VLC
arquitectura
volume 1
issue 1

Aproximación crítica del "plug" en la re-conceptualización del programa arquitectónico

The Critical Approach of 'Plug' in Re-Conceptualisation of Architectural Program

Bahar Beslioglu
Minar Sinan Fine Arts University, Turkey. *bbeslioglu@hotmail.com*

Received 2013.11.05
Accepted 2014.02.13

Resumen: Este artículo sugiere una lectura incisiva del concepto de "plug" en el diseño de los programas arquitectónicos, mediante la exploración de conexiones/temas entre espacios arquitectónicos de determinados estudios experimentales. Hubo un 'elaboración' crítica del programa en el proyecto 'Plug-In' City de Archigram de 1964, y curiosamente el enfoque adoptado en el proyecto 'Un-Plug" de Francois Roche y Stephanie Lavaux de 2001 hizo alusión a una "re-evaluación' del 'plug' en relación a los programas de arquitectura. La crítica inmanente y las creativas sugerencias programáticas en ambos proyectos se analizarán desde el punto de vista de la utilización del paisaje urbano acumulado como potencial para la contemplación, un tema que también ha sido abordado, tanto teórica como experimentalmente, por el artista/arquitecto Gordon Matta-Clark en su proyecto 'Balloon Housing' 1978. Estas experimentaciones –sobre el concepto de "plug"– necesitan ser estudiadas con el fin de comprender sus aportaciones como fuentes rastreables en las cuestiones programáticas de la arquitectura contemporánea.

Palabras clave: crítica, *plug*, experimento, concepto, programa.

Abstract: *This paper suggests an incisive reading of 'plug' in designing programs in architecture, by exploring connections/ threads among architectural spaces within particular experimental studies. There was a critical 'elaboration' of the program in Archigram's 1964 'Plug-In' City project, while intriguingly the critical approach taken in the 2001 the 'Un-Plug' project by Francois Roche and Stephanie Lavaux hinted at a 're-evaluation' of 'plug' related to programs in architecture. The embedded criticism and creative programmatic suggestions in both projects will be discussed from the point of view of using the accumulated urbanscape as a potential for contemplation, a theme that has also been elaborated, both theoretically and experimentally, by the artist/architect Gordon Matta-Clark in his 1978 'Balloon Housing' project. These experimentations - about the 'plug' - need to be discussed in order to understand their contributions as traceable sources to program issues in contemporary architecture.*

Keywords: *criticism, plug, experiment, concept, program.*

Beslioglu, B. "The Critical Approach of 'Plug' in Re-Conceptualisation of Architectural Program". VLC arquitectura (2014) Vol. 1(1): 59-76. E ISSN: 2341-2747. DOI: http://dx.doi.org/10.4995/vlc.2014/1829

INTRODUCTION: THE 'PLUG' AS AN EXPERIMENT (A SELF-CONTROLLING SYSTEM)

Among many experimental projects researching on contemporary inquiries of architecture at the third ArchiLab Conference (2001), the 'Un-Plug Project' designed by Francois Roche and Stephanie Lavaux in 2000, was remarkable and prominent with its title. The project had three design criteria; first, 'the realisation of a generic office building'; second, 'the deformation of the reactive façade to respond to contact with renewable energies through: the "fibrous" façade due to the thermal sensors, and through the swelling of the glass skin due to the photoelectric cells'; and third, 'the disconnection ('unplug') of the building from the urban ground and its energy network, in addition to getting its energy from the sun.' This 'household office' building consisted of 23 floors, including 352 offices and 22 conference rooms, in the business district of Paris, La Défense. The most interesting and operative part of the building was its communicative curtain façade with an energy-producing membrane. The network along the lines allowed the building to react on contacting with renewable energies, as its architects were defining their design to be simultaneously consuming and generating energy into an urban network.[1]

More recently, such experiments disoriented the disputable form/structure/function relations of the program in architecture, like the one developed in the 'Un-Plug' project by involving mutual systems that were undergoing a process of being plucked up by the roots, both metaphorically and structurally. Significantly, in 1970s, Gordon Matta-Clark said he wanted to make use of the 1960's emergent, inflatable membrane as a self-controlling system, which favoured space creation not only for its ability to move within existing structures, but also for surviving within the city. A reading of these projects, as experiments associated with 'plug', aims to explore how they reconstituted the conceptualisation of program in architecture by featuring on different critical approaches.

Architecture in 1960s probed flexible infrastructures in the form of a network on which the equivalent, mobilised units/ parts could be inserted. Yet, form/ structure/function relations were arranged with an interdependency formula as linked to this infrastructure. Such considerations in design pointed out inter-disciplinarity as a source to respond to this necessity of expanding the vocabulary of architecture. Evidently, technology was seen as one of these disciplines to overcome the limitations in terminology that remained inadequate compared to social developments of the time. Essentially, technological developments did not only evoke progressive revelations in structure, materials and physicality of design, but also brought novelties in programming the buildings. For as much as programming in architecture urges to be considered as an intrinsical concept, it reconstitutes and dispenses to be a convention according to the situation it encounters. This paper observes plug as a suggestion about programming and aims to observe its contributions.

The term 'plug' was first used in architecture by Archigram to describe the system of cells/ units designed to dwell on temporality concerns that had mobility via cranes in a network-structure including access ways and essential services. Peter Cook pointed out 'The Metal Cabin Housing' project of 1962 as a prototype in that sense.[2] *Starting from these decades, the introduction of 'plug' addresses/ illuminates a relation to experiments on the formula of program. The term plug was transferred to architecture from a perennial, scientific source; technology related to machine industry. There are terminological, theoretical, structural, material, and aesthetical issues concerning plug in architecture that brought novelties. Here I discuss*

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the programmatic aspect of 'plug' in architecture, where I will emphasise its importance concerning the developments and suggestions about connections in programming. A new way of establishing threads among spaces in program was accomplished with the integration of plug in architecture. By considering that plug provided an accessible content to flexible connections in program, it is possible to resituate program in architecture and how it evolved towards mobilisation. Plug was designing program with loose, flexible connections/ threads. Namely, it was one of the terms introduced to make flexible programs. Therefore, this paper explores the use of 'plug' in architecture as an instrument/ concept that defined connections among spaces in architectural program by attaining temporality in connections between spaces.

