theory books,[65] the idea of conversation through entailment meshes was exemplified with a machine called 'Course Assembly System and Tutorial Environment' (CASTE). As an interactive teaching machine designed to teach elementary probability theory, CASTE used a large display in the form of an 'entailment structure' — a pruned version of an entailment mesh — that showed distinct topics of the subject matter and their relationship to each other to facilitate the interaction between the student and the machine.[66] In the specific case of Kawasaki, the entailment mesh was, in fact, proposed by Pask as a machine-readable knowledge representation diagram of the city, hence the name 'The Architecture of Knowledge'. In this diagram, nodes — or in Pask's own terms concepts — would be defined and distinguished from others by toroidal skins, which would form a continuous structure when brought together.[67] Pask explained the process behind the coming together of those toroidal skins as relational structures between concepts in the second presentation poster with a total of twenty-five diagrams, starting from the simplest and leading up to the more complex configurations.

While it seems unlikely that someone without any prior knowledge of conversation theory and entailment meshes would even be able to read the idea behind the proposal — let alone grasp it — Pask must have proposed the intricate mesh and the elegant lightweight tensegrity structure as an appealing image for an audience of architects. Perhaps, it was also this image that prompted Pask to adopt an over simplistic approach of converting a supposedly scale-free dynamic representation into a fixed-scale static architectural object. However, to offset this limitation, he also proposed a computer-animated version of the installation that would evolve in time as the city changed. Although not specifically mentioned in the competition documents, given several other instances Pask employed entailment meshes — as in CASTE — this dynamic digital version would likely be used as a facilitator of interaction for the citizens in sharing and understanding each other's cognitive concepts on the city.

In contrast to the Intelligent Plaza, Pask developed an entirely different approach for the Intelligent Network theme where he proposed a series of four to six-floor-high buildings that are tightly packed together with eight-meter streets in-between (Fig. 7). The buildings were classified into types according to their dimensions, but they followed the same architectural organisation throughout: They had atriums of various sizes in the centre surrounded by balconies on all sides. The individual spaces were designed in two modules (6 m x 7 m and 6 m x 11 m) and located around atriums. Another layer of balconies would encircle the buildings from the outside, complemented by some bridges providing access to the other buildings from upper levels.

[Figure 7 near here]

Pask ironically likened his blocks to computers and declared that the whole design was conceived as a 'monumental joke.'[68] It is debatable if they really resembled a computer, yet architecturally speaking, they were certainly quite ordinary in appearance and conventional in spatial organisation both on the architectural and the urban scale. However, as ordinary and conventional as they architecturally seem, these buildings were, in fact, designed for a technologically advanced future based on a vision that was deeply rooted in Pask's discourse in the 1980s, where he anticipated an impending era with unlimited connectivity. Elaborating on this premise in an earlier paper he mentioned as a reference in the competition documents, Pask argued that lack of communication due to barriers such as geographical distance would not be a parameter in obstructing conversation any more, rather conversation would be endangered by 'excessive togetherness' brough about by communication and computation systems emerging by then that offer unlimited communication bandwidth and information storage.[69]

With respect to this anticipated transformation process, which was also explored in a book he published with Susan Curran in 1982,[70] Pask proposed an infrastructure to be built into the Intelligent Network buildings that would provide a minimum of 60 gigabytes of RAM and CD-ROM storage in addition to four fibre optic and coaxial channels and twelve telephone lines,[71] a generous estimate by the standards of 1980s. According to him, this infrastructure would be sufficient for inhabitants to freely interact with others in remote geographies on a global scale. However, to counter the effects of this highly connected information environment, he also provided some architectural elements, specifically 'drawbridges' (Fig. 8) and 'sensory perceptual adaptable interior walling' (Fig. 9), that would render the geographical and perceptual neighbourhood relations of the inhabitants flexible. As the flow and storage of information would be virtually unlimited owing to the proposed infrastructure, it would be possible for an inhabitant or a group of inhabitants to achieve visual and auditory privacy and be nearer to someone else in another city than they were to their neighbours in the same block by adjusting the position of the drawbridges or rotating the moving slats and louvers of the special walls.[72] In other words, the buildings would offer an environment that could accommodate their inhabitants' needs in terms of both socialisation through information infrastructure and isolation through architectural layout as desired.

[Figure 8 and Figure 9 near here]

This vision was largely shaped by the radical changes in the technological landscape in terms of computer hardware and communication infrastructure in the 1980s, which exhibited stark differences from the era of the Fun Palace. In the early 1980s, the microprocessor technology, representing the third generation in the evolution of computers, was thriving by virtue of its steady development since it first became available in 1971.[73] Based on this technology, personal computers, having already become a reality with several models from several brands in the late 1970s and the early 1980s, were starting to proliferate.

The communication infrastructure was also flourishing at that time. 'A worldwide wave of deregulation, privatization and liberalization' was in place resulting in 'a thorough restructuring of telecommunications operators, and the total number of telephone subscribers'.[74] As a result of this process, the telecommunications networks were evolving from 'narrowband, circuit-switched, state-owned' to 'broadband, packet-switched, private'.[75]

The transition from radio-relay to coaxial to optical fibre communication was also providing significant increases in transmission capacities around the same period.[76] Although 'internet' was not publicly available until the 1990s, services such as 'teletex' and 'videotex' were already in use.[77] 'Cable TV' systems that worked through coaxial and optical fibre cables as opposed to traditional TV that relied on radio signals were flourishing.[78] Within this context, the Kawasaki project was proposed by Pask as a distributed and unlimited communication infrastructure that emphasised the information environment and its consequences on the socialisation as well as isolation of individuals.

As mentioned earlier, Price also developed his own ideas on the Intelligent Network theme, which he called an 'anti-matter' network.[79] He proposed 'Techno-Trees' or 'People-Poles' (Fig. 10) as large-scale urban structures to 'establish familiarity with both the geographic and demographic texture of the whole city'.[80] As the explanatory summary text and the poster reveal, Techno-Trees would carry as many as four 'spherical pods' depending on their height. The facilities within the pods would be decided according to the location (industrial/residential). Nonetheless, they would generally include 'electronic data exchange facilities' at the highest level, 'local environmental conditioners' at the middle, and 'publicly accessible resources including the equivalent of the "local postman" and bookstall' at the lowest level.[81] Several hundreds of Techno-Trees would be scattered across the whole municipal area of the city, the exact positions of which would be determined by user demand.

