Information, Communication, Feedback: The Festival Plaza (Japan World Exposition Osaka 1970), Center Pompidou and Sendai Mediatheque as Suggestive Examples of Artificially Intelligent Architecture

Danyal Ahmed and Junichiro Higaya

Department of Architecture and Building Science, Graduate School of Engineering, Tohoku University, Sendai, Japan

ABSTRACT
This paper attempts to propose the characteristics of artificially intelligent architectural design through the case studies of the Festival Plaza (Japan World Exposition Osaka 1970), Center Pompidou and Sendai Mediatheque and studies the handling of information, communication and feedback processes in these suggestive cybernetic environments. The first section of this paper analyzes Center Pompidou by researching the competition brief and the initial states of the winning entries presenting their preserved notions against the bureaucratic, political and budgetary constraints. The second section surveys the contemporary history behind the projection of a cultural center as a cybernetic or more precisely as information broadcasting entity by reviewing Geddes’s Index Museum, Malraux’s Le Musée Imaginaire (Museum Without Walls), etc. Finally, the third section summarizes the contributions of the Festival Plaza to the cybernetic (or information and communication) conception of the Center Pompidou, Archigram (or vice versa) and eventually represents Sendai Mediatheque as a suggestive apohesis of this overlapping cybernetic discourse. This paper then concludes the characteristics of artificially intelligent architectural design by suggesting that the technology of artificial intelligence, acting invisibly as in the background of these cybernetic environments, autonomously collects, analyzes, interprets, disseminates, receives and feedbacks information.
1. **Section I. The synopsis of Center Pompidou as a live center of information**

1.1. **Constant renewal of information – the Center Pompidou’s (Beaubourg’s) project brief**

“Constant renewal of information” was proposed by the French President Georges Jean Raymond Pompidou on 11 December 1969 as an antithesis to the questioning of the traditional notion of art and culture by the French society. The aim was the dissemination of information in its broadest sense and this time in the form of artistic creations not only regionally, in France, but internationally. In order to formulate a benchmark for the broadcasting of this limitless information, Pompidou envisaged a trans-disciplinary experimental contemporary plastic art’s center right in the heart of Paris. Information was divided, then sub-divided in order to formulate a colossal information center that broadcasts, with its simultaneous renewal and upgrading, the objective being to re-affirm the richness and contradictions posed by contemporary artistic creations in their most sensitive forms without being judgmental but merely through their presence. The communication and information exchange via receiving, breaking down and re-distribution from this broadcasting colossal information center was to be triggered via multiple formats such as of visual transparency, electronic displays, traveling exhibitions, television broadcasts, publications and through a remotely accessible electronic library catalog/distance reference cards. Through the amalgamation of information and men, the public was entrusted to reveal this true unity of the information machine.

Centering on the democratic characteristics of information – encyclopedic, open, freely accessible and self-served – the competition brief³ (Ministry of Culture France 1970a) harshly negated the practicing of restrictive policies, capricious opening hours and bureaucratic layers between the users/citizens⁴ and their access to information, in hope of achieving a live center of culture and information for all classes of society that focused particularly on current news and media instead of the past. The emphasis of the brief on invisible computational infrastructure – particularly on library automation and closed-circuit security systems – was remarkable in the sense that it portrayed their usage as for the dissemination of information to the broader environment via current events, interoperating with documentation centers in Paris, throughout France and internationally.

The brief’s Diagram of Activities and Interrelationships (Figure 1) straightforwardly emphasizes both the intra- and inter-information flows among different sections of the building. With the major divisions of four non-hierarchical categories of reception and orientation (A), main activities (B), management (C) and parking (D), this diagram flattens the programmatic hierarchies by rejecting any notion of priority of any specific function over the other and renders all the information uniform as if in a convenience store where all the products are of same calibre and significance. These flows of information then act as interfaces (Figure 6) between the users/citizens and objects/documents. Interfaces were more important than the components (different sections of the building) as they kept the users/citizens fully informed regarding the artistic events taking place via the building whether within the city, region, country or globally. Users/citizens as they moved through these various interfaces and interactions within the building repeatedly encountered the “constantly renewing” of information that they were presented with and thus upgraded their knowledge continuously.

The continuous renewal of information and communication among the different departments as indicated in the brief combines the building in a unified whole – as a mega-locus of information – a hypothesis that has been thoroughly verified by the honorable mentions of the competition. While maintaining their individuality, the different components strived to formulate a combined whole, monolithic structures, unified environments, in all of these award-winning entries. Among all of the award-winning projects, the jury particularly noted the spirit of project 641 from Philadelphia submitted by some young architects Giovanni Cosco, Nathaniel East, Samuel Galbreath, Richard Huffman and Russel Weeks (Figure 2). Their competition entry text is of particular significance as it materializes the notion of invisible flows of information comprehensively, as stated under conceptual approach and development of the program.

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³Ostensibly known in French as Livre Rouge roughly can be translated in English as The Red Book.

⁴The users were not only the artists but people working in cooperation with them resulting in mutual activities such as architects, engineers, businessmen, critics, galleries, associations and foundations etc.
We see it as a Matrix of Flexibilities; for future space uses, for future needs to evolve, for future ways of partitioning space and experimenting with art. The incompleteness will be revealed in our design, during the construction process, by the future possible users [added emphasis]. As knowledge and

**Table 1.** Diagram of Activities and Interrelationships (left) (Ministry of Culture France 1970b) and its legend (below) (Ministry of Culture France 1970a) and the resulting architecture (right) from Piano and Rogers initial studies after winning the competition in November 1971 (Piano + Rogers Architects and Ove Arup + Partners Design Office).