'EXPERIMENT OUT OF ARCHITECTURE'

Modern Architecture liberated the conceptualisation of program, which corresponded to typology in the preceding Beaux-Arts tradition, from fixed abstractions of spatial types to more flexible organisation of spaces within a building. Whilst typology was a convention in architecture, Modernism replaced this notion (of typology) with program and released design from given spatial diagrams of types. Aligned with developments of the period's technology, program in architecture brought in flexibility of design and freed architects from typology limitations that entrapped design into a plan consisted of segmented spaces enclosed by dominant, heavy structures.

If program is decomposed, a network of functions emerges between spaces as components; and connection describes the relation among spaces. Program is not merely the prescription determining the occupation of designed voids, but includes connections concerning social and functional contexts. An analysis of the free-plan regarding its spatial configurations reveals that it encompasses the functional connection in the form of abstraction of movements and its scientific consequences. For example, Rapit Suvanajata describes three fundamental experiences in architectural space connected to the mechanism of movement: passage, junction and place suggesting that:

> *One experiences 'passage' when moving in a space such as a corridor or experiences 'junction' when moving through a doorway or making a turn or experiences 'place' when moving in a room.[3]*

Architectural historian John Summerson pointed out this crucial role of program that became a subject of design (or a design tool) for the Modern Movement, by saying that 'the conception of a building must arise from within the programme; the programme itself must be the architect's medium, just as much as the materials with which he builds'.[4] Yet, design was developed over program. Architecture was programmed in consideration of needs and time/space configurations of a society that was shaped through industrialisation in early 20th century. Theoretical framework of this novelty was declared as based on scientific and objective standards. Freedom of programming spaces was in the agenda for architecture and "free plan" was the instrument that architects played upon.[5] Modern Architecture's program was devised through "free-plan", which provided flexibility as the skeleton framework structure freed walls from load-bearing responsibilities, and the partitions could be organized for easing function and context. By all means, interpretations on free-plan enriched the variations of design.

"Free-plan" was one of the five points of architecture Le Corbusier defined along with "pilotis, free façade, ribbon windows, and roof gardens" and his modular, repeatable structural systems for interchangeable

building blocks. Accompanying reinforced concrete slabs, beams and pillars constructed in series and the staircase freed from floors on one of the parallel walls; the skeleton of the structure as a framework provided an open free plan and organisation of spaces like a machine. Le Corbusier used "free-plan" as a programming design formula of which he carried out in houses that became like products of an assembly line, each having its own variations and identities, but composed of a definitive set of components. The domino skeleton system in his projects eased the insertion of these architectural components in any arrangement that the specific context required. This approach was an evidence of scientific determination of the era, as Stanislav von Moos described:

> *Le Corbusier's attempts to introduce industrial methods into building and his "Appel aux industriels" were self-evident functions of the architect. Yet, the notion of subdividing living rooms and bedrooms according to the practice of the Pullman company, and of fitting them out with the sort of furniture that had been successful in the office context...*[6]

Projected in his 'Citrohan House', which was described as a manufactured object of industrialisation, the movement among spaces were flowing one into another, although the specific functions were still fixed.

Incidentally, the interpretation of "free-plan" by Mies van der Rohe suggested the dissolution of the building centre and conventionality of four-walled room as spatial organizers. He appreciated flexibility as multi-functional in contrast to the specified functions included in rigid, heavy boxes of defined spaces. He minimalized the use of divisions between spaces apart from necessities for privacy and service spaces. A large, light, airy volume of space was left open for the design of motion and function flows.

Designing the program as a strategy, and programming architecture and society under the guidance of objectivity and scientific methods regarded function as crystallisation of activities; and developed the specification of threads among activities. Consequently, this understanding of threads among activities shaped the definition of terms concerning the program.

The Modern Movement arrived at a point that considered the function of a building as a utilitarian tool, whose functionalist treatment was an ideal. A building's function, such as the purpose or the utility, calls for the emergence of required spaces used in the program. Yet, Stanford Anderson claimed that 'within modern architecture, functionalism is a fiction - fiction in the sense of an error' and further suggested that this fiction had a richer notion of storytelling.[7] *This fiction was programmed according to scientific and objective standards in 1920s connected to technology, industrialisation of architecture and its discourse. Besides, Kiesler's definition of function was self-evident and drawn from industrialization:*

> *Strict definition of human needs is the key question of architecture. Without definition of fundamental needs there can be only conglomerations of steel, stone, gnu and plastics, airy excrement of industry-not architecture.*[8]

Larry Ligo defined five different categories of function in twentieth century architectural criticism: structural articulation, physical, psychological, social and cultural-existential function (Ligo, 1974). Rapit Suvanajata takes Ligo's division further and puts these categories into two paradigms as: abstract and physical; and suggests that "in order to understand how architectural space works for our social needs one has to separate functions, how we use space, from their architectural elements".[9]

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Use also became one of the considerations of program in architecture, which had two aspects: an aim that directed and limited design process; and an actual situation after being available for the occupants. A conglomeration of functionalist approaches that intersected with use requirements emerged as a requirement list, which is a written brief with necessary dimensions that are expected to turn into spaces. This requirement list became another correspondence of program.

Program in architecture is a blurred and a 'weakly' defined term that requires investigation in architectural discourse.[10] This term has been referring to 'function', 'use', and 'requirement list' or even to 'the zones of a city', but neither of them is sufficient to make a definition of program. These definitions created a framework for the program as Modern Movement indicated in it a noteworthy design strategy. Although this framework provided the establishment of conventions of program and defined its boundaries directed by a Modernist ethic, in 1960s their legitimacy was questioned in relation to informing agents that has caused radical changes effecting architecture. This consideration of program as a core for designs in Modern Movement, gained/attained several definitions to term by forming a foundation (in its definition), in which limiting approaches became central points of criticism in later decades.

Starting from 1950s onwards, the raising concern in the integration of psychology, participation, behaviour and demands of users into design processes became a variable in the form of post-occupancy considerations included both criticisms and suggestions on functionalism. The influence of technology-oriented views leading to alternative searches for architecture both in space as a unit and as part of an overwhelming system, took priority over the functionalist ideals of Modern Architecture.

