Big Blue and the Concrete Wave:

IBM Boca Raton & Marcel Breuer's Redefinition of Modernity

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ABSTRACT

The pre-cast concrete ensemble by Marcel Breuer and Thomas Gatje for the IBM Offices, included also a research laboratory, development and manufacturing facilities. Inaugurated in 1970, it was commissioned by a technological giant, a company that was literally redefining the term “future” through the very new information technology. According to Breuer himself, this project was related to his previous design at La Gaude, France, though the IBM Offices in Boca Raton, in South Florida (USA), represented a progress in relation to it, as it responded to a more complex program. The building ensemble raised on a clean, flat site, with no other buildings in its immediate surroundings, distant from anything that could be considered an urban center. This was a blank space at the time, designated, through a series of local policies, to become a regional technological hub, which IBM would be spearheading. This project was the starting point for expansion not only for IBM, but through this company, to the region, blurring the lines that defined the public and private realms, compacting them within the built ensemble of these facilities with the mission of converging growth and development towards a new reality.

The modern language formulates these buildings, specifically framed as Brutalists. The ensemble aligns itself with the movement that aspired to redefine the paths of modernism. Aware of the examples increasingly polished and dogmatic of the International Style, architects such as Breuer make an effort to reinsert the discussion of what should direct the architectural production, without falling into a stylistic jacket that had been so feverishly opposed by the previous generation. This discussion was raised by Mumford, and quickly found echo. The apparently unfinished raw surfaces evoked the original fresh spirit of the modern movement. It wouldn’t be an exaggeration to present this project as a one of the main branches of what brutalism signified. It’s incredible subtlety and simplicity as built environment, contributes decisively to represent the term “Brutalist” as it came to be known for.

The building was designed to be sufficient; it has a slender body, with a façade worked through its openings and brise-soleil for solar protection. The ensemble snakes over the site as a vertebra, elevated by expressive though solid concrete cast in place columns, which bifurcate to support the volume above, forming a single continuous structure. This monolithic sequence rests lightly and fluidly over the landscape. The elevated buildings allow the uninterrupted view of the site

The module that generates the buildings presents incredible vitality and adaptability to the circumstances of the site, or to new functionalities, foreseeing the possibility of changes in the priority of administrative and industrial space configurations that this center shelters. The practicality of this module is at the service of an ambitious future, of unquestioned growth and expansion.

The IBM project did not go forward in South Florida as initially expected. Curiously the survival of this complex is compromised today not because of any structural aspect, but due to its perception. These are sober buildings, using this concept not only as an aesthetic appraisal, but also as related to its built integrity. Today this ensemble stands discretely away from the road, and is offered as office space to corporations who some say shy away from it, since these facilities do not offer the visual assault and voracity of facades that blink, oscillate and pulse intermittently to the eye of bystanders.

Key-words: Breuer, IBM, modernism

Big Blue and the Concrete Wave:

IBM Boca Raton & Marcel Breuer's Reinstatement of the Modern

The International Business Machines Corporation, widely known for its acronym "IBM", an nicknamed the "Big Blue", commissioned its facility in Boca Raton, Florida to the office of Marcel Breuer and Associates. The project architects were Marcel Breuer and Robert Gatje (longtime partner at his firm). When Breuer received this commission he was at the height of his career. He was an established, respected, well known architect and a mature designer, having been a former notorious student in the Weimer Bauhaus, also a close disciple of Walter Gropius, a decisive formative influence in his career and defining a friendship until his later years

The project responded to the need of rapid and significant expansion of the company in Florida, which would include offices, laboratories and manufacturing facility, for the research, development and construction of what we call today state of the art of computer devices. The company was moving to Florida to isolate itself from the corporate interests of New York and find space to develop new ideas, something more difficult under the pressure of the usual business urgencies. The company already had some connections in the state which included NASA as one of their clients. Under the same roof the company intended to research, develop and manufacture what then known as data entry systems. The System/ 360 model 20, which was then the most cost effective and user accessible computer model at the time. In the early 70's IBM Boca Raton would develop what we know today as Personal Computers (PCs).