The entire network was proposed as a temporary ‘socio-civic learning toy’ intended to be ‘always visible-always available’.[82]

[Figure 10 near here]

Using large spherical elements for civic purposes was an idea Price had experimented with earlier. The Olympia project, developed for a pedestrian plaza at the village of the 1972 Olympic Games in Munich also involved a sizeable spherical element with multi-media facilities for public use (Fig. 11). However, the trees of the Kawasaki project were different in the sense that they would also be able to perform on another scale with their ability to communicate among themselves and with other such facilities. The network would act as an ‘invisible postman’ and individual techno-trees as high-tech post-boxes ‘available for random access and use’.[83]

Given both solutions to the Intelligent Network theme, contrasts in Price’s and Pask’s interpretations of the architectural manifestations of technology become evident. Even though both dealt with buildings or artifacts meant not only to accommodate but also to represent the cutting-edge technology, their visions diverged in the sense that they ended up with two very distinct architectural images: Pask’s conventional buildings versus Price’s futuristic towers. This divergence raises the question of whether spaces or artifacts designed to showcase the latest technology should themselves be futuristic in their appearance. Nonetheless, in either approach, Kawasaki was imagined as a dynamic urban environment that would allow for the active engagement of its inhabitants in shaping its spatial organisation, signifying a shared vision despite their apparent differences.

[Figure 11 near here]

Embracing technological transience through interaction

The Fun Palace and Kawasaki projects were different from each other in many ways due to the fact that they were designed in radically different technological contexts. Significant advances in computer hardware and communication infrastructure from the 1960s to the 1980s required this distinction. However, both projects shared Pask's persistent cybernetic agenda centred around the idea of facilitating interaction between buildings and their inhabitants, a feature that rendered them inherently related.

Since both projects were intended to be architectural manifestations of the latest computer technologies of the respective periods, they had to become obsolete with the changing technology, a destiny also shared by Pask's several other undertakings. From a technological point of view, the Fun Palace, with its crude mainframe IBM 360/30 computer, would have already been outdated by the time the Kawasaki was conceived in an era marked by the personal computer revolution. Likewise, the Kawasaki would have appeared archaic by the 1990s when the internet became publicly accessible. In this sense, contrary to the common view, it would be fair to argue that these projects do not signify much as architectural embodiments of technology. Instead, their significance as two prominent case projects stems from their model of human-machine relationship. Both projects shared the same understanding that the architectural environments should be considered as part of systems that involve both human and non-human agencies, and they should be designed in ways that allow them to learn from their inhabitants and interact with them in creating novel configurations of themselves.

In both projects, interaction is not a byproduct that comes with the application of technology — a certain tool, method, or algorithm. Technology is rather a means to achieve interaction by applying some core ideas that Pask developed in his conversation theory based on the constructivist epistemology, which would later become known as the 'cybernetics of cybernetics' or 'second-order cybernetics'.[84] Although Fun Palace preceded the full publication of conversation theory, which mainly took place in 1975 and 1976,[85] Pask started working on his theory early in his career and applied ideas from it in all of his projects, including the Musicolour project mentioned earlier. Conversation theory was formulated to understand, model, and design exchanges among entities — human to human, machine to machine, or human to machine — in a similar way to a conversation between individuals. Unlike models that reduce interaction to deterministic stimuli-response patterns that are mischaracterised as interactive, conversation theory aimed to embrace the indeterminacy involved in real conversations, where participants may reach unforeseen outcomes.[86] In order to accommodate this, Pask aimed to develop formal models that incorporated two main cybernetic principles that are essential for a system to be genuinely interactive: A circular feedback mechanism between the components of the system, which ensures that the system is not merely a reactive one, but each component could observe other's behaviour and act on them accordingly. And, perhaps more importantly, at least one higher-order mechanism embedded inside each component that would allow them to observe their own actions, and if necessary, be able to change their goals. As a necessary feature of any second-order system, this renders each component able to give variable output to the same input, meaning they would not follow one-to-one input-output relationship, but they could find themselves in unanticipated situations that were not determined at the beginning of their exchange. In the case of Fun Palace, this is achieved by the three-layer system and several measures designed to adapt its behaviour in time rather than functioning merely as a passive instrument of its users' wishes. Similarly, in the case of Kawasaki, the Architecture of Knowledge installation was conceived as an embodiment of an entailment mesh and designed to act as a dynamic medium that allow the users to interactively negotiate their own perceptions about the city with one another.

In this sense, Kawasaki is a reincarnation of Fun Palace, as is the case with many other projects that Pask himself, or his several architect collaborators, students, and followers have developed for over sixty years.[87] With the Fun Palace and the Kawasaki as leading examples, the same idea has successfully been adapted in different technological contexts on countless occasions, showing its strength in being generalisable, and thus, resilient enough to keep up with the pace of technology. This adaptability is why they remain relevant today, withstanding obsolescence stronger than ever.

The paper highlights the significance of this specific mode of adopting computer technologies in contrast to approaches that disproportionately rely on the technology itself. Instead of celebrating computer-technology-driven architecture as mere demonstrations of innovation, it calls for assessing them in terms of how their aims and objectives endure over time.

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Declaration of Interest Statement

No potential conflict of interest was reported by the author.