Adaptation of emerging technology into architecture and their consequences on people's lives in 1960s developed a new experimental approach to program by suggesting alternatives to existing everyday life activities. Awareness on the inadequacy of terminology on meeting requirements of emerging developments such as the outburst in technology and production was reflected on the works of architects that included significant challenges against conventions and terminology created by Modern Architecture.[11] There were remarkable changes in the consideration of space, such as the shift from the distribution of spaces in a dwelling unit such as the living room, kitchen, bathroom and bedroom in the very basic sense; to the sleeping capsules, disposable plug-in eating units, sleeping bags, and balloon units inserted into any existing building in a city. Consequently, not only the distribution of spaces was challenged but also the way of living was questioned and architectural thinking depending on these social conditions was also re-evaluated. The following assessment of experimentation in 1960s by Peggy Deamer, who discussed the utopias and their influences on users, perceived these suggestions not only as futuristic urban machines and technological insertions, but also as comments and critiques on everyday life programs:

> *The particular formulation of this body – as technologically advanced but programmatically primitive – defined a 'new man' who was ideologically committed to seeing the self as the safeguard of the values of ordinary life and the defence against the co-opting of the everyday. This formulation suggested that the life of this new man could never be aestheticized nor abstracted and could never be technologically sanitized.[12]*

For instance, in revolutionary consideration of liberating women from the kitchen by designing the 1926 'Frankfurter Küche' project, Margarete

Schütte-Lihotzky aimed to respond the rising demands of novelties in society of the period. In Frankfurt Kitchen project movement/ time diagrams determined the configuration of spaces. Activities were considered in regard to standardization. The time required to carry out various functions was measured using a stopwatch, borrowed from Taylor system, in order to arrive at an optimum, ergonomic organization of the space. As such, emerging requirements in 1960s asked for the space of individuals who were in constant motion against the immobility of space while questioning their social and traditional bonds and boundaries. Yet, the design of 'Cushicle' *by Mike Webb in 1967 can be considered as pointing out such a demand, in the way 'Frankfurter Küche' once did. The use of the term* 'Cushicle' *as a dwelling unit reflected an inadequacy of terminology responding to 'house' during this period. The replacement of the house with a 'Cushicle' designed as a portable dwelling unit suggested complete abandonment of architectural elements and conventions; in comparison to criticism of functionalism.*

These novelties in architecture were theorized by Reyner Banham with the term 'Clip-On Architecture', of which he introduced in an article in 1965 in Design Quarterly *and a special issue by Architectural Design in 1967, was discussing the Archigram Projects in this respect, (he first used the term in his article '1960 Stocktaking') as Anthony Vidler puts it[13]:*

> *Here he traced the genealogy of 'clip-on', from the idea of 'endlessness' with regard to standardization, and, according to Llewelyn-Davies, from Mies van der Rohe through to the notion of a 'cell with services', introduced by the Smithsons in their plastic House of the Future of 1955, by Ionel Schein in France, and Monsanto in the US. The conception of the house as a mass-produced product, mass-marketed like a Detroit car but put together with prefabricated components, had inspired Banham in 1961 to outline a late-1950s unpublished article on 'clip-on philosophy'. And Cedric Price's Fun Palace, conceived by Joan Littlewood and considered by Price as a 'giant neo-futurist machine', ran very close to the programmatic revolution for which he was calling in 1960: a giant 'anti-building' seen as a 'zone of total probability, in which the possibility of participating in practically everything could be caused to exist'.[14]*

David Greene, a member of Archigram, was describing their relation with precedent 'idea of mass-produced expendable component dwellings' by their familiarity with 'Le Corbuiser's efforts in collaboration with Prouve (his own bits and pieces), with Buckminster Fuller's Dymaxion House (The Phelps Dodge Dymaxion bathroom and the Dymaxion deployment unit), Alison and Peter Smithson's House of the Future (at the Ideal Home Exhibition of 1955), Ionel Schein's prefabricated hotel units and the Monsanto Plastic House in Disneyland; the Metabolist Group in Japan and Arthur Quarmby in England.[15]

Archigram was urging that 'in a technological society more people will play an active part in determining their own individual environment, in self-determining a way of life', and suggesting the changeable or interchangeable parts depending on individual needs and preferences, besides the inherent qualities of mass-production for a consumer oriented society as repetition and standardization. Archigram's criticism employed the use of technology as a solution to the paradox of Modern Architecture regarding the inadequacy in attaining human psychology as a considerable factor in design process. This inadequacy prompted the necessity of experimental attempts of opening architecture to inter-disciplinary. To 'experiment out of architecture' *was to*

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experiment on the vocabulary of architecture as Peter Cook defined:

> *The idea of breaking and opening up the formula, the formula of architecture. Every once in a while it becomes, it responds in the same sort of ways, and then you say let's look at it again, let's open up the bag of threads and change the approach to see alternative.*[16]

Archigram's projects developed a critique on existing architectural discourse beyond conventions, whose point of departure took its essence from the necessity – in the words of Peter Cook – to 'experiment out of architecture', which was connected to architectural program in a critical sense.

A LOOSE WAY TO THREADS/ CONNECTIONS IN PROGRAM

Discussions about program evolved around inquiries on the inadequacy of vocabulary in 1960s, which was necessitated by the emergence of concepts such as temporality, motion, and mobility. These concepts gave rise to the re-consideration of connections and their control in the configuration of architectural program. The integration of 'plug' in design was a criticism and suggestion in programmatic discussions.

Whilst Modern Architecture was calling for the emergence of program in the form of liberating design from typological limitations, the 1960s expendable architecture was pointing out a loose way to connect in program. The specification of threads among activities was based on functions as a design strategy in program in early 20th century and function was regarded as crystallisation of these activities. But, in 'plug', function was evaluated as individualisation and marginalisation of activities. Bringing motion and temporality, the 'plug' highlighted a critical point as a design instrument that set up and questioned the way of threads/ connections and configuration of spaces in program. Designing programs in architecture became related to designing loose connections that covered a spectrum ranging from activities within a space to relations between spaces. Modern Architecture defined conventions about these connections based on more control issues through an implicit terminology, but the 1960s defined and put them into a distinct network. The development of experiments on 'plug-in' provided an innovation about the elaboration of existing conventions; their re-evaluation or ideological subversion. Namely, 'plug' was about connections in program as experiment and a self-controlling system was a programmatic suggestion based on criticism.