Early Experiences of Breuer and its related aspects to the IBM project

Marcel Latjo Breuer, born in Hungary, arrived at Weimer Bauhaus[1] in 1920. He dedicated himself to the craft of furniture design, where he demonstrated early interest in aspects of Expressionism and primitivism. One of his first chairs was made out of branches direct from a tree. He continued producing chairs, rethinking their design, and trying to build standard parts that could be easily produced and assembled, while also experimenting with new materials. At the age of 23 he came up with the tubular steel chair Through his hands chrome became incorporated as a material in the household. This basic qualities: redefinition of the object, modularity, pre-built parts that were applied to small scale to design in his early life, would continue to reflect themselves until his late years production of architecture, and more so, his restlenesness in relation to form and the nature of architecture would never cease.

From Weimar Breuer follows Gropius to Harvard in 1937, and there he meets Eliot Noyes, who would become a pivotal figure later on. A smooth transition follows from furniture to architecture, were housing becomes a strong aspect of his work aided by his facility with the small scale design,

and some education buildings, mounting to a reputation and prestige as a forefront architect. The commission for IBM Boca Raton would be formalized in 1967, and for Marcel Breuer and Associates this would be the latest of several high profile projects, which had pushed them to the forefront of the architectural discussion. Although sometimes considered controversial works, their consistency and integrity would keep attracting attention to what they designed. The experiences that began in the early 50's and into the 60's with projects such as the Department of Housing and Urban Development Headquarters (HUD), UNESCO Headquarters in Paris and an earlier work for IBM in La Gaude, also in France; had raised eyebrows on the boldness of the use of concrete, stepping each time a bit further into the application of the precast technique (which Breuer would oppose to the traditional poured concrete calling it the "old concrete"). The search for the most complete resolution of problems, in the most practical and economic way, reaching with it a sculptural quality that could transcend the material, seemed to be a well accepted proposition that would bring him significant institutional and corporate projects. The criticisms brought forth by people such as Lewis Mumford described a sense of disorientation and dissatisfaction with the architecture then being produced. The forcefulness of works such as UNESCO Headquarters had caused grievances and distancing from the CIAM and most notoriously from Le Corbusier himself. Walter Gropius would remain his close friend and ally through these turbulent years, even contributing decisively to new commissions for his former student.

The encounter of IBM with Breuer is a crossroads in architectural history. The company was at the forefront of defining new ways of relating design and the environment; and in proposing objects that would intermediate this interaction. On the other hand an architect that would define himself as a continuous experimentalist, eager to push the limits of what defined architecture whilst maintaining its integrity was contributing in the long chain of designed interfaces, as Noyes would refer to.

Eliot Noyes, whom Breuer had met in Harvard had served in the Air Force during the war together with Thomas Watson Jr, founder of IBM. El Noyes as he was known, cleverly convinced IBM on the advantages of an integral design for a company like them. He was hired directly by the president of the company Thomas Watson in 1956 as a "consultant director of design"[2], charged of reinventing IBM's corporate image. Noyes was appointed as responsible for the development and integration of all aspects of design to a degree, depth and longevity rarely seen.

As a company dealing with the early stages of communication technology and data management, IBM was in a special moment of operating a transition on the aspect of conception and use of objects, entering into a whole new realm of understanding how they looked and where used. Noyes introduced the notion that there should be a unified co-relation between all the objects that had "interface" with the environment. They were the means of communication between the company and its clients. From the design of the letterhead, through the typewriters to the buildings occupied. This unified vision of design resembled largely an idea of integration of all scales

defended by Groupius. They were actually determining the re-dimensioning of the routine space/time use although not entirely aware to which extent. Interestingly though in relation to architecture, this did not imply into a uniform all alike number of buildings. Noyes intent was in his words for IBM to become “simply the best in modern design”. This was the company whose business was the management of business itself, and as Watson entitled a lecture he once gave: “Good Design is Good Business”. Together with the design, the company was also restructuring its hierarquical organization from a typical vertical model to a more horizontal and homogeneneous one. It is interesting to note how this functional approach finds its parallel in modern design.

During his long tenure at IBM Noyes hired (in different times and capacities), names such as Charles Eames, Paul Rand –the man behind the iconic three blue striped letters the formed the IBM logo-, George Nelson and architects such as Marcel Breuer, Egon Eiermann, Eero Saarinen, Ludwig Mies Van der Rohe and Paul Rudolph.