| A. Orientation | B. Main Activities | C. Management | D. Parking |
|----------------|--------------------|---------------|------------|
| A1. Access     | B1. Newsroom       | C1. Scientific and administrative staff | D1. Staff parking |
| A2. Reception of infants/children | B2. Permanent gallery and documentation center for industrial creation | C2. Social services | D2. Visitors parking |
| A3. Cafeteria, canteen | B3. Experimental gallery for contemporary art | C3. Surveillance and control | D3. Auto-cars/Coach parking |
| A4. Restaurant | B4. Temporary exhibitions | C4. Logements/accommodation | D4. Camions/truck parking |
|                | B5. Events and meetings | C5. Ateliers and workshops |              |
|                | B6. Museum          | C6. Local techniques |              |
|                | B7. Library         |                |              |
|                | B8. Specialized documentation, research | |              |
|                | B9. Storage and reserves | | |

**Figure 1.** Diagram of Activities and Interrelationships (left) (Ministry of Culture France 1970b) and its legend (below) (Ministry of Culture France 1970a) and the resulting architecture (right) from Piano and Rogers initial studies after winning the competition in November 1971 (Piano + Rogers Architects and Ove Arup + Partners Design Office).
instructions will become in time more precise, our meta-architectural image will solidify into a more complete architectural form: this may be the Hegelian way by which « . . . the universal enriches itself by becoming immersed in the particular . . . » . . . The Program, then asks for: [a.] A temporal definition: Storage from the past, experimentation in the present, beaming toward the future. [b.] A user definition: Cultural amusement, personal experimentation, assistance to staged official events. [c.] A scale definition: A neighborhood permeability and use, and accessibility as a repository of culture for city usage. A symbolic lieu for the dissemination of a new emerging form of art. In this we read the following metaprogrammatic needs: Experimentation, flexibility, growth, (rythmic [sic], change) modulation and variance; adjustability, symbolism, incompleteness and also: Modularity, ease, repetition of basic existant [sic] answers, topicality of solutions, respect for the surroundings. (Ministry of Culture France 1971a, 113-114, 116-117)

Inspired by Alvar Aalto’s Library project in Viipuri, project 641 being highly flexible and without any suggestive use also utilized billboards and indicated that

[the billboard projects a « saussurian sign » in a symbolic way, by the associated means of sound, light, words, images. (Ministry of Culture France 1971a, 120)]

The fact that both the projects — distinction holder project 641 and the winning entry by Piano and Rogers (project 493) — were selected by the jury on more or less the same factors, particularly the fact that both exceeded in delivering the power of information technologies and networks both as a tool and a symbol simultaneously that was conveyed to the users/citizens through the overwhelming billboards/display screens/clip-on media systems suggested by both of the entrants on the facades of their proposals. The aura of projection of information and communication both as a tool and a symbol is suggestive of the successful transformative (or either superficial) qualities of technologies utilized by colonizing powers — e.g. as in the case of steam engines — that were utilized both in favor by these colonizers as tools as well as exerted surmountable symbols of control and authorization on the defeated. This fact also acted as an antithesis to the section of French society that was rigorously questioning the traditional notion of art and culture at the very moment and this authoritative enforcement of information and communication as the futurist cultural narrative played in the favor of the French government.5

1.2. A live center of information – Piano and Roger’s project 493

In order to answer the problematic of materializing the “constant renewal of information” as posed by the French President Pompidou, project 493 by Renzo Piano, Richard Rogers, Gianfranco Franchini, John Young and Ove Arup & Partners, eliminated every trace of any kind of construction

5It is another fact, however, that the billboards/display screens/clip-on the facade facing the piazza in Piano and Rogers entry were never installed — either due to budgetary constraints or due to the problematic political discourse regarding the control of information that was to be displayed on these clip-on media systems.
on site but intentionally only left what would be called as a "colossal of information". The idea of an information center was proposed with information on the outside, inside, being relayed and linked up to other centers across the world. Information was presented in its each and every avatar – mobile exhibitions, live theatre and music, games, stalls, meetings, parades, competitions, shops, cafes, restaurants, reception areas including children’s reception area, current events rooms, information areas/rooms, design center, world catastrophes, among other commercial and cultural activities. Furthermore, by dividing the type and display of information on two sides of the proposed structure – Rue du Renard (street) as related to moving vehicles and passing pedestrians and that on the square related to as more static viewing points – architects made sure that all the major, socially relevant information scattered as aforementioned and in any comprehensible forms coming down was to be easily deciphered by the users/citizens/visitors. With the intention of easy orientation and flexibility, all the vertical movement was proposed on the face of the building so that anyone can comprehend while viewing from the square in front. It can also be noted here that closed-circuit televisions as well as all the usual security measures were also proposed in the competition text. According to the competition entry text submitted by Piano and Rogers

We recommend that the Plateau Beaubourg is developed as a 'Live Centre of Information' covering Paris and beyond … This centre of constantly changing information is a cross between an information-orientated, computerized Times Square and the British Museum, with the stress on two-way participation between people and activities/exhibits. The Plateau Beaubourg information centre will be linked up with information dispersal and collection centers throughout France and beyond: for example, university centres, town halls, etc. Information is shown in three areas: [a.] Within the building, which offers a number of large, flexible, uninterrupted floor area (varying between 5,500-7,500 sq. m.) housing books, fine arts, architecture, cinema and industrial design, etc.; [b.] On two long facades, one facing west across a sunken square and the other facing Rue du Renard. A 3-dimensional load-bearing wall carries constantly changing information, news, what’s on in Paris, art works, traffic situation, maps, weather and financial reports, cinema, television, robots, temporary structures, electronic two-way games and information, etc. (Ministry of Culture France 1971a, 101-102)

By prioritizing the information and communication over the static, structural demands of the project, the winning entry 493 suggested all the flexible, ephemeral and adjustable modifications to the proposed architecture. All the lifts and escalators were clipped on to the facade so that intensity of use or change in the positions of departments or their entrances can be easily accommodated. Cranes were proposed on the roof to lift and maintain different clip-on parts of the building ranging from wall panels to electronic components to any futuristic devices. Floors and their supporting beams were also proposed to be dismantled and re-positioned when desired. The external structural grill was also designed to carry a constantly changing clip-on system of information. Although the scheme impressed the jury due to its infinite flexibility

Figure 3. The Centre Pompidou's diagram of information and communication's network (Ministry of Culture France 1971a).
but in the end only some of these elements were realized reason being the lack of engineering advancements, time and budgetary constraints.