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Figures

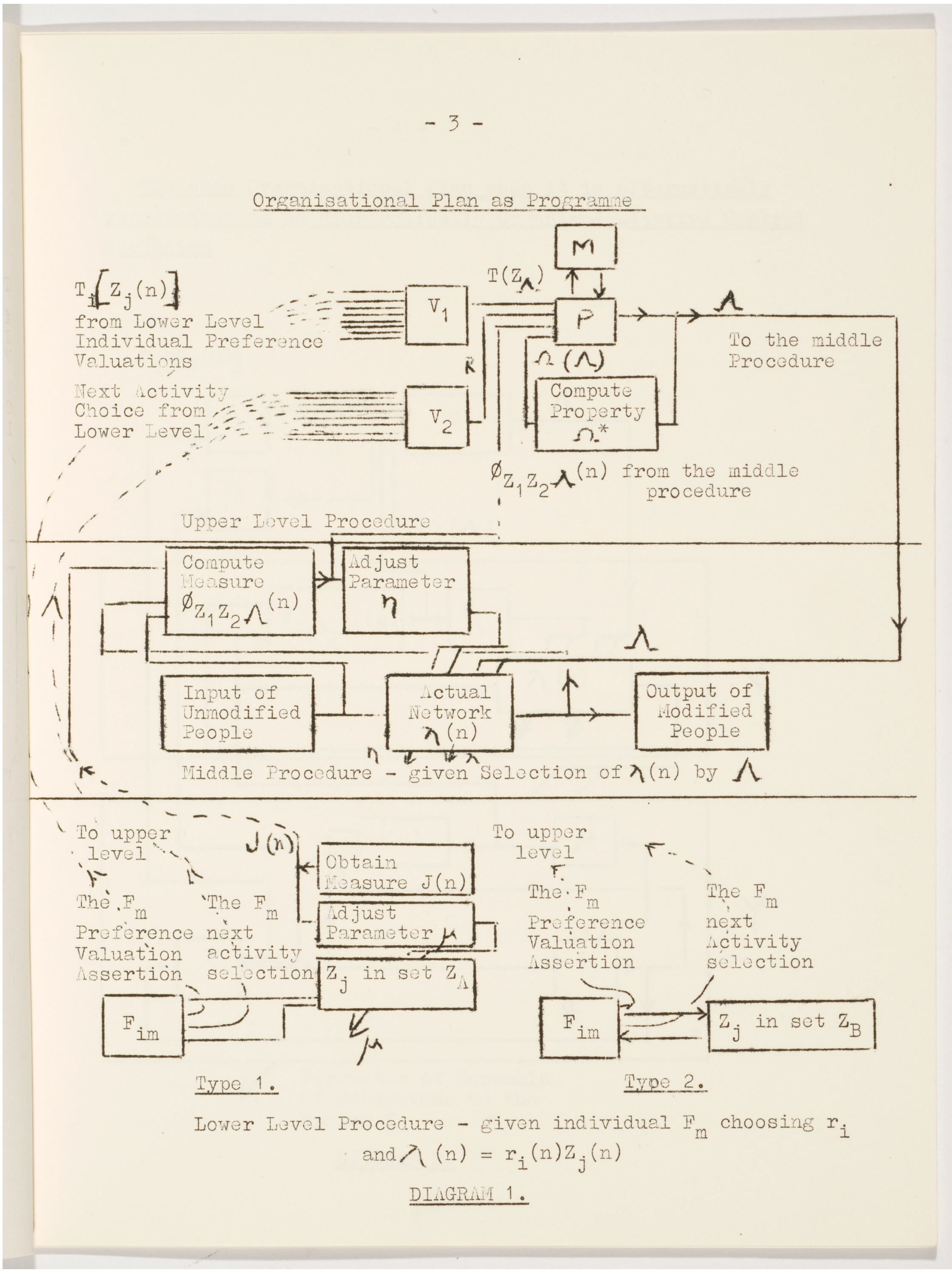
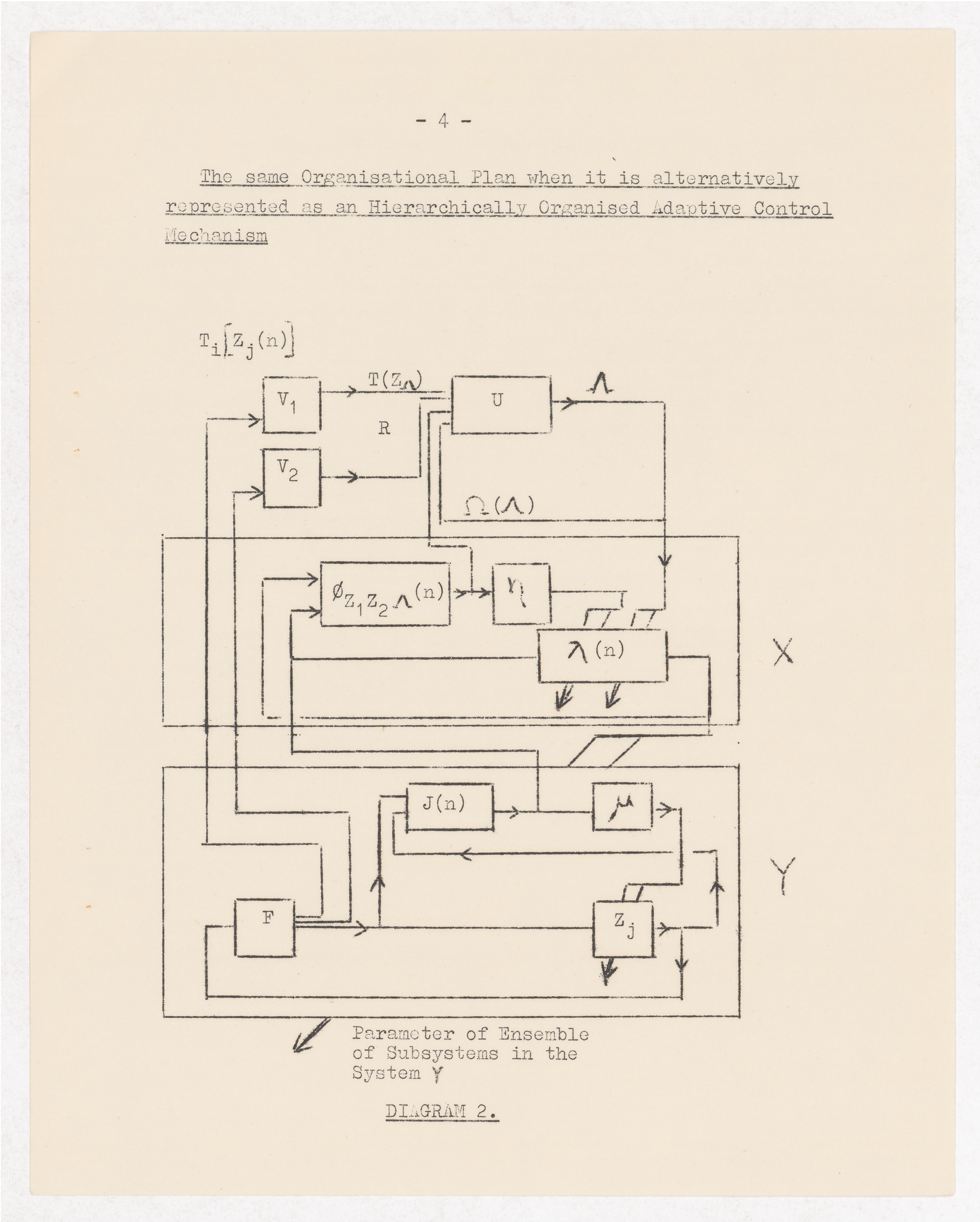


Figure 1. Diagram of the organisational plan for the Fun Palace. Gordon Pask, Minutes of the Fun Palace cybernetics committee meeting, 27th January 1965, 1965, reprographic copy, 25,5 × 20,4 cm, DR1995:0188:526, Cedric Price fonds, Canadian Centre for Architecture



- 4 -

The same Organisational Plan when it is alternatively represented as an Hierarchically Organised Adaptive Control Mechanism

Figure 2. Diagram of the organisational plan of Fun Palace with complete depiction of all feedback mechanisms. Gordon Pask, Minutes of the Fun Palace cybernetics committee meeting, 27th January 1965, 1965, reprographic copy, 25,5 × 20,4 cm, DR1995:0188:526, Cedric Price fonds, Canadian Centre for Architecture