IBM and Eliot Noyes design influence

IBM dealt with and did business with an abstract notion that needed to be embodied in objects, and become usable as such. Where on one side was a creating machine but most importantly a way to relate information and to communicate. Their machines a control of the environment, and established a rigidity that allowed actions to happen. In this sense here happens a detachment of time and function in order to streamline productivity. Machines are used for this purpose. Objects produced should relate equally to this function, and architecture becomes part of this system. Function as Harwood notes, is not a quality that can stand on its own, but should be relative to a purpose. It exists in relation to something. In the same way architecture to be functional, is functional in relation to a certain objective. So functionality becomes a relative quality to the built environment.

Breuer deals with the concept of “organic” in a very particular way, were the inanimate objects (relating to a construction per se) become part of their surrounding when they have meaning, when they are absorbed by the viewers sensibility (as they then become architecture). Again there is an idea of integration of the parts, and of a dynamic relation between them.

The design project for IBM was far more than the softening of edges and search for public appeal. It involved the actual creation of interfaces, objects that integrated these new operations into objects and facilitated its handling by the user.

Noyes insisted on the use of modules, and saw beauty in constant and repeated patterns throughout the building design. Repetition, the rule of order of the shell helps the organization of the new ideas still brewing inside. Besides the idea of repetition and module, Noyes searched for the introspect qualities of monasteries and fortresses, through their internal courtyards. This center

space is continually invoked (if not required) by the IBM string of buildings, and this would not be different for the IBM Boca raton.

Description of the Site

A press release of 1967[3] announced a purchased area of 550 acres of IBM from the Arvida Company in November of 1966, in the area called University Park, in Palm Beach County (since then the county lines have shifted), property three miles from downtown Boca Raton and adjacent to Florida Atlantic University. A subsequent memorandum of the company[4] addressed to Mr T.J.Watson Jr reports that Marcel Breuer and Associates, Architects had accepted the commission for the design of the Boca Raton Project.

International Business Machines Corporation (IBM), Offices, Laboratories, and Manufacturing Facility, Boca Raton, Florida, 1968-1974. Perspective. Courtesy IBM Archive.

The site was an absolutely flat piece of land in proximity to the Atlantic Ocean, it had no urban occupation at the time. It had been used for agricultural purposes by a small but strong Japanese community before the 2nd World War, during which the land was bought by the Air Force. When the war was over several supporting institutions were created: a Boca Raton Airfield (today still in use as an executive airport), the Florida Atlantic University, Palm Beach State College and the IBM facilities, which was responsible for attracting a number of smaller businesses to the area, and caused a rapid development with the increased housing needs. This concerted effort was responsible for the growth and densification of the urban area known today as the City of Boca Raton.

This project was the starting point for expansion not only for IBM, but through this company, to the region, blurring the lines that defined the public and private realms, compacting them within the built ensemble of these facilities with the mission of converging growth and development towards a new reality.

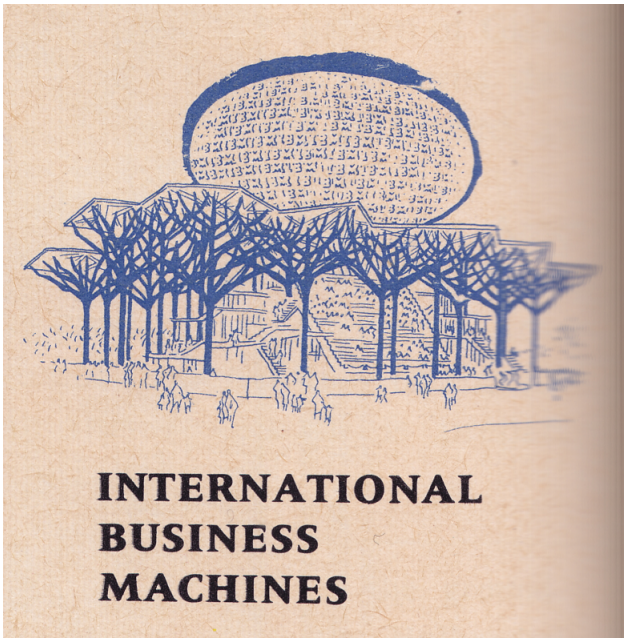
International Business Machines Corporation (IBM), Offices, Laboratories, and Manufacturing Facility, Boca Raton, Florida, 1968-1974. Aerial View of the site. Initial work. Courtesy Boca Raton Historical Society.