One of the most significant aspects of the competition entry text by Piano and Rogers was their presentation of the proposal as a diagram of an information and communication network (Figure 3). Starting from macro (originating from the Center and dispersing throughout to regions, in France and globally), mezzo (within the surroundings) and micro (within the immediate most premises/building), these information and communication diagrams rendered the architecture invisible, only to be comprehended via transmission or while being broadcasted.

2. Section II. The notion of cultural center as an information broadcasting entity

Twenty-first century rendered all sorts of classifications of museological artifacts – whether it be the proportion, color, function, context or a relevant time period – as a unified source of information. It was the flow of information that was prioritized instead of the architecture that rendered it in multiple segregations – particularly in the projects of Le Corbusier that divided building masses according to their functions. One similar case is of Sir Patrick Geddes, who around 1902 proposed that a visitor must witness all the museological information in a unified uninterrupted flow, giving him a glimpse of easily graspable, quickly comprehensible, colossal of information. In a project defined on the aforementioned principles named as an Index Museum, Geddes explains that segregated disciplines (physical, organic, social, art, education and morals) are supposed to be an amalgamation due to their common thought in Evolution and one has to look upon the broad and general, being observant and concrete, studying all these kingdoms of thought at once and descending at will into each by turns. Being a precedent to the Center Pompidou’s project brief, Geddes stated:

What then is an Index Museum? First of all, more than an ordinary museum it is not only an Encyclopaedia but an Encyclopaedia Graphica … an Encyclopaedic Methodica … with things and diagrams instead of words, “with specimens instead of types” in Prof. Brown Geddes’s phrase, thus a literal one, not a metaphor … (Paris Exposition of 1900 surpassed even the Louvre at its best, and even in parts of its own business) that of the fitting display of antiquities. But where we may hope to improve upon the exhibition, and to make it an Index Museum indeed, is not only by gradually purifying it of its lower elements, but by emphasising and unifying its higher ones … Museum and Gallery, Library and College are thus more and more clearly seen to be capable of essential expression and summary within a single culture-organisation, to be capable of generalised representation in culture within a single building. Why speak then as if it were a feature of an Exhibition? Why not permanently as a civic institution, linking the many larger but scattered resources of culture – museum and college, gallery and library – into one intelligible whole? This then (an outline, of course) is our prepared Index Museum; and we have seen it to fulfill both the conditions laid down – the abstract and the concrete; that is, in plan it is an abstract classification of the arts and sciences; in execution it is an outline of the evolution of civilisation. (Geddes 1989, 65-67, 69)

André Malraux – a French novelist, art theorist and France’s first Minister of Cultural Affairs – in his essay titled Le Musée imaginaire7 written in 1953 – by questioning the existence of a museum lineated all the museological entities as pure sources of information irrespective of their color, proportion, context, function (religious, etc.) and the period in which they were produced. Negating the notion of confined museum within a walls, he proposed a museum that rests purely within the imaginary domains of a person, as he proclaims that it is the human body that has been the supreme object of art within the Western civilization and it is only due to this presence that all the available information is interpreted, as he proclaims:

Accidents impair and Time transforms, but it is we who choose. (Malraux [1954] 1974, 67)

By referring reproduction as a new field of art experience, a common heritage to all mankind and a way of freeing art from its evaluations,8 he suggested that the photographic reproduction of lineated artworks then engages itself in new correspondences and contrasts.

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7 Le Musée imaginaire has been roughly translated from French to English language as Museum Without Walls.
8 Malraux argued that photographic reproduction when arranged on the same page renders different museological mediums such as a miniature, a piece of tapestry, a statue and a medieval stained-glass window, to seem as if they are members of the same family.
9 Geddes proposed the layout of an Index Museum in these words:

We have seen that our Index Museum must at once express the outer world in its concreteness, yet the inner thought world in its abstractness also. It is on one side a miniature of the exhibition, yet also a materialised presentment of the classification of the Arts and Sciences. Beside an outline of each Art we need then an outline of its corresponding Science: that is to say, besides the exhibits of the mechanical, chemical industries, or conveniently in galleries overlooking them, each reached by its appropriate staircase, we must place the means of a corresponding outline of mechanical, physical, and chemical science, and each, as far as may be, must be historically arranged; so that, for instance, along the gallery of electricity one may see such expression as may be practically possible of the various stages of electrical invention and application exhibited immediately below. Look now along the general perspectives. From the staircase connecting these at one end, we look backwards from our present twentieth-century discoveries and inventions to the days of Galvani and Volta, and of the rude fire and semaphore signaling which these discoveries were indirectly destined to replace. Or midway in time, the parallelism of the scientific discovery of Oersted with the inventions of Wheatstone and Morse. Or starting anew from the opposite end – the earlier and simpler one – we show our visitor only a fragment of crude lodestone, a piece of amber, and point out for him the essential process of discovery which has followed the intelligent utilisation of these, from Flavio Gioja of Amalfi and Gilbert of Colchester, to Kelvin and Marconi (Geddes 1989, 67-68).
through continuous shuffling and recombination that results ultimately in a new colossal of information.

Hitherto the connoisseur duly visited the Louvre and some subsidiary galleries, and memorized what he saw, as best he could. We, however, have far more great works available to refresh our memories than those which even the greatest of museums could bring together. For a “Museum without Walls” is coming into being. ... it will carry infinitely farther that revelation of the world of art, limited perforce, which the “real” museums offer us within their walls ... thanks to the mass of works [sic] sets before us, frees us from the necessity of this tentative approach to the past; by revealing a style in its entirety - just as it displays an artist’s work in its entirety - it forces both to become positive, actively significant. (Malraux [1954] 1974, 16, 21)

Equalling (photographic, etc.) reproduction to the art of fiction, Malraux argued that the systematic falsification of the scale, color, context, function and time period renders this reproduction as a fictitious art that is merely to be imagined without any existence in reality. On the other hand, this metamorphosis sometimes also reveals new beauties, throws light on some moot point, restoring a work of art its due place in the company of the elect. In doing so, these works unintentionally become the moments of art fully depicting the life-story of their great creator, thus emphasizing the creative expression of an emotion that exceeds a mere will to art. Such an approach can be witnessed in the recent work of Hovestadt and Bühlmann where a number of photographs in a compilation are thrown abstractly to be in an infinite discussion (Hovestadt and Bühlmann 2013) (Figure 4).