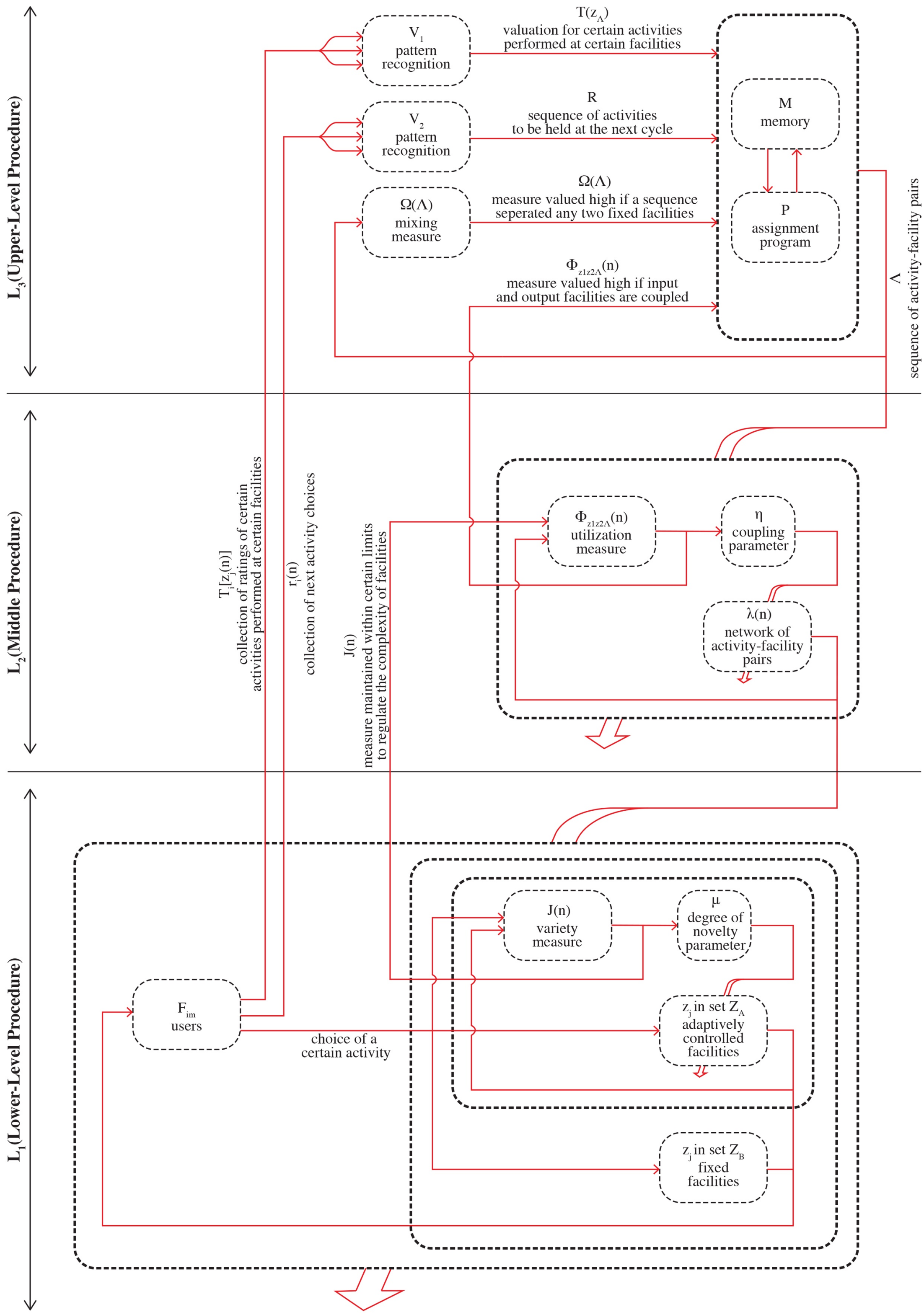


Figure 3. Reconstruction of Gordon Pask's diagrams. Drawn by the author. Courtesy of the author.

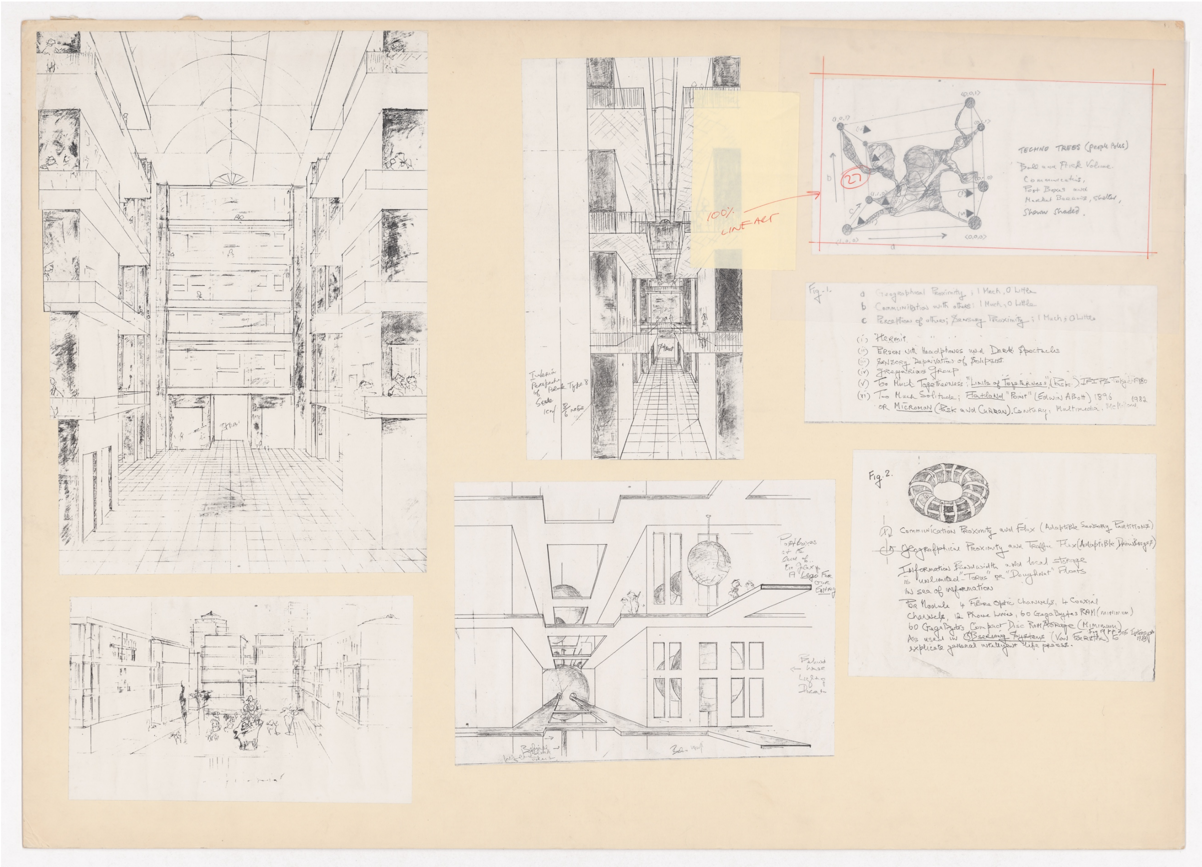


Figure 4. A presentation panel of the competition entry. Cedric Price, architect, Gordon Pask, draughtsmen, Kawasaki: presentation panel with perspectives of students' residences and diagrams illustrating the transmission and storage of information, 1986?, electrostatic prints on paper, all mounted on board, 59,5 × 84,3 cm, DR2004:0449:001, Cedric Price fonds, Canadian Centre for Architecture