International Business Machines Corporation (IBM), Offices, Laboratories, and Manufacturing Facility, Boca Raton, Florida, 1968-1974. Full Aerial View of the site and finished construction. Courtesy IBM Archive.

The International Business Machines Corporation (IBM), Offices, Laboratories, and Manufacturing Facility in Boca Raton

The New IBM manufacturing/development complex would count an initially estimated 620000 square feet (57600 m2) and would house approximately 3500 employees at its inauguration. The total area was divided as follows: 220000 sqft (20400 m2) three-story administration and product test building, 96000 (8900 m2) three-story development laboratory building, 96 000 (8900 m2) Manufacturing Building, 21000 (1950 m2) Cafeteria, 178000 (16500 m2) Materials Distribution Center and 9000 (830 m2) for the Utility Plant.

The administration building and product test and development laboratory building stood elevated three-stories high on branched columns resembling trees, an aspect the confounds a recurrent symbol of IBM as much as Breuer himself. The “Y” shaped building arranged one opposite each other, and then this set doubled, creating through its symmetric antagonism a center, a focal point (again the courtyard), where they embraced a perfectly round man-made lake. This lake as another one in the outskirts of the complex are connected through canal to the ocean, and serve to balance and control of the water level and are directly connected to the fire system of the buildings.



The IBM Pavilion at the 1964-65 New York Worlds Fair. Trees support a modern dome, a late work of Eero Saarinen. Shows the recurrent use of the tree image by IBM.

The plans arranged in “Y”, are a shape that had already been explored in previous projects, such as the UNESCO Headquarters and IBM La Gaude, both in France. This shape allowed to group in a core the main services such as stairs, elevators, restrooms, electrical and air conditioning systems in one point, and from there have the shortest distribution lines to each of the three wings. The “Y” shape is on one hand a functional and economical solution, and on the other offers a

continually concentric curve, a protective open space that gives a pedestrian friendly scale to an otherwise desolate area. It provides not only the central eye focus, but also the reassurance from the inside observer over the continuing line of the building in view in an otherwise flat, bland empty landscape. This concentric curve along 800 feet refers to the courtyard element Noyes wanted in the IBM buildings, present in other projects of the company, although the focal point is outside the campus , the lake occupies a center point of the ensemble. The ingenious “Y” shaped floor plan had another very attractive quality to the geometric growth of IBM, which was to allow the future expansion of the building with the simple addition of another module, without any conflict or interference with the remaining portion of the complex.

The ground floor occupied by offices was set back from the concave façade punctuated by the tree-like columns to accommodate a 12 feet (3,6m) covered walkway connecting the full length of the buildings. These offices are enveloped with a curtain wall of aluminum and glass. The 2nd and 3rd floors are sheathed by the hybrid structural, load bearing enclosure skin composed by the columns and precast panels. The columns are the only poured in place concrete on site besides the staircases. The panels are 33 feet (10m) high by 8 feet (2,4 m) wide. This structural arrangement allowed for a 60 feet span of column free space, enough to allocate the unknown future spatial rearrangements these complex could go through. In La Gaude that same space had been of 40 feet, due to the code in France were the workspace should have natural daylight. The precast panel design was similar to that developed by Breuer in La Gaude in its structural capacity, and its ability to shield the interior from the sun with its deep creases built into the form. For Boca Raton however, given the strength of the sun of Florida, the architects worked on deep fins that projected out5, though slender in size to the previous. Also, in the use of the similar tree column in La Gaude, there is a significant change. There the hybrid column and panel were hollowed to receive mechanical ducts, electrical cabling and heating elements, In Boca Raton this did not happen so instead of a deeper column and panels, in Boca a much more slender result was achieve. It is not clear why exactly that happened, but it would be a strong argument to infer that in the need of having to reach any failing element within the massive concrete monolithic piece, it would be necessary to drill a hole on what was essentially the structure of the building.