There could have been no absolute example of the instant, spontaneous, knit-able into any locale and psychologically substantial popping-up of information from nowhere — that served as an inspiration for the Center Pompidou as well — other than the Instant City by Peter Cook, Dennis Crompton, Ron Herron and Gordon Pask — members of the Archigram in 1968. By designing a network of information-education-entertainment — “play-and-know yourself” facilities — as Archigram called it — for the psychologically suppressed and underprivileged citizens, or victims of gentrification, this spontaneous program skillfully utilized robots — to which Archigram labelled as “the symbol of the responsive machine that collects many services in one appliance” — audio-visual display systems, projection television, trailered units, pneumatic and lightweight structures and entertainment facilities, exhibits, ganttries and electric lights. Existing somewhere in-between the hardware (the design of buildings and places) and software (the effect of information and programming on the environment), this project flooded and enriched the habitants of intended places with lots of physical and electronic, perceptual and programmatic information and networks such as fairs, festivals, markets, societies, with trailers, stalls, displays and personnel accumulating on an often ad hoc basis.

Where the Instant City was spontaneous and dynamic dissemination of uncontrolled information, Computer City by Dennis Crompton in 1964 was a speculative proposal that deployed a computer system that detected and facilitated patterns of activity in a city area with a population of 100,000 people, that in other words, can also be classified as an approach towards controlling the sprawl of information and communication, as and when deemed necessary. Similarly, the Plug-In City project by Warren Chalk, Peter Cook and Dennis Crompton produced between 1962–66 also placed computer rooms and cranes onto

Figure 4. Malraux in his museum without walls (left) (Jarnoux [1952] 2020) and reproductions in discussion (right) (Hovestadt and Bühlmann 2013).
of built structures merely being as information themselves and radiating in all dimensions. The City Interchange project by Warren Chalk and Ron Herron in 1963 also deploys towers that were suspended from central masts containing services such as electronic data transmission, traffic control and administration, radio-telephone tower, communication and news service relay station, inter-commercial closed-circuit television hook-ups, public television and Telstar re-diffusion center. Furthermore, Oasis – an indeterminate civic building project by Ron Herron in 1968 – also holds stark resemblance to the Center Pompidou (Figure 5) (Archigram Archival Project 2020; Postle 1980; Sadler 2005).

The notion of a well-serviced shed has always been persistent in Archigram’s work and this shed was supposed to be ultra-dynamic, with every activity of its users being fully projected by it as well. This supposition, taken philosophically, resulted in the Center Pompidou as being composed of six sheds (flexible floors), one on top of the other. Technological utopianism and pop and science fiction/imagery projects testify that Archigram treated information and communication as primary and any notion of architectural discourse as secondary in their attempts.

Cities are first a number of events and only secondly a collection of buildings … What’s needed is a new architecture to stand beside the space capsules, computers and throwaway packs of an atomic world. (Postle 1980)

On October 1969 and April 1970, a group of museum specialists in contemporary art and a general museologist met in Paris at the invitation of UNESCO to exchange views on the problems of common interest regarding Western museums of contemporary art. By questioning the notion of traditional museums, they presented museum and the subsequent works at display as an information center and suggested that the museum with future art which does not express itself in material form must represent itself as a transmitting centre instead of being as usual a repository of consecrated material. In concentric descending order, they expressed the information processing stages that an information facility must conform to as

1) **First circle activity.** Primary information, i.e. all information, even before it is processed by television, radio and the press; in other words material from press agencies, wire services, live discussions, news comment, fashion reports, etc.

2) **Second circle.** Studios and technical facilities for processing information for the public, artists and the museum.

3) **Third circle.** The processed information, which is currently available in the form of exhibitions, concerts, plays and films.

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**Figure 5.** Postle’s (1980) and Sadler’s (2005) comparison of the techno-utopianism of Archigram (left-column) as portrayed in the Center Pompidou (right-column). Left-column: (a). Self Destruct Environ Pole – Night. (b). University Node (Plug-in 6) Elevation. (c). Tuned Suburb: Oasis, Right Side. (d). Oasis. (Archigram Archival Project 2020). Right-column: (e), (f) and (h). West facade. (g). East facade from a street. (Meguerditchian 2003-10).
(4) In the centre. The collection as memory bank. The memory bank and what is stored in it together make up the collection as a place for contemplation (not necessarily in the same building). (Gaudibert et al. 1972, 13–14)

To re-capture the constantly distorting nature of information and the resulting confusion, they proposed an all encompassing, didactic but experimental discourse awareness is hampered because information is constantly distorted . . . [resulting] . . . in an increasingly confused situation. All need information, and the question is what method should be used to obtain it? We advocate the creation of a model system in the form of a vast experimental laboratory, which could stimulate and test every kind of information situation; in other words, the museum seen as a centre of information, as a television broadcasting station. (Gaudibert et al. 1972, 14)

The international expositions and their resultant hypermarket, self-service store, or a factory could then be said to be the successful precursor of the Center Pompidou – a hypermarket of culture – where culture was fundamentally seen as a problem of communication. Based on the principles of American consumer culture, a hypermarket presented a space of consumption that was highly transparent, flexible, regenerate able, optimal urban structures that are potentially limitless and utmost functional. With the flow of information central to its operation, this space equated the notion of culture with that of information, with examples being, the Crystal Palace, Ludwig Mies van der Rohe’s Concert Hall, Albert Kahn’s great sheds, Johannes Brinkmann’s Van Nelle factory, Norman Foster’s IBM Pilot Headquarters and Sainsbury Centre for Visual Arts and Ezra Ehrenkrantz’s industrialized school systems, etc. As in the words of Piano