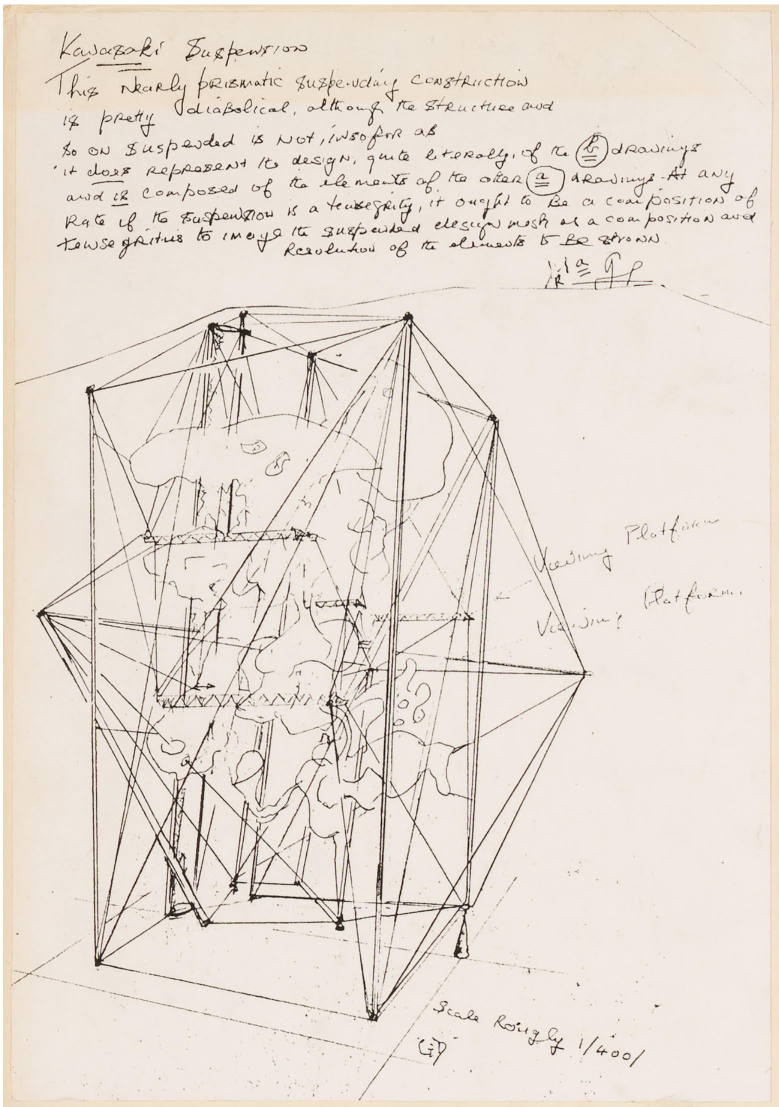


Figure 5. Depiction of the Architecture of Knowledge installation. Detail of Cedric Price, architect, Gordon Pask, draughtsmen, Collage of sketches for Kawasaki project, 1986 or 1987?, collage on board, 64 x 85 cm, DR2004:0449:002, Cedric Price fonds, Canadian Centre for Architecture

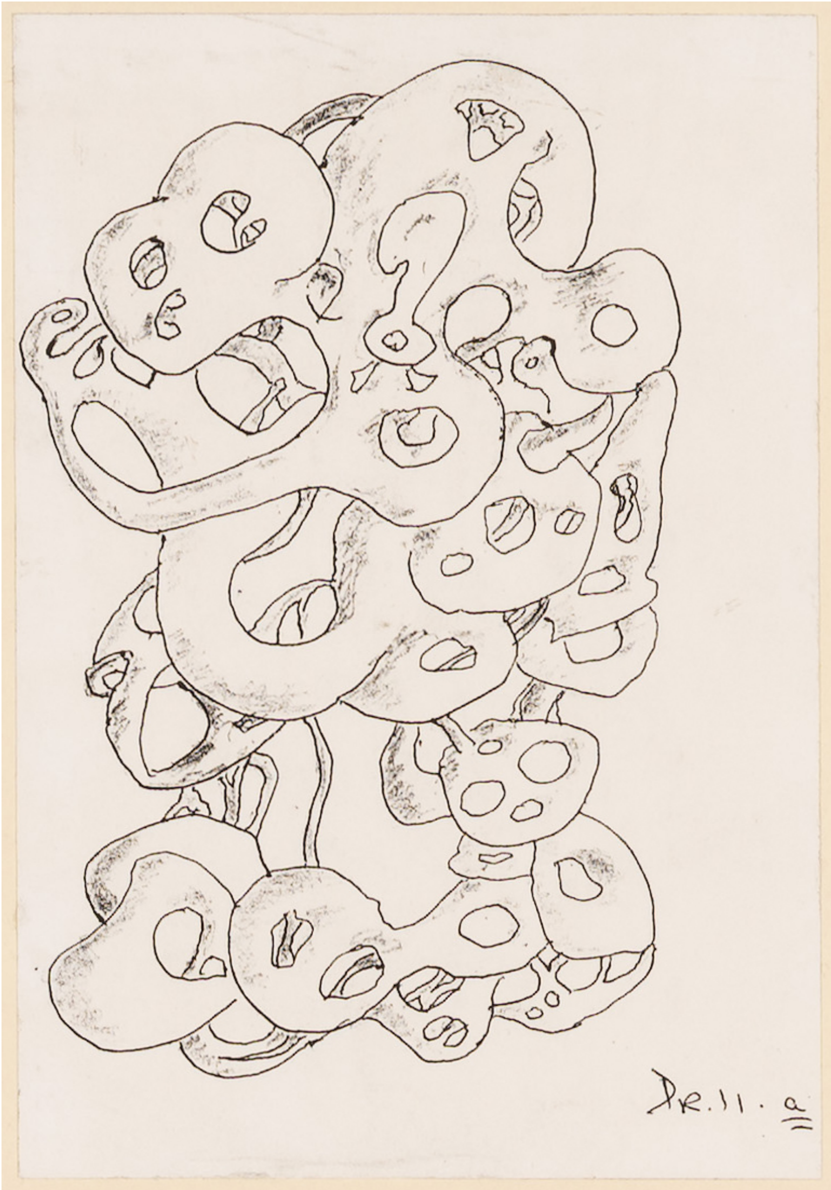


Figure 6. Impression of the suspended mesh of the Architecture of Knowledge installation. Detail of Cedric Price, architect, Gordon Pask, draughtsmen, Collage of sketches for Kawasaki project, 1986 or 1987?, collage on board, 64 x 85 cm, DR2004:0449:002, Cedric Price fonds, Canadian Centre for Architecture