The theoretical formulation of 'plug' can be read from Archigram's use of the two terms that pointed out an inherent contradiction in programming: 'control and choice'. Thus, designing of program through 'plug-in' units provided a criticism on this contradiction.[17] *Choice provided a flexible approach to control issue in design, which caused speculations during criticisms on Modern Architecture. Archigram described choice as the 'freedom; of personality, enclosure, involvement, facility, movement'.*[18]

Inevitably, the integration of the 'plug-in units' within an architectural space challenged and changed the programmatic configurations. Precisely, the insertion of 'plug-in' units in Archigram projects was a radical, evocative and stimulating programmatic approach in architecture during 1960s, in terms of using and creating mobile spaces, which moved both horizontally and vertically. The 'plug-in units' were

programmed for change in response to the needs and psychology of users. Their mobility provided a flexibility of program and brought the possibility of temporary activities and their motion, rather than fixed activities within a space, along with their actual body; the flexibility of program was aimed to be achieved with such experiments in emerging technology. In plug, function was regarded as marginalisation and individualisation of activities in program. The use of 'plug' brought flexibility and choice in architectural program. [19]

In the projects of Archigram, a new way of life was fictionalised and its reflection was a 'non-fixed, temporary architecture.' This temporality meant the dissolution of buildings as functioning machines, which found its essence on the emerging technology. These dissolved pieces were highlighted as individual dwelling activities. Such an emphasis addressed an inevitable projection on the whole machine concept as a new form of unity. Along with this newly emerging quest, Peter Cook distinguished the architecture of 1960s from movement and style-oriented roles and evaluated its ambiguity as a potential:

> *Now the architectural world is confronted with an even more ambiguous set of circumstances and the definitive role of styles or movements of the past is disappearing in a continuous evolution away from architecture.*[20]

Archigram projects discussed the need to replace program solutions of the past with updated program solutions, but they associated this with replacement of certain types: 'Plug-in City was still in some respects a replacement city; The Capsule Houses were still replacement houses.'[21] *However, their experiments from 1965 onwards began to include hybrids; as sometimes machine, sometimes architecture, sometimes animal-like growth, sometimes electrical circuitry, sometimes part of a mathematical progression and sometimes completely random. They pointed out the first project in this sense as Micheal Webb's Auto-Environment series.*[22] This was inevitably challenging the functionalism of 1920s.

In Archigram's terminology, the use of 'metamorphosis' can be detected as the most critical suggestion about programming. Metamorphosis, they defined as a 'continuous evolution from one state (or arrangement of forms, values, and incidences and so on to another', which was 'always alive but never the same' and 'always complete but always in metamorphic transience.'[23] *David Greene, a member of Archigram, was pointing out 'growth' as the natural analogue of change and extending the discussion to a point where all parts could be in an evolutionary state. He was saying this widening caused most of the projects they made to be 'hybrid in content as well as notion', which were 'in a constant change of state, assembly, and value'.*[24] *Among these variables of change, he pointed out 'value' as the most difficult and 'may be what metamorphosis is all about' by saying:*

> *Therefore there seem to be two levels of metamorphosis: the simple one by which an object has to change to keep going and the more complex metamorphosis of our own regard for phenomena at all. So-called 'values' are the shorthand for this regard; so, watch out for fixing too hard these value-judgements.*[25]

The integration of 'metamorphosis' to architecture, of which the group explained as 'change of mood: change of need: change of personality: change of place', should be associated with Archigram's another significant determination about the dilemma between 'control and choice'.

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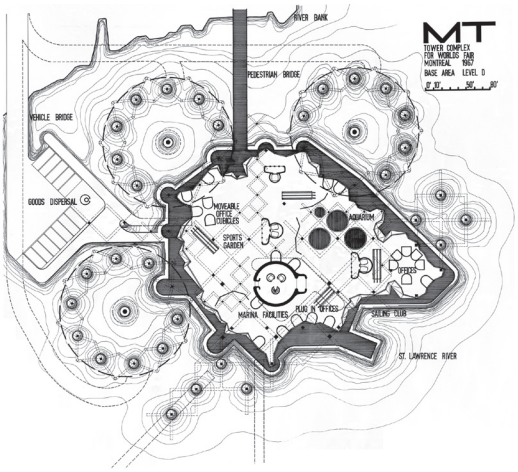

Figure 1. *Montreal Tower.*

As Archigram group noted, The Plug-In City project, designed between 1962 and 1964, was a 'speculative series of proposals for a computer-controlled city designed for change with removable elements plugged into a 'mega-structure' service framework.' Units, which catered for all needs but planned for obsolescence, were placed into a large-scale network-structure that contained access ways and essential services. Cranes that were operating from a railway at the apex of the structure were providing the movement of the units. The interior of the units contained electronic and machine installations in order to replace present-day work operations.[26] *Especially, in the discussions of* Archigram 2 *and* 3*, they said that there was an argument about expendable buildings; and an emphasis on the whole urban environment being 'programmed and structured for change'. Of the Plug-In City projects, this paper highlights two, which are considered as having remarkable qualities of design in terms of their programs: The Montreal Tower (Peter Cook, 1963) and The Living Pod (David Greene, 1965).*

The Montreal Tower, designed for Montreal Expo, consisted of a central concrete tower and entertainment functions wrapped around it. (Figure 1) Archigram described the project as forming 'a 'skin and guts' proposition', in the form of 'a vertical tree with enormous roots on to which could be hung temporary exhibition elements that would be removed and replaced after the Expo'.[27] *The project was an experiment on the connections between removable components and the structure. The access ways were forming a parallel structure with lift tubes placed diagonally. In addition, a skin was wrapping the whole temporary units.*

In the Living Pod project, the design referred to relations among activities rather than requirement lists including certain dimensions. Inflatable partition instead of wall, inflating seats instead of living room, the food machine instead of kitchen, the study machine instead of an office, washing units instead of bathroom were all non-static, independent parts of design urging the 'plug' issue. The multi-pod wall (or High-rise Pods) composed of a high-rise block grouped together by the Living Pod project (1965) on a vertical axis, which could be moved, removed or added by crane, according to the user's wishes. (Figure 2) The pods and the 'autonomous, utility-free scaffold structure' were connected to each other through flexible units that allowed the replacement and movement of the pods. Thus, when the pods came together, they formed the structure. The mechanical system used for the assembly was described as follows:

> *Each pod has fixing points to connect to the framework that would flex and recalibrate themselves (much like a car suspension) with regard to changes in weight and arrangement and in order to allow the maximum freedom in relation to any one plot. The gross load does not exceed 10,000lbs (or the weight of three small cars).*[28]