[The Center Pompidou] is a vast multidisciplinary structure, a culture factory that preserves and exhibits important modern art collections . . . The centre is like a huge spaceship . . . that landed unexpectedly in the heart of Paris, and where it would very quickly set deep roots. (Piano 2020)

Flexibility was one of the most emphasized and significant aspects of the Center Pompidou’s project brief as well as pedantically incorporated in their design by Piano and Rogers. Flexibility rendered the space generic, one of the characteristic qualities of information and communication technologies and the reason for its incorporation in the brief. While hailing flexibility as a representation of individual choice, freedom, everyday life and play in the decades of 60s and 70s, the winning scheme incorporated it to achieve the traits of flexible, transformable, evolutionary and unfinished design. To be an another flip of the coin, Rogers stressed the notion of information expressed via flexibility as

[The Center Pompidou] was a truly flexible container in which all interior spaces could be rearranged at will and exterior elements could be clipped on and off over the life span of the building. The notion of flexibility is extended to every component of the building; the Centre was to act as ‘an ever-changing framework, a meccano kit, a climbing frame for the old and the young’ . . . [the design expresses the belief that buildings should be able to change to allow people the freedom to adjust their environment as they need. (Rogers 2020)

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1The Big Roof was 292 m long, 30 m high and 108 m across with only six supporting beams. This structure resulted in a huge “Festival Plaza” underneath and a structure in which capsules can be plugged-in (Koolhaas and Obrist [2011] 2019, 349).

2Isozaki (Koolhaas and Obrist [2011] 2019, 35) explains about Taro Okamoto as
This ultimate flexibility in Piano and Roger’s proposal then resulted in elimination of walls and presented inter-
faces as alternative to them. The nature of these inter-
faces was determined by the type of activity they 
governed between people and machines, people and 
artworks, people and documents, archives, etc. 
Elimination of superficial boundaries and a continuous 
flow of information was the ultimate goal of these inter-
faces. In due course, again, the user was assigned 
a supreme position within the dialogue of these inter-
faces as he was the one responsible for their interpreta-
tion. Among the entries that were awarded honorable 
mention, Kisho Kurokawa’s entry particularly emphasized 
on flexibility but in a different manner as compared to 
Piano and Rogers winning entry. It proposed the geo-
metric extension by means of plug-in modules (Figure 6).

3. Section III. The synopsis of Sendai 
Mediatheque as a live center of information

3.1. The Festival Plaza of the Osaka Expo ’70 – 
apotheosis of information, communication and 
feedback – an inspiration for the Center Pompidou 
or vice versa

Introduction of Festival Plaza9 by Tange et al. in the 
Osaka Exposition in 1970 was a straight-forward 
attempt of simultaneously visualizing and designing 
an invisible mega-colossal of information, communica-
tion and the resulting feedback. Right from its incep-
tion, the Festival Plaza initiated a contradictory 
dialogue – resultant of the discrepancies between its 
designers, Tange and Okamoto10 – that generated 
a kind of dynamism. While Tange brought in synthesis,
Okamoto focused on the opposing approach and their 
resultant tensions, as Akira Asada (Koolhaas and Obrist 
[2011] 2019, 35) notes

Tange and Isozaki made this great structure that was 
supposed to be a cybernetic environment. They 
wanted it to be invisible architecture, faceless archi-
tecture, with no façade; everything is the exchange of 
information, etc. Then Okamoto said: “It’s too factional 
and futuristic. Let’s make something very brutal.” So he 
put this figure [Tower of the Sun] through it. It was 
a deliberate Jomon act against Yayoi civilization. 
Jomon is an ancient culture - it literally means trace 
of rope around a vase. Jomon is regarded as rough, 
wild, and popular. Then came Yayoi, which is smooth, 
polished, and regarded as aristocratic. Okamoto took 
pictures of Neolithic vases and said: “This is Japan. 
Forget about polished surface, go directly into this 
depth!” It’s an odd couple: Tange with Yayoi sophisti-
cation and Okamoto with Jomon, representing some 
deeper transgressive energy.

While Tange conceived this Festival Plaza to be 
a potent “object” for this national event, as Toyo Ito 
(Koolhaas and Obrist [2011] 2019, 45) recalls, Isozaki 
was interested in an urban space implementable by 
means of information – an information plaza – based 
on Archigram’s guidelines (Figure 7)

… the Festival Plaza that Isozaki wanted to create was 
an urban space that would be immediately implement-
ted by means of “information”; an instant city. 
Undoubtedly, he was greatly influenced by 
Archigram’s Plug-In City and Walking City, from 1964. 
On this site for a national event, Isozaki conceived 
a scene of people intoxicated by a hallucinatory 
urban space produced by two robots, as if in a huge 
disco.

![Figure 7](https://example.com/figure7.jpg)

Figure 7. Archigram’s response to Expo ‘70 – an information corridor (comoVER (Blog) 2012).

In my view, Japan’s first avant-garde was this artist, Taro Okamoto. I was really surprised when he proposed the Tower of the Sun: it pierced the Tange team’s flat Big Roof scheme for Expo, sticking out above. It was a tumult.
The notion of Festival Plaza was in itself as of incomplete structure – a characteristic of information influenced architecture – that was further exhibited by the Mid-air pavilions embedded in Tange’s Big Roof by Kurokawa, Awazu and Maki. The notion of an infinite dialogue between seemingly segregated entities of information, as is evident in Malraux’s and Hovestadt’s works (Section I, Sub-heading 3) was explicitly deportable in Kurokawa’s work as his Article 8 of “Capsule Declaration” written in 1969 stated: 

The capsule mentality is opposed to uniformity and systematic thinking. The age of systematic thinking has ended. Thought disintegrates, is dissolved into separate, powerful words, and is encapsulated. A single word, or single name, can spread, transform, permeate, stimulate an entire society and help to mould the thinking of the age … (Koolhaas and Obrist [2011] 2019, 457)

This Plaza was thought of as an invisible environment, a techno-utopia with a seating for various spectacles, computer-controlled lighting and two giant robots that choreographed both (Figure 8). In short, it was a fluid, high-tech space for transient events as it hosted performances by Sammy Davis Jr., Sergio Mendes, Andy Williams and the Gutai artist group (Koolhaas and Obrist [2011] 2019, 522). While Tange summed up the space underneath the Festival Plaza as an environmental experience possessing unforgettable and psychologically satisfying happenings, Ichiro Harui, who criticized the Expo as the grandiose fake festival, applauded Isozaki’s concept of an invisible monument as an antithesis to the expo syndrome of monumentality.