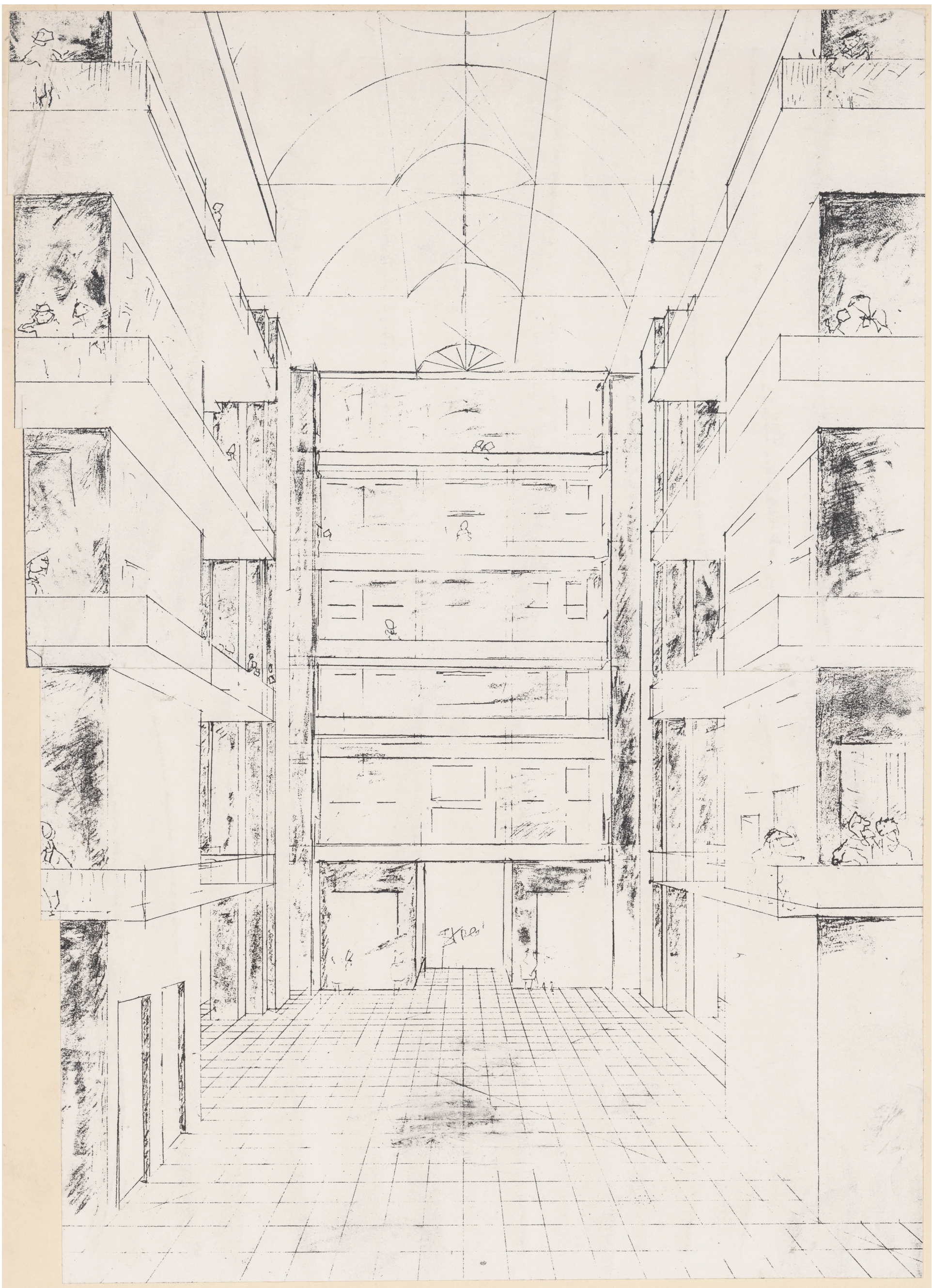


Figure 7. Interior perspective of Intelligent Network buildings. Detail of Cedric Price, architect, Gordon Pask, draughtsmen, Kawasaki: presentation panel with perspectives of students' residences and diagrams illustrating the transmission and storage of information, 1986?, electrostatic prints on paper, all mounted on board, 59,5 × 84,3 cm, DR2004:0449:001, Cedric Price fonds, Canadian Centre for Architecture