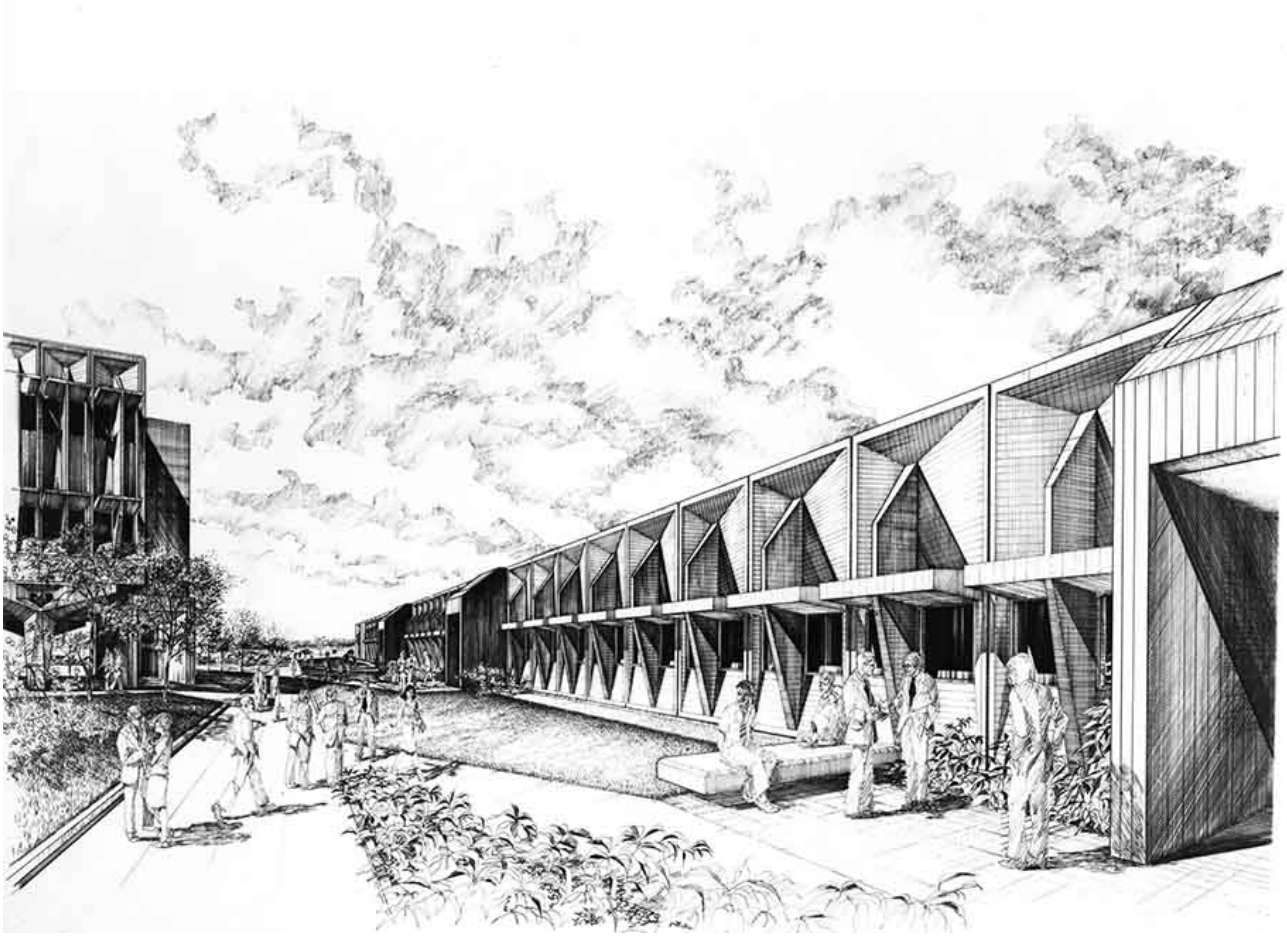
International Business Machines Corporation (IBM), Offices, Laboratories, and Manufacturing Facility, Boca Raton, Florida, 1968-1974. View by the lake of the curving façade. Courtesy IBM Archive.

International Business Machines Corporation (IBM), Offices, Laboratories, and Manufacturing Facility, Boca Raton, Florida, 1968-1974. Entry point of building of the offices building. Courtesy IBM Archive.