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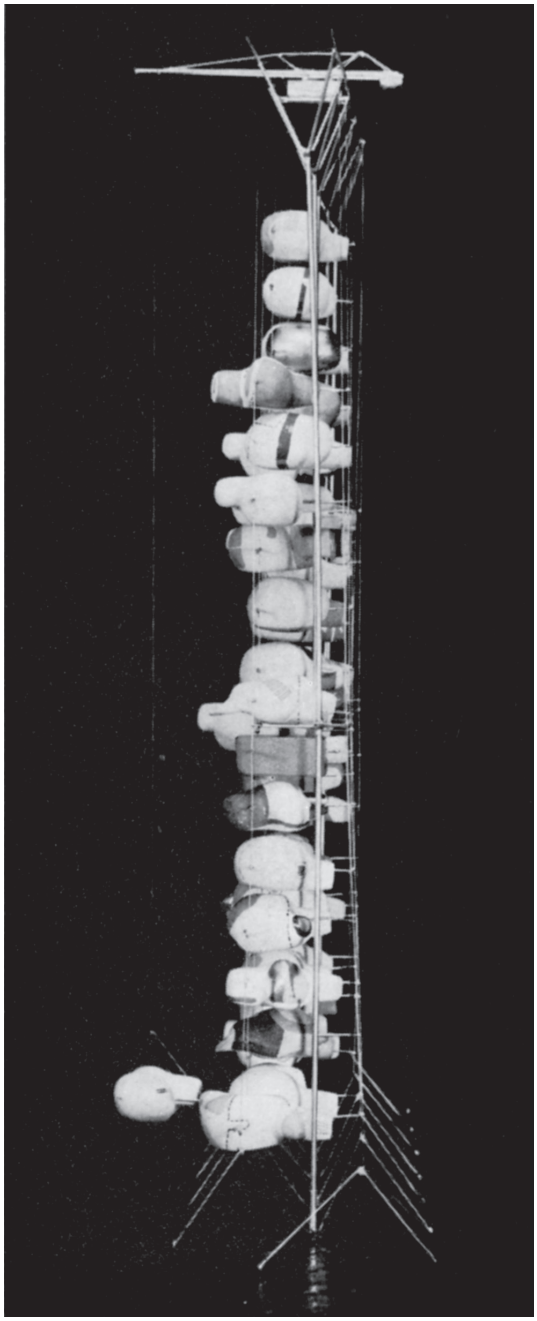

Figure 2. *The multi-pod wall (or High-rise Pods).*

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The literal mobility of the individual living-pod units together formed the high-rise block. If a skin had been wrapped around the whole structure, it would not be very different from contemporary examples of design using generative tools of cyber-architecture. Archigram described the hybrid properties of the systems as 'a conglomeration of systems, organizations and technical apparatus', which allowed the individual response of each according to their own physical, functional and innate properties and limitations, thus adapting the ability and handicap to be a part of an ephemeral medium. Thus, their drawings composed of time-space-atmospheric sequences as 'momentarily frozen summary of parts', which represented architectural spaces 'where the hardware, software and ephemera are all intermixed and interdependent at any one time' and whose relations pointed out a looser hierarchy of parts.[29] The change was occurring in so-programmed machine units as they were designed according to temporality.

Reading the analysis of loose/flexible connections and configurations of spaces of 'plug' in architecture through/based on the projects by Archigram in 1960s, by Gordon Matta-Clark in 1970s, and Francois Roche and Stephanie Lavaux in 2001, enlightens and debates different ways to configure spaces that are established on suggestions of connections by using 'plug' in each. However, their terminologies intersect at pointing out 'body' and its parts, such as 'skin and guts' used by Archigram, 'hairiness of skin' by Roche and Lavaux, and 'network enclosure' by Matta-Clark. Not only structurally, but also metaphorically, the body and its parts, and the virtual connections among them are established referring to a body and its organs. The 'plug' positions itself as a self-sufficient unit and challenges the program. These challenges were determinant in critical experiments of how Archigram has used mobility; how the Un-Plug project has used a fluid membrane as a vertical transmitter of energy; and how Gordon Matta-Clark used the in-between spaces in cityscapes as potential mutual spaces for balloon housing. The 'Balloon Building Project' of 1978 by Gordon Matta-Clark developed the idea of insertion of a balloon unit into existing buildings, which passed through all floors.[30]

In Archigram's Plug-In City, the mobility was achieved through 'control and choice', which constituted a literal mobility. In Roche and Lavaux's Un-plug Project, the mobility, in a more phenomenal way, derived from more fluid, metamorphic and membrane surfaces. (Figure 3-4-5) The relation between activity (involvement) and surface/form that gave rise to experimentation with the program can be considered an intriguing factor in both projects. In the case of Un-Plug, the units activated the skin for mobility, and their motion was more fluid, while the units of the Living Pod forming the multi-pod wall had a vertical and horizontal movement. The sources of mobility had varying qualities, but their obstructive/or direct criticism was aimed at programmatic configurations. The glass façade responded to renewable energies by swelling and this autonomous deformation aimed to unplug from the urban network. The façade became reactive to energy through a fibrous vacuum-sealed thermal sensors, and photoelectrical cells. This system provided the ability of capturing ambient electromagnetic waves and generating its own ecology.[31]

The proposal of the 'Balloon Building Projects' used inflatable technology not only as a new tool for investigating architecture and contributing to its vocabulary, but also incorporated a new type of dwelling, an inquiry about alternative way of inhabiting; changing the idea of modern dwelling type from a box to something else, detaching it from both the urban context and any other ties, mobilising it, and creating this situation of

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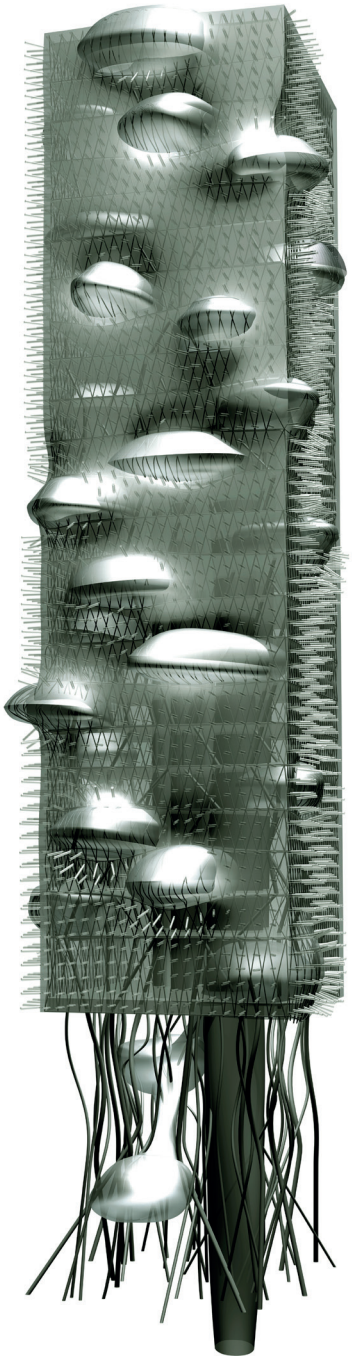
Figures 3-4-5.
The 'Un-Plug Project', Francois Roche and Stephanie Lavaux, 2000.