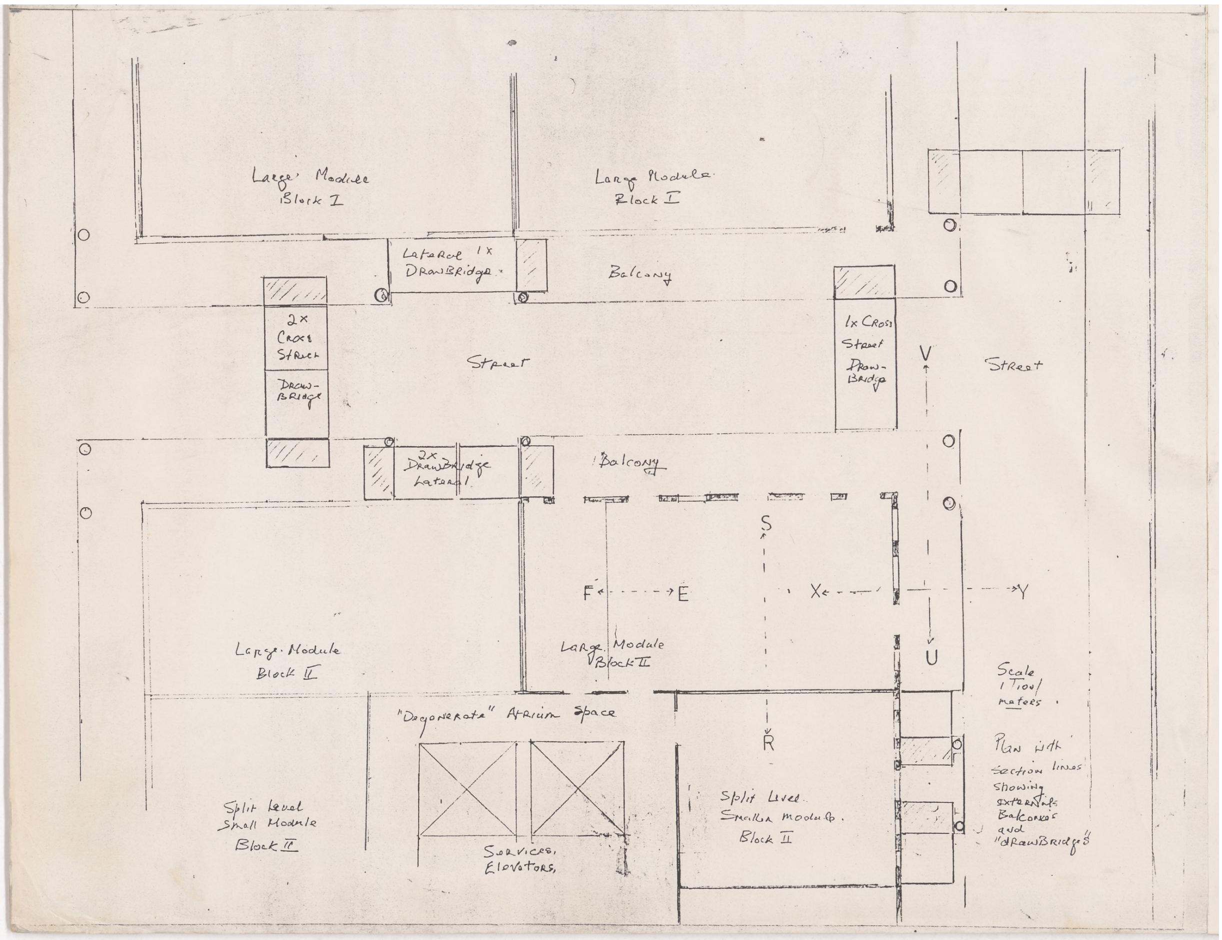


Figure 8. Plan showing the locations of drawbridges between Intelligent Network buildings. Detail of Cedric Price, architect, Gordon Pask, draughtsmen, Presentation panel collage of sketches and drawings for Kawasaki project, 1986, electrostatic prints on paper, all mounted on board, 64 × 84,3 cm, DR2004:0449:004, Cedric Price fonds, Canadian Centre for Architecture

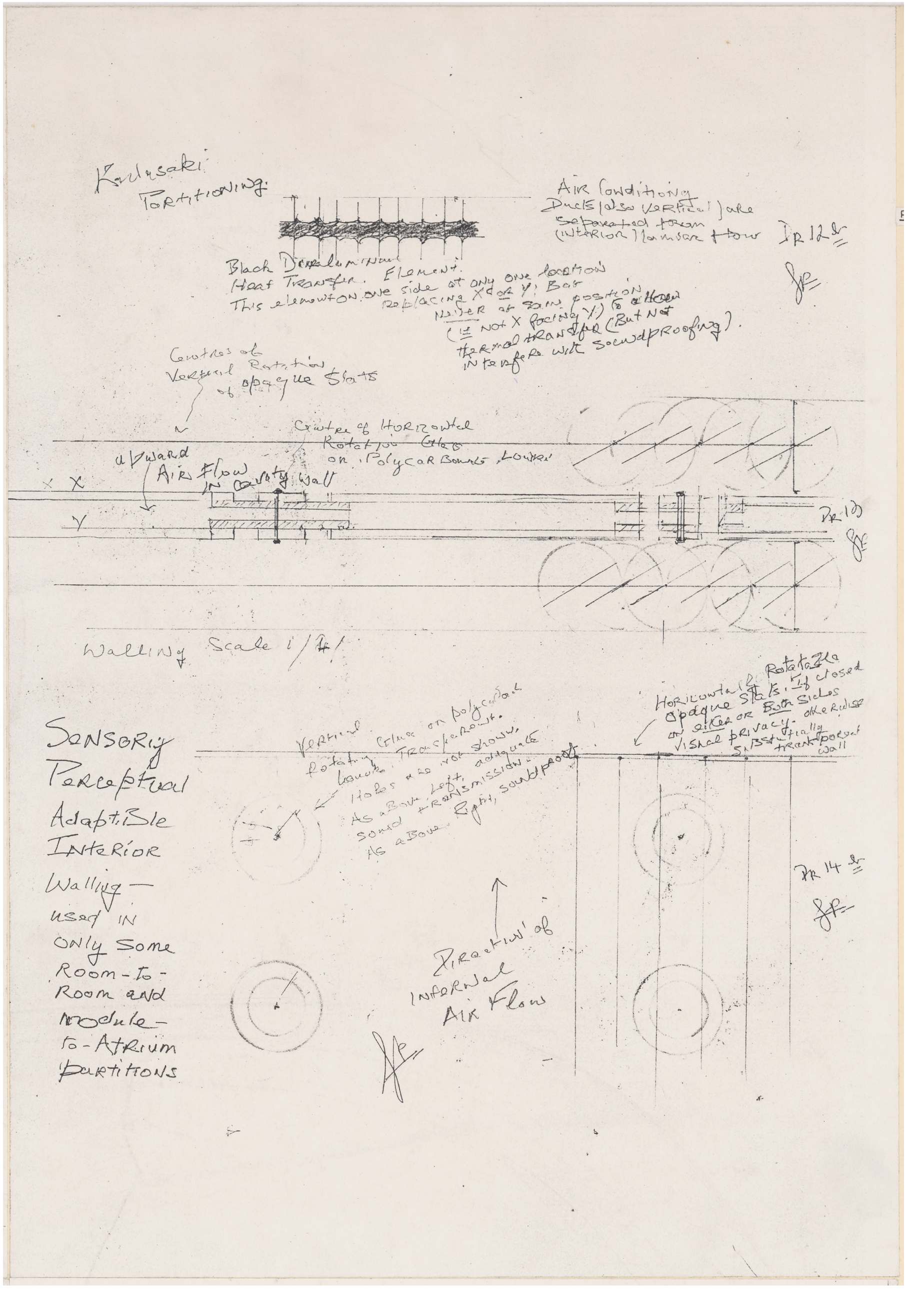


Figure 9. Plan and section detail of Sensory Perceptual Adaptive Walling. Detail of Cedric Price, architect, Gordon Pask, draughtsmen, Presentation panel collage of sketches and drawings for Kawasaki project, 1986, electrostatic prints on paper, all mounted on board, 64 × 84,3 cm, DR2004:0449:004, Cedric Price fonds, Canadian Centre for Architecture