The building was designed to be sufficient; it has a slender body, with a façade worked through its openings and brise-soleil for solar protection. The ensemble snakes over the site as a vertebra, elevated by expressive though solid concrete cast in place columns, which bifurcate to support the volume above, forming a single continuous structure. This monolithic sequence rests lightly and fluidly over the landscape. The elevated buildings allow the uninterrupted view of the site

Ponctuating the end portions of the building, or indicating entry points along the curves of the buildings are brick walls positioned in full vertical length, a reminiscence according to Gatje to what Semper refers as the “earth”, a principle he feels that although never heard from Breuer was present in all his work, either a wall of stone or of exposed brick, as a symbol of connection to the earth. The doors themselves are framed by deep, thick frames of concrete, which contrast with the laced lightness of the brought by the shadows produced by the deep fins on the precast panels. The sensation of weight is that of a presence.

The manufacturing and materials distribution buildings are one story high buildings, enclosed by precast panels that resemble the administration ones.



International Business Machines Corporation (IBM), Offices, Laboratories, and Manufacturing Facility, Boca Raton, Florida, 1968-1974. Perspective drawings of manufacturing and materials distribution buildings.

International Business Machines Corporation (IBM), Offices, Laboratories, and Manufacturing Facility, Boca Raton, Florida, 1968-1974. End portion of buildings. Courtesy IBM Archive.

This comparison is important to show, that although there were very similar take –off ideas for the Boca Raton project in relation to La Gaude, there wasn't a blind repetition of details. All the opposite, the similarity shown and the Gatje says that the office considered building a detail library, were certain architectural parts would be signature pieces applied. Breuer however would also bring to the table previous solutions, question them and re-address them. Which makes this a continually dynamic pratice. His buildings express the constant experimentalism of his practice.

Interior has a sober quality, where the lab spaces are taken by the big machines that were the computers then, and the office spaces are just enough. There are no excesses and finishes are simple, with stone surfaces at some portions of the building.

International Business Machines Corporation (IBM), Offices, Laboratories, and Manufacturing Facility, Boca Raton, Florida, 1968-1974. Interior offices. Courtesy IBM Archive.

To this day the complex remains architecturally essentially the same. The trees have grown around it and now compose an interesting composition of shadows together with the columns. Originally planned redundant systems, only recently generators were added. The exterior façade recently went through structural maintenance, when it was judged better to stain the concrete in order to hide the work that had to be done. It was done in a light bone color, not distracting at all, with the concrete form work still very visible in the surface.

In the context of discussion of Brutalism as this Conference proposes, and given to how freely Breuer is associated to this idea, certain contextual aspects of his thoughts, work and intent need to be brought to light. Breuer is consistent throughout his practice on the problems he addresses and the principles he uses to solve these problems He clearly states one of his majors concerns, which he refers as one of his most persistent questions is the “line beyond which design, building and planning become more than just rational and the roof over our heads takes on the significance of architecture” He does not cease asking himself that question, and this leads to an ever experimental attitude towards his craft. So in order to maintain his questions present, he needs to be able to reevaluate his work, hence, to change it.

The appearance of Brutalism within this context is that of a discussion on the decline of the modern architecture, specifically as a criticism to what become known as International Style, sometimes a term used interchangeably with modernism, which is actually a reductionism of the full breath of this movement. The criticism is built over an ever increasing distanced architecture from it social potential, the preponderance of the lightweight and transparent materials and consequent high costs associated with technicalities that became further out of touch with the essence of what it intended to be. Again in his address to concrete manufacturers in Belgium6 he says: "*Change in contemporary architecture: abstract space, all inclusive glass, replaced by solid structure, partly. Reasons:[a] esthetic ones, critical feelings against all around reflectiveness; [b] technical reasons: maintenance, control of climate, of sun view and privacy." He completes: "This philosophical points prepared the way for a more radical search for a satisfactory universal building material*". He states these main reasons as the point of rupture in relation to the course architecture had been taking until the, were concrete was a material exactly for its universality. Different than the International Style, a name that implied a universality that it did not possess, Breuer made allusions to the true meaning of this, by international it should be available as material and as construction system, a direct criticism to the increased detachment of the consequences of the impersonal weightless glass boxes.