Amid all the opportunistic technological fantasies of the ‘future’ prevalent in the Expo, [Isozaki’s idea] is something to be valued … it looks at the unpredictable ‘present’; it tries to bring day-to-day life to our consciousness. (Koolhaas and Obrist [2011] 2019, 523)

While on the one hand, this invisible space of accidental happenings – the Festival Plaza – somehow acted as a realization of the dreams of Archigram who never were able to do so in the West, on the other it also acted as an inspiration, although on a very smaller scale as compared to its own, for the Center Pompidou. Apart from the philosophical and metaphorical implications for the Center Pompidou, it acted as a structural inspiration for Peter Rice – engineer for Center Pompidou – to use the concept of the 640 ball joints that were structurally used in the Big Roof of the Festival Plaza.

### 3.2. Sendai Mediatheque – Architecture as a device for storing and transmitting information

Toyo Ito has been a techno-utopian protagonist in the years between the decades starting from 80s till earlier 2000 when his theoretical and architectural praxis shifted from the subjects of robot, city, body and nature to auto-catalytic molecular structures (crystalline/molecular forms). The techno-utopia that initiated in 1971 due to the ongoing influence of technology in the 60s led him to design URBOT 001 (or Aluminium House), a resultant of inspirational influences from Archigram’s Plug-In City (1964), Instant City (1969), Walking City (1964) and Computer City (1964) and Isozaki’s writings from early and late 1960s. Shinohara’s influence from late 60s till early 70s can also not be neglected. This occupation with the technologically advanced atmosphere that renders all the entities such as visible light, video transmissions, radio waves, sounds, rhythms, images, colors, odors, water, air, people, cars, variations in temperatures, breezes and all encounters as insubstantial and incessant flow of information, eventually led him to design an ultimate colossal of information – Sendai Mediatheque. Although this visualization of invisible flows of information has previously been depicted in his projects of “Egg of Winds” and “Tower of Winds”, Sendai Mediatheque holds a unique priority as it not only visualizes the flow of information within, through and between its various activities but also broadcasts and transmits it to wider audience of the citizens of the Sendai city and beyond. By presenting
Mediatheque as an intermediary between the physical and the virtual body, he proclaims

[The Sendai Mediatheque] ... should be a model library and a model museum of the next generation, equipped with an advanced computer network. What is the true image of an architectural space where new media are used in abundance? Why must we picture the space intended for electronic media as ‘water’ or as ‘fluid bodies in water’? A graphic designer skilled in the use of the computer says he has the odd sensation that part of his body starts to flow into the screen whenever he sits at a computer ... In the electronic media, time and space are different from those we experience in daily life ... The graphic designer poses a serious question when he says, ‘just as water makes us realize that a human being is part of a greater nature, electronic media may modify or change the meaning or boundary of a human being, especially of the individual’. By entering into the computer screen, he became aware of the possibility of orienting the self toward the outside, a self that used to be excessively introverted. (Ito [2011] 2015, 118-119)

By referring architecture as a device for storing and transmitting information, he presents the project of “Tower of Winds” from 1986 that by selecting the air (wind) and sound (noise) from the various currents flowing through its surroundings turned them into luminous signs, or more precisely into (visual) information. He presented it as a question of introducing information into the environment. Among the infinite visualizations of information within our surroundings, he boosts the example of a typical convenience store where every possible lifestyle commodity is Saran wrapped, making the available information homogenized, relativized, deprived of any sense of vitality that ultimately results in a neutral, abstract and symbolic existence.

The competition design brief and later on the Project Advisory Committee of Sendai Mediatheque defined and proposed a mediatheque as something that supports each citizen as a creative individual, together with the comprehensive accumulation and supply of art images as emotional media, a library and various forms of information as intellectual media, and their fusion as new media, as well as providing images of spaces for new urban functions in a new era ... as well as being an accumulated body of wisdom comprising contemporary information technology as its infrastructure, can be used to generate new symbols. Accordingly, what are conventionally called libraries and museums are absorbed into a new system that allows the active access of every citizen. (Ito [2011] 2015, 136)

Focusing on the advanced information and communication networks for a futuristic library and museum, the information system advisory committee presented its themes as

(1) Rather than the conventional model of fixed, unidirectional services, it will be supported by the activities of user participation and self-expression.
(2) Rather than a model of autonomous service within the building, it will aim at a shared service network.
(3) The activity programmes will be constantly examined and new results incorporated, aiming at a self-generating facility. (Ito [2011] 2015, 137)

As a result of these guidelines on the information and communication facility for the new era, what Ito proposed, as he calls it, a New Dom-ino system that embodies a composite informational space, a new type of Mediatheque that possesses the characteristics of

(1) Elimination of spatial hierarchy.
(2) Maximized elimination of the distinction between interior and exterior spaces.
(3) Production of open, intensive spaces (Igarashi 2018)

With the aforementioned characteristics, all the superficial restrictions were eliminated resulting in a free-flowing information and communication network of indefinite spaces engendering multiplied relationships.
as a composite (Figure 9) holding up seven floors and pierced with swinging tubes.