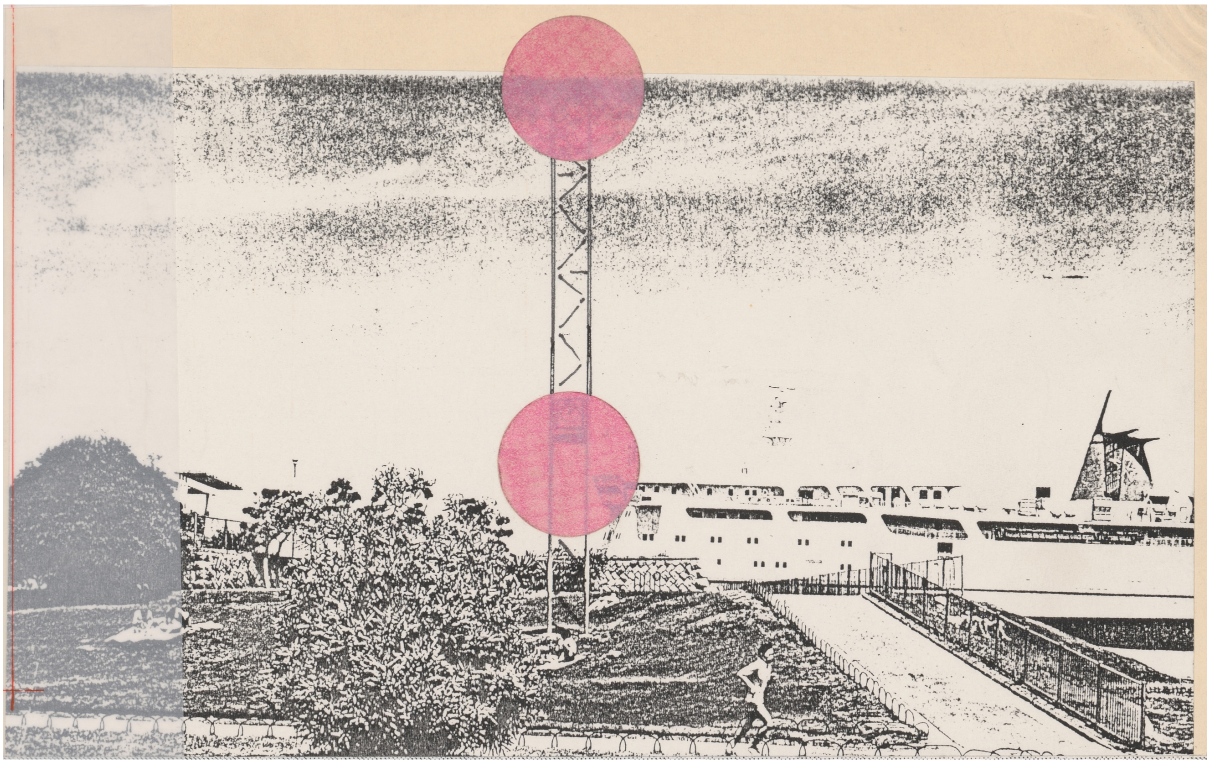


Figure 10. Collage depicting a Techno-Tree. Detail of Cedric Price, Montage for Kawasaki project, 1986?, montage, 60 x 85 cm, DR2004:0449:005, Cedric Price fonds, Canadian Centre for Architecture

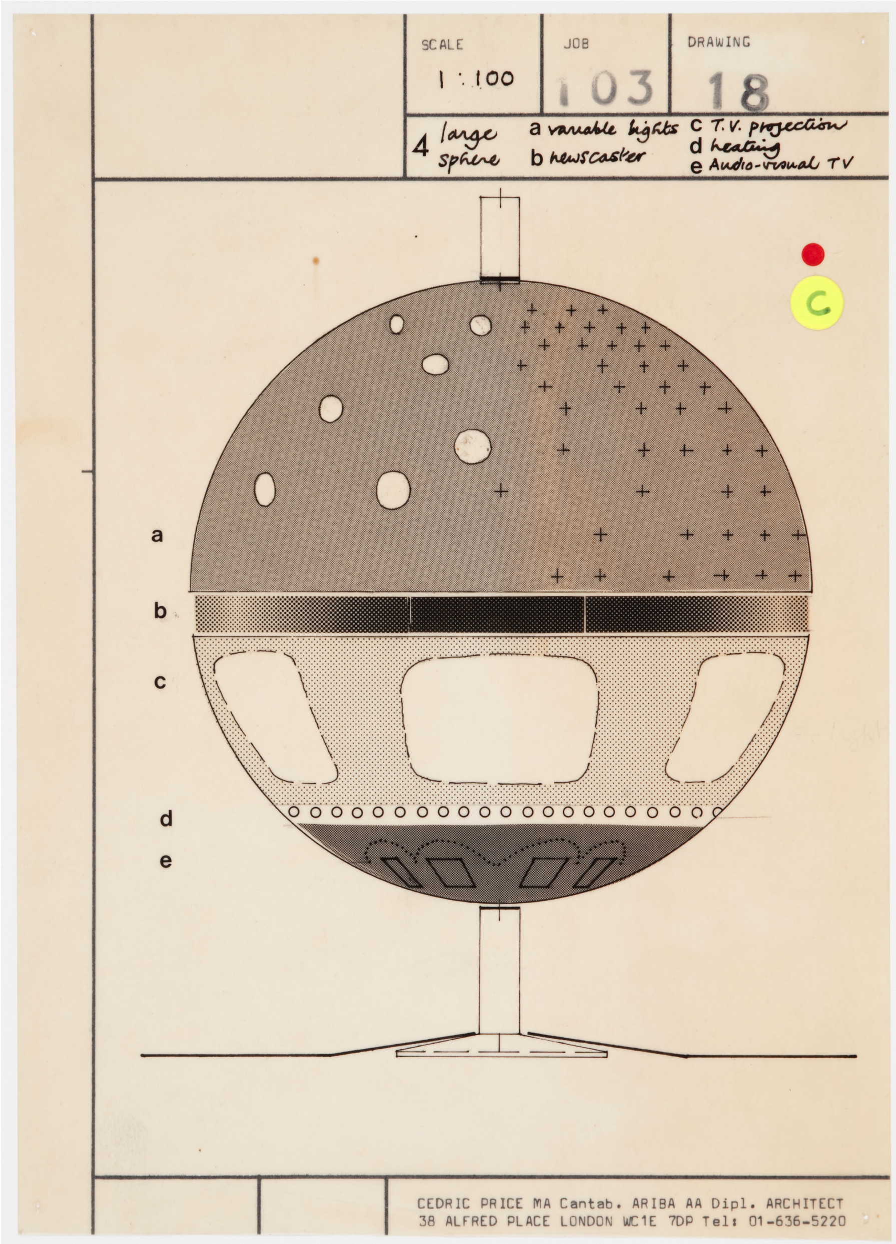


Figure 11. Large sphere of the Olympia project. Cedric Price, Olympia: elevation for large sphere, 1971, screentone appliqué, ink, graphite and transfer type with ink stamp and paper cutouts on pre-printed translucent paper, 29,2 x 20,8 cm, DR2004:1221:001, Cedric Price fonds, Canadian Centre for Architecture