Beslioglu, B. "The Critical Approach of 'Plug' in Re-Conceptualisation of Architectural Program". VLC arquitectura (2014) Vol. 1(1): 59-76. E ISSN: 2341-2747. DOI: http://dx.doi.org/10.4995/vlc.2014/1829

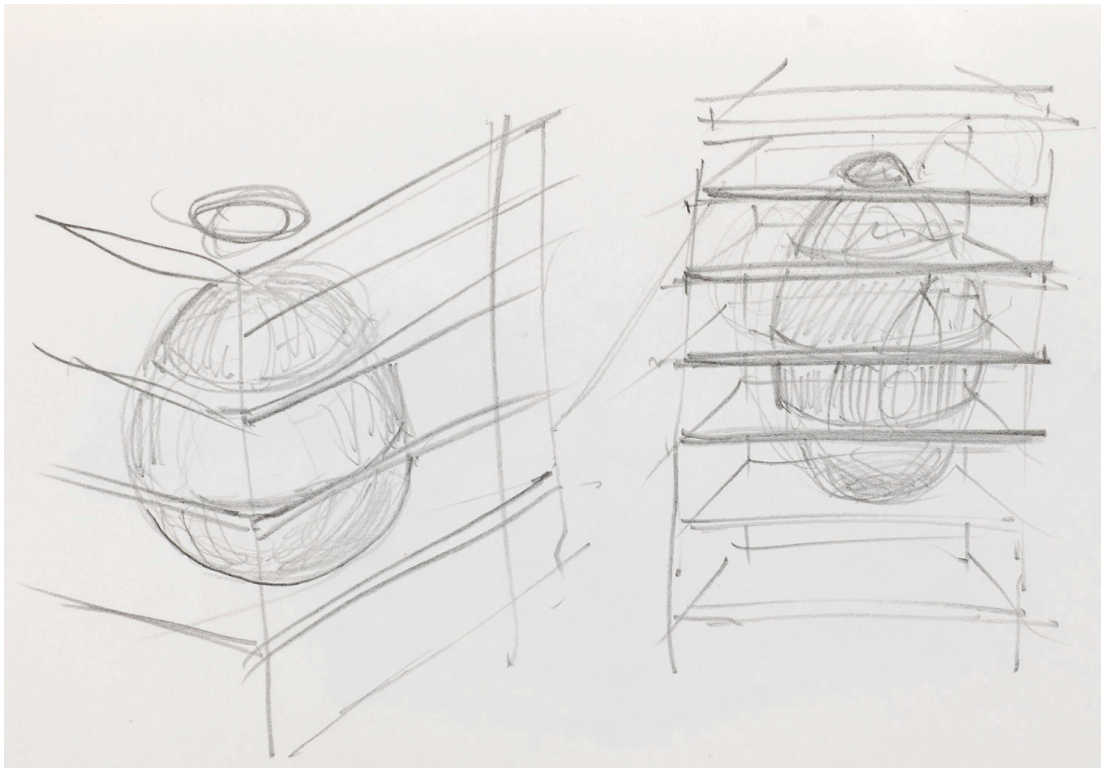


Figure 6. *Balloon Housing Project, Gordon Matta-Clark.*

detachment by using technology. This mobility would allow different permutations and possibilities of programming both inside the dwelling and in relation to any context it would cover.

In this project, Matta-Clark considered that the heat released as gas, emitted from machines, vehicles or from people, could be used as a source along with incoming solar heat. 'A hot-air balloon – or helium balloon, or both combined – of a mesh rigging, as lighter-than-air pneumatic tent, could suspend platforms and walkways when tethered'[32] upon which people could climb and walk, could become a standard element of the city. Matta-Clark described the project as follows:

> *...but I am interested in the possibility of a hot-air stationary balloons, perhaps combined with the use of a solar heat collector to hold pay loads of a ton aloft at low attitudes for as long as economically feasible.*

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The task of the experiment was to combine 'network enclosures' with the structural lift of a series of tethered balloons as Matta-Clark described in a letter to Piccard Balloons dated 20 November 1977 in which he was asking about the possibility of realizing a moderate scale model of a more sculptural than structural character.[33] Thus, in a letter to Karl Stefan dated 14 December 1977, Matta-Clark talked about how he wanted to benefit from emerging balloon technology in space creation as:

> *This fascination with economical flexible systems using cables and networks has extended to the possibility of hanging a tent-like tower of a hundred feet in height from a tethered balloon. I'm doing this as an artistic experiment looking to hoist aloft weights, not exceeding 1500 pounds, for short periods in a demonstration model.[34]*

Peter Fend, an architect who assisted Matta-Clark from Spring 1977 to Spring 1978, wrote that Matta-Clark asked him to do research on things built on getting levels, or platforms, to stay suspended or elevated above the ground.[35] The project could allow suspended canopies or vegetation or platforms accommodating people, or all of these within unoccupied air spaces of the city.[36] (Figure 6) What the project aimed was to achieve elevation, not to build walls. Therefore, the experiment conducted for the balloon building probed concerns about the outdoor climate and temperatures, air pressures, winds, skins and coatings, zeppelin manufacturers, tethered balloon systems, lifts and the elements, as emphasised by Fend, and was using different features of 'compression elements, tensile fibres, pneumatic or sail planes, heavy counterweights, which would be strung together like the elements of a giant sailing ship, always in flux.'[37] Matta-Clark aimed to test both indoors; inside large, empty spaces; and 'between-doors', in spatial terms, 'which were not claimed by anyone but which – being physically 'there' – affect everyone.'[38] Fend asserted that 'to academics, this is the breaking of walls; to those in the banished camp of artists attacking architectural questions, it's called injecting the self into space.'[39] But, for him, Matta-Clark was looking for solutions concerning 'mediation' between in-door to out-door spaces, a kind of 'working space that is shared, and somehow sheltered, by the city.'[40]

Fend suggested that Matta-Clark emphasised the 'body' itself as the architectural task, and found hints in this project about how he linked this issue of inflatable structures to some 'processes' in the human body as: 'gas inflation, liquid filling and inflation, counter-balancing of separately suspended weights, bridging between separate contacts with the ground, elastic stretching and contracting of the skins.'[41] And their correspondences he found in Matta-Clark are 'Light-Gas Suspension (by helium, by hot 'air', by sun), Inflation (of an elastic skin), Counterbalanced Weights (in line with Serra and di Severe), Narrow (Pilots) Foundation (high above), and Membranes instead of Walls (a load need not be borne up).'[42]

Matta-Clark's experiment about the employment of inflatable structures was also an emphasis on changes in conventional uses of space. The essence of this set-up was to shake up the rules of social conventions that were influential on configuration of spatial relations in a building. He debated what would happen if social conventions of a house were broken down. He experimented with the inquiry: if a house were not a box, and if it was detached from the surrounding and became mobilised. He explored how that detachment would influence spatial configurations by using the emerging technology. This project searched for the open-ended configurations of program where conventional and unconventional exist together

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through balloon building. Developing ideas and suggestions on alternative architectural programs were obvious in the 'Balloon Housing Project.' His aim was to open up the limits placed on program, which caused the loosening of its bonds and configurations.