In order to eliminate the artificial order of architecture, the seven levels were simply piled one on top of the other, as seven buildings were piled together. The intention was to make a ‘media convenient [sic] store’ [as a convenience store offers a profusion of products, a variety of media such as artwork, books, digital resources and all other items are presented as of equal value and equally accessible to all its visitors]. For Japanese, the notion of space represents ‘emptiness, be acuity, vacuum, nothingness’. It is what exists between two columns, the void in which multiplied relationships can be engendered, as the gap between the spoken words there is a ‘blank space’. With an emphasis on the ‘blank spaces’ represented as areas without signs, the maximum number of functions are attributed to these indefinite spaces, leaving room for future uses. With the elimination of rectilinear walls acting as artificial barriers, hundred different people can experience a freedom of hundred different paths, negating the basic principle of modern architecture of dividing a whole into elements and organizing them according to some rule. (Copans 2004)

Describing Mediatheque as in the state of being eternally under construction – a pivotal characteristic of information and communication architecture – he stresses the fact that it is not just the physical construction (hardware) that encompasses this architecture but a major component of it is the interior-exterior exchangeability, plasticity, organic fusion, the fourth dimension (intangible and mysterious four-dimensional art that embraces what is not visible), flexibility (that results in hierarchy-less architecture), transparency, emptiness, nothingness and eventually the softwares that it holds within, transmits and broadcasts with the wider community, the fact that has also been stressed by his mentors and his disciples in their theory as well as in architectural praxis (Blake 1963; Cortés 2008; Futagawa 2011; Hasegawa 2005; Isozaki 2006; Takahashi 2009). As Ito describes his architecture of Mediatheque

… Arata Isozaki, dubbed the proposal somewhat cynically ‘an otaku media space’ faced with cool, frosted virtual-feel surfaces of no more depth that what’s behind a CRT screen’, ‘Ito’s proposal is a spotless germ-free operating room where not a drop of blood ever spills, a vision of virtual transparency where strangers see each other almost as shadows.’ (Ito [2011] 2015, 159-160)

4. Conclusion

… every building on earth is destined for some unknown ceremony. Only to a few initiates is it given to draw aside the brick, wooden, iron and synthetic curtains that hide the secret rights. Beyond the use of architecture as a service shelter and microclimate, another type of use is continually happening, this is the symbolic use of architecture. Architecture is a formalization of the symbols of knowledge, dominion, procreation and immortality. Architecture is thus an iceberg hiding most of itself as innumerable services and technical apparatus that make it work remain unseen, so also do the rites and symbols that render it desirable and necessary until suitable therapy succeeds in bringing human beings into harmony with themselves, with no more need for security blankets … (Superstudio 1973)

This paper attempts to study the protagonist technoutopian projects of the Festival Plaza (constructed: 1970), Center Pompidou (constructed: 1971–1977) and Sendai Mediatheque (constructed: 1997–2000). The fact behind the selection and pedantic study of the competition briefs and early competition drawings of these projects is their purity, unaltered approach as proposed by their experimental architects, especially when these were completely untouched by the superficial layers of bureaucratic, political and budgetary constraints. These projects present architectural space as an information and communication colossal including but not limited to the ideas regarding organization and assembly of space, movements in space and the visual communication of architectural content. The matrix of flexibilities that these projects present for future uses, needs to evolve, ways of partitioning space and experimenting with art, the incompleteness that they reveal through their emptiness, voidness, not only during their construction but as an eternal characteristic – is simply a hallmark of information and communication network that when attempts to control itself leads us to an artificially intelligent architectural design – our future.

The image of information, communication and feedback or precisely cybernetic technologies that when start disseminating and managing themselves lead to the network of artificial intelligence has been projected both as a tool and as a symbol. The notion of these technologies being projected as a symbol is being utilized to its maximum by the emerging economies of the world, architecture being its supreme showcase, a fact that the projects of Pompidou and Mediatheque depict fully in an authoritarian way. Both of these projects present architecture as a node that links it with the wider network and controls, disseminates, interprets and receives information.

By discussing some of the significant backgrounds behind the notion of presentation of space as an information colossal – unified, all encompassing entity, without any divisions – Geddes’s Index Museum, Malraux’s Le Musée Imaginaire (Museum Without Walls) and Hovestad’s Sheaves, has been recalled as an example of a dialogue between individualistically identifiable but when combined as powerful, colossal information entities. This case study acts as an alternative to the dialogue that exists between the emerging common platform technologies of artificial intelligence, internet of things, big data, robotics, fifth-generation telecommunications
networking (5G), nanotechnology, biotechnology and quantum computing.

The technological utopianism and pop/science fiction/imagery that Archigram deployed for achieving physicalization for the invisibly manifested information and communication networks, have been studied and presented in this study as a precedent to the emerging architectural discourse regarding artificial intelligence as a design in contemporary Japanese architecture (Ahmed 2020). The instant, spontaneous, knit-able into any locale, psychologically satisfying network of information-education-entertainment self-served great sheds popping-up as a colossal of information in the projects of Instant City (1968), Computer City (1964), Plug-In City (1962–66), City Interchange (1963) and Oasis (1968) not only acted as inspirations for the projects of the Center Pompidou (as repeatedly quoted by Piano and Rogers) and the Sendai Mediatheque (as Ito elaborates in his writings) but can also be extended fully for accommodating the notion of artificial intelligence as a design in them. As all of these projects in one way or the other were dependent on hardware (computers) and software (electronic, perceptual and programmatic information, communication and feedback), these can fully be extended for incorporating the emerging technology of artificial intelligence in order to render autonomous architecture for the twenty-first century.

Surplus of information has always been a mandatory component (rather problematic) of international expositions, hyper-markets, self-service stores or factories and UNESCO attempted to answer this problematic through filtering information in the descending order of accumulation (primary information), processing (through studios and technical facilities), dissemination (through exhibitions, concerts, plays and films) and ultimately storage as a memory bank (for contemplation). Their proposal of vast experimental laboratory for stimulating and testing every kind of information led to the notion of museum as a television broadcasting station as is depicted in the Center Pompidou. One of the extremely significant outcomes of these unhindered free-flowing spaces of information has been their interfaces – the hallmarks of authentic flexibility. These interfaces can be witnessed in all of the three case studies discussed.

Furthermore, while on one hand, the Festival Plaza of Osaka Expo ’70 – a cybernetic environment representing an invisible, faceless exchange of information – served as a backdrop to the structural and spatial conception of the Center Pompidou, on the other, it served as a realization of Archigram’s concepts who were unable to realize these in the West. Whether Festival Plaza inspired the Center Pompidou or Center Pompidou in return inspired Sendai Mediatheque is another discussion.

Artificial intelligence is repeatedly being defined as an autonomous technology that receives, interprets and passes the information it encounters, why not the gigantic information structures such as the Center Pompidou and the Sendai Mediatheque be thought of or at least be considered as precedents of artificially intelligent architecture? Starting from the micro such as artificial intelligence controlled security systems in museums and libraries to the macro-scales such as of a smart city, why not these information machines be self-decision making, why not their systems, or in architectural terms, their spaces be fully autonomous? With the exemplary case studies, this paper hopes to inspire and to further investigate the implementations of artificial intelligence – particularly as a design instead of for a design – in contemporary Japanese architecture. An outlook for orientation or suggestive thought-provoking statements that can be formulated on the basis of this study are

(1) As the information collection, interpretation, dissemination and retrieval are performed with user as being a foci, based on his affinities, correspondences and contradictions within the given environment – why not the Center Pompidou or Sendai Mediatheque can process information in a real-time synthesis utilizing artificial intelligence to its maximum potential?

(2) As information is only perceptible when it is in the process of transmission – which the bare spaces of Pompidou and Mediatheque successfully portray – why not the user be made a component of this intangibility and invisibility through artificial intelligence software and telematic networks? Or whether this point renders the physicality of Pompidou and Mediatheque as useless?

(3) By considering information technology and architecture as a whole, does the controlled chaos of the Festival Plaza of Osaka Expo ’70 be given physical presence (if necessary) with the utilization of artificial intelligence in futuristic projects inspired by the Pompidou and Mediatheque?

(4) Does the emerging infrastructures with the help of artificial intelligence be given, in words of Koolhaas, the “randomizing circulation, short-circuiting distance, artificializing interiors, reducing mass and stretching dimensions”?

(5) As Sadler quotes from Archigram no. 8 while alternating the distinction between the “enclosure of space” and the “operation of space” with that of “hardware” and “software” that the two can be linked together as response systems such as of linking HARD (e.g. Monument, New York, wall, machine, metal, plastic, etc.) with SOFT (program, wire, message, instruction, graphic synopsis, equation, mood, abstract, etc.) (Sadler 2005), can we think of linking artificial intelligence as in hard – i.e. machine aspects, like satellite dishes and information displays – integrated with soft – openness, access, eliminated social hierarchy, democratization, etc. – in Pompidou and Mediatheque?
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**Notes on contributors**

*Danyal Ahmed* is a licensed architect, professionally affiliated with Architectural Institute of Japan, and at present a doctoral candidate nearing completion of his studies at the Department of Architecture and Building Science, Graduate School of Engineering, Tohoku University, Japan. His research focuses on the role that the emerging technology of artificial intelligence - while considered as an arts and humanities praxis - can play with a particular emphasis on contemporary Japanese art and architecture. He has been an academic guest at the Swiss Federal Institute of Technology (ETH) Zürich, Switzerland. He has presented his research findings at major international platforms of Architectural Institute of Japan, Architectural Society of China, Architectural Institute of Korea, Association of Pacific Rim Universities, European Association for Japanese Studies, University of Manchester (U.K.) and University of New South Wales (Australia), etc. just to mention a few. Being a contemporary architectural design researcher within the continents of Asia, Australia and Europe, a recipient of numerous grants and scholarships from prestigious entities such as Government of Japan, Tohoku University (Japan), University of Manchester (U.K.), etc. he holds a number of internationally appreciated architectural designs, published papers and proceedings to his credits. He also delivered a talk titled ‘Architecture in the Age of Artificial Intelligence’ through the platform of TEDx Tohoku University.

*Junichiro Higaya* is an Associate Professor of Architectural History at the Department of Architecture and Building Science, Graduate School of Engineering, Tohoku University, Sendai, where he heads the Laboratory of World Architectural Heritage (informally known as - Assoc. Prof. Dr. Junichiro Higaya Laboratory). In addition, he also teaches at Keio University, Tokyo. While being a visiting researcher at Department of Art History, Faculty of Letters and Philosophy, University of Padua, Padua, and Department of Architectural History, Faculty of Architecture, University of Rome “La Sapienza”, Rome, he was awarded with a PhD from the Department of Architecture, Graduate School of Engineering, University of Tokyo, Tokyo in 2004. After completing his PhD, he was awarded with a Japan Society for the Promotion of Science Research Fellowship at the Department of Architecture, Graduate School of Arts, Tokyo National University of Arts, Tokyo. His research focuses on the Italian Renaissance and Japanese Modern Architecture. His publications include Interpretations of the Ancient Architecture in the High Renaissance (Tokyo, Chukokoron Bijutsu Shuppan, 2007) that has been a recipient of Herend Prize in 2007 by Collegium Mediterraneum, Prize of Society of Architectural Historians of Japan in 2008 by the Society of Architectural Historians of Japan and the Architectural Institute of Japan (AJI) Prize for Book in 2012 by AJI. His latest research is titled as Renaissance Architecture of the World Dream (Tokyo, X-knowledge) that is published in 2020. His co-authored publications include Modern Japanese Style Architecture in Miyagi Prefecture (edited by Miyagi Prefectural Board of Education, Miyagi, 2016) and, The Genius of Michelangelo: Majestic Renaissance Architecture, Exhibition Catalogue (edited by P. Ragionieri, P. Ruschi, S. Osano, and J. Higaya, Yamanashi, Tokyo, and, Fukuyama, 2016). He has published several articles in leading architectural history and theory journals and is frequently invited to give keynotes and plenaries at major conferences and universities, both domestic and international.

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