Conventions in architecture about being fixed on the ground, the mobility of 'human body' rather than architectural product itself, and a static program for the building, were transcended by self-mobility, and the possibility of being open to co-existing programs. The nature of balloon as a self-controlling system was considered as having the ability of not only moving within existing structures, but also surviving within the city. The wall was replaced with the skin of the balloon. Here, Matta-Clark rejected the protectiveness and closed nature of a program in a building, and opened it up to other possible programs that could move around and co-exist for a specific time within another program.

The 'balloon building' was relative to its own components, such as its own use, structure, materiality, and to the problems it resolved; but it was also absolute through the site it occupied, such as, its co-existence with other programs and the conditions it assigned to problems of this co-existence. Consequently, by breaking the generality, definition of architectural program became non-fixed in this project. Distinctively, Matta-Clark did not narrate a story about the non-controllable situations of his 'Balloon Building Project's' program proposal. Rather, he left it obscure, as the configuration of the 'Balloon Building' was open and uncontrolled, by simply setting up the game.

There was a concern about connecting architecture to infrastructure in Modern Movement. The "Plug-In" projects and "Balloon Housing" project was questioning this connection and searching its flexibility, in the form of two parallel but different approaches, and "Un-Plug" project was plucking off this dependency on infrastructure while generating energy both for itself and for the infrastructure.

Therefore, the creative use of mobility in these three projects, as a generative design issue, reveals and designates the potentials of challenging the conventions of program, which requires re-evaluation according to the needs of the society and expanding terminology of architecture. The determination of 'plug' assessed in architectural program might also illuminate one of the paradoxes of contemporary of architecture in which the role of architect as activity based script-writer, hierarchy distributer in spaces is debated about the integration of emerging technology, such as computer, into architecture.

Notes and References

[1] Plea2004 - The 21st Conference on Passive and Low Energy Architecture, *Eindhoven, The Netherlands, September 2004, p. 19 – 22.*

[2] *COOK, Peter, Warren CHALK, Dennis CROMPTON, David GREENE, Ron HERRON, and Mike WEBB.* Archigram. *New York: Princeton Architectural Press, 1999.*

[3] *SUVANAJATA, Rapit.* Relations in Architectural Space Designs and Effects in Space of the Traditional Thai Houses and Temples. *PH.D. thesis. The Bartlett, University College London. 2001.*

[4] *This reflects a crucial assessment of the changes in 'program' that would have centralized architect's role in design process by Modern Movement. Yet the revolutionary liberation of 'program' by the Modern Movement against the typology-based notion of 'program' in Beaux-Arts tradition can be regarded as one of the formations of conventions of Modern Architecture in paradoxical relation to preceding Beaux-Arts tradition. SUMMERSON, John. 'Introduction' to* Modern Architecture in Britain. *London: Dannatt Trevor, Batsford, 1959, p. 11.*

[5] *It also changed the inter-dependability of form/plan/structure as Stanislav von Moos described: "The logic, the form of a product, is not something that can be applied externally, but rather something that- according to Le Corbusier- derives from the nature of the task and of the product, as the necessary result of an evolutionary process."*

[6] *VON MOOS, S., ed.* M. Risselada: Raum Plan versus Plan Libre: Adolf Loos and Le Corbusier. *Rotterdam: 010 Publishers, 2008.*

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[7] *ANDERSON, S. The Fiction of Function. In* Assemblage, *2, February 1987, p. 20. The architectural theorist Christopher Alexander published his book 'Notes on the Synthesis of Form' in 1964, and his article 'A City is not a Tree' in 1965, which has been uttered as one of the fundamental sources on this task. Namely, he criticised the ideals of Modern Architecture in the urban scale by asking: 'What is the reason for drawing a line in the city so that everything within the boundary is university and everything outside is non-university? It is conceptually clear. But does it correspond to the realities of university life? Certainly it is not the structure which occurs in non-artificial university cities.'*

[8] *SUVANAJATA, Rapit.* Relations in Architectural Space Designs and Effects in Space of the Traditional Thai Houses and Temples. *2001.*

[9] *SUVANAJATA, Rapit.* Relations in Architectural Space Designs and Effects in Space of the Traditional Thai Houses and Temples. *2001.*

[10] *'Weak Theory of Architecture' by Stanford Anderson. See: ANDERSON, S. Architectural Design as Research Programs: The Schools at Cranbrook by Eliel Saarinen. In:* Places, *2, 1986, p. 59-69.*

[11] *However, during this process of radical criticism, the works of those architects were described as 'utopian' and have been overshadowed under a discourse confining the period as* 'ambivalent.'

[12] *DEAMER, P. The Everyday and The Utopian. In: S. HARRIS and D. BERKEED, ed.,* Architecture of the Everyday. *New York: Princeton Publications, 1997, p. 195. 'The work of 'visionary' architects in Europe during the 1960s – for example, Archigram in England; Hans Hollein, Coop Himmelblau, Raimund Abraham and Friedrich St. Florian in Austria; Superstudio and Archizoom in Italy – is generally known for its futuristic and often monumental urban machines. But in actuality, this work was fundamentally lodged in a utopian image of the body, one animated by visions of the future yet bound by the concerns of the everyday.'*

[13] *BANHAM, R. A Clip on Architecture. In:* Design Quarterly, *Nov. 1965.*

[14] *VIDLER, A. Toward a Theory of Architectural Program. In:* Architectural Review, *July 2012.*

[15] *COOK, P.* Archigram. *1999, p. 17.*

[16] *Peter Cook, Interview with the author, 10 April 2006. For instance, the work of 'New York Five' that appeared around the same period with an exhibition in MoMA in 1967, directed a criticism on Modern Architecture without challenging its fixed rules more in a revisionist form.*

[17] *This elaboration can also be read from Bernard Tschumi's criticisms and suggestions on program, control in relation to unpredictability and choice in relation to deficiency. Emphasising its deficiency and unpredictability as a challenge against conventional understanding of program, the architect and theorist Bernard Tschumi was one of the main contemporary transgressions on the subject. He suggested that a 'program' defined by space and time can confront the weaknesses of architectural space caused by the deficiency and unpredictability of use. Consequently, he put program and function into a dynamic position for the production and interpretation of architectural spaces. The reflections of this claim appeared as the separation of program, form and structure in favour of the 'event' issue. Thus, the program emerged in these reflections as a hierarchy distributor among events. The shift in the position of program from 'the list of activities' to a hierarchy distributor suggested the 'decomposition of program' as a new approach. This kind of an approach to program is followed by multiple definitions of program such as; 'program as an innovative strong mechanism', 'program as a generator of design strategies', 'program as a sequence', 'program as meaning', 'program as a strip', 'program definition derived from cinematic terms', 'program in relation to themes to generate events rather than functions', 'program in relation to language', 'program to be permutated'. In addition to the proposed positions mentioned above, Tschumi suggested three alternative definitions of architectural program, which encompass them: 'Cross-programming', 'De-programming', and 'Trans-programming'. Tschumi emphasised the significance of 'event' and 'activity' in program not only as a generator but also as a dynamic tool for design. The consequences of these challenges against 'program' became more 'event-oriented' as suggested by Tschumi. 'Temporary activities', 'spontaneity', 'coincidence', 'hybridisation', and 'interface spaces', as some of the emerging concepts in these discussions, contributed to perception of 'temporality' as a more considerable variable in contemporary architecture.*

[18] *COOK, P.* Archigram. *1999.*

[19] *Felicity Scott questioned how this choice option against the control issue went far from their precedents by stating: 'If, for instance, the work of Team 10, Cedric Price, Archigram, Yona Friedman, and the Metabolists emerged through a certain techno-euphoria, and if experimental architects were initially fascinated by the liberal possibilities offered by new communication and construction technologies, this would soon give way to a more complex, and more dystopian, but never simply techno-phobic, engagement. Although many architects experimented with open-ended, intelligent, and 'flexible' structures, they quickly came to understand the other side of this feedback equation: the dispersed forms of control to which their strategies gave rise.' SCOTT, F. D. Architecture or Techno-Utopia.* Grey Room, *03, Spring 2001, p. 112-126.*

[20] *COOK Peter.* Experimental Architecture. *London: Academy Editions, 1972, p. 68.*

[21] *COOK, P.* Archigram, *p. 51.*

[22] *COOK, P.* Archigram, *p. 51.*

[23] *COOK, P.* Archigram, *p. 74.*

[24] *COOK, P.* Archigram, *p. 74.*

[25] *COOK, P.* Archigram, *p. 74.*

[26] *COOK, P.* Archigram, *p. 39.*

[27] *COOK, P.* Archigram, *p. 39.*

[28] Living Pod: Net Structure. *The Archigram Archival Project. Research Centre for Experimental Practice, University of Westminster, 2002 [viewed January 2014]. Available from: http://archigram.westminster.ac.uk/project.php?id=110*

[29] *COOK, P.* Archigram, *p. 68*

[30] *The 'Balloon Building Project' is included in the Gordon Matta-Clark archive as drawings and writings. The drawings for this project mostly include sketches of different possibilities for balloon-building insertions, such as the balloon unit clinging to one of the wall surfaces of an existing building; or located in a structure that uses the existing building; or moving within the building by entering from one wall through a circular cut and leaving from the opposite corner after pushing the roof up; or entering through an angular cut in the surface of the wall.*

[31] Unplug Project. *032c Magazine, 2007 [viewed January 2013]. Available from: http://032c.com/2007/paris-what-makes-hairy-buildings-so-irresistible/ Accessed: May 2013.*

[32] *FEND, P. New Architecture from Matta-Clark. In: S. BREITWEISER. ed.,* Reorganizing Structure by Drawing Through It. *Vienna: Generali Foundation, 1997, p. 47.*

[33] *It can be understood from Matta-Clark's correspondence that he contacted several balloon firms about the detailed properties of such a structure. 'Gordon Matta-Clark Archive', CCA, Montreal, Archivol Books, PHCON 2002:0016:004: Letters 1976-77. Another letter to Dick Brown also reflected his tentative approach to this project: 'I'm experimenting in environmental, experimental design. At present I'm researching a project that will attempt to combine tensile 'net-works' structures (enclosures) with a series of low attitude tethered balloons for support. Because of the rapid dissipation of helium, I'm questioning the feasibility a stationary hot air balloon perhaps incorporating a solar heating system for part of the lift.' ('Gordon Matta-Clark Archive', CCA, Montreal, Archival Books, PH CON 2002:0016:004: Letters 1976-77.*

[34] *'Gordon Matta-Clark Archive', CCA, Montreal, Archival Books, PH CON 2002:0016:004: Letters 1976-77.*

[35] *FEND, P. New Architecture from Matta-Clark. p. 47.*

[36] *FEND, P. New Architecture from Matta-Clark. p. 50. With this element, he aimed to 'set up the game' for the users, as an 'an-architect' who would 'play a model role, and set the spirit', as Fend says. But people must themselves cut out and arrange their own spaces; all within the community shelter created by the 'Sky Hook' or with its other name the 'Balloon Project.' It seemed that cities could be opened up between In-Doors and Out-Doors to allow a vast range of mediation between the two, between Sealed Boxes and Open-Exposed Voids.*

[37] *FEND, P. New Architecture from Matta-Clark. p. 53. The cut experiments that Matta-Clark used are considered to be the outdoor connection of the balloon building: the balloon structure gets out of the existing structure through that cut.*

[38] *FEND, P. New Architecture from Matta-Clark. p. 47.*

[39] *FEND, P. New Architecture from Matta-Clark. p. 48.*

[40] *FEND, P. New Architecture from Matta-Clark. p. 48.*

[41] *FEND, P. New Architecture from Matta-Clark. p. 44-55.*

[42] *FEND, P. New Architecture from Matta-Clark. p. 46-55.*

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Creative team: François Roche, Stephanie Lavaux, With Alexandre Boulin, Olivier Legrand, Gilles Desevedavy; Collaborators: Benoît Durandin, Etienne Feher, David Topanni

Besliogu, B. "The Critical Approach of 'Plug' in Re-Conceptualisation of Architectural Program". VLC arquitectura (2014) Vol. 1(1): 59-76. E ISSN: 2341-2747. DOI: http://dx.doi.org/10.4995/vlc.2014/1829