He notes as a negative aspect that what he calls an "abstract space" he probably reads it as a tentative of neutrality, and the reflection of neutrality bouncing of the mirrored facades as no statement, no meaning delivered by the urban landscape. This has to do with the fact that he never refers only on a building when pointing design principles but to the street, the district the town, always all scales, or the consequence of the building in all scales. Breuer understands buildings have a social aspect. So what he indicates is the buildings need to say what they are, express meaning. Breuer then intentionally opts for the weight and lack of transparency of his buildings. The opaque quality is that of affirmation, he builds the street, the square, the city.

There was a relative discomfort towards this new heavy architecture forcefully brought by a company such as IBM. At the time, in the words of the Architectural Record article[7] on the IBM Boca Raton stated: "*These buildings* (…) *bear a striking family resemblance. Taken separately, each is vigorous, and vibrant. Taken together, they begin to embody an expression of our corporate and cultural values that like it or not, tells us a great deal about who we are and where we have been going* (…)". There is a clear impossibility to address what exactly all that concrete meant. They are not instantly identified with that architecture but there is value perceived in it.

According to Gatje's memoir, on a comment on ever more simplified solutions, specially referring to the sun-shades, he says (…)"Where others try to break up their buildings, Breuer tried to simplify their envelope."[8] Complementarily in the mid 50's he uses both the direct reference and the metaphor while referring to "Sun and Shadow"[9]. He describes the exercise of arduously working on elements to attach to the surface of the building in order to protect it, but also understands in

broader sense he sees the effort of unifying contrasting elements, where he adds, unifying is not compromising.

Breuer describes as an organic quality of architecture in his text “About the Eye”[10], where (…) *the inanimate objects gains an organic quality, when object become alive. That world of stone behind stone, of vistas, of weight and material, of large and small cubes, of long and short spans, of sunny and shady voids, of the whole horizon of buildings and cities: all that inanimate world is alive*.”

1969[11] Breuer describes his thoughts on the material, and in a short draft he gives valuable input on the state of architecture at that moment and his ideas on how he has been directing his work. Concrete has a innate capacity as a structure element and he strongly introduces it into his vocabulary. It should be added however that in his early period in the US he and Gropius study and work with the balloon wood structure typical of the American Midwest, a light timber structure densely aligned to create enclosing surfaces. He experiments with other material bu he gradually prefers more the concrete as it can structurally eliminate parts and condense in one form, this is in one pour, what otherwise would need to be a composite piece.

Breuer searches for the unified experience of architecture capable of responding to all those demands. Yet he questions himself over and over again what makes a roof turn into a architecture. He cites the “eye” as a unifying entity, and concrete is a material capable to respond with the required precision and mold to the exact intention of the architect. He declares at the inauguration of the 1st phase of the building, that they have achieved a ¼” precision in this 800 feet long building. This unifying experience remits to Noyes same intention on IBM, of unification or correspondence of design in all objects and scales.

The IBM building in Boca Raton although deceptively simple, proudly bears the long years of search of Breuer into the nature of architecture. As he said: “the designer should feel free to be similar; and equally free to turn his back on precedence.”

Closing remarks

I finally would like to justify the reference to the waves made in this title. Although there is an evident allusion to the curves evoked by the “Y” shaped complex, the thought actually originated from trying to photograph the building. Although the surface of precast panels is repeated ad nauseum over and over again, shot after shot the building remained elusive. No frame was the right one, or no number of images were enough. Alike the ocean movement, the ever smooth rhythm created by the deep ridges under the sun, created an ever changing ephemeral façade. This architecture at its finest, fully integrated with it environment. Latje undoubtly produced architecture.

International Business Machines Corporation (IBM), Offices, Laboratories, and Manufacturing Facility, Boca Raton, Florida. Exterior View, 2013. Angela Pedrão.

Notes

[1] **"Bauhaus",** by Frank Whitford, pp170-173, Thames and Hudson,1984

[2] "**The Interface: IBM and the Transformation of Corporate Design**, 1945-1976", by John Harwood

[3] IBM Press Release from March 15, 1967 at 8:30am. Courtesy IBM Archive

[4] IBM Memorandum addressed to president of the company Mr.Watson June 9, 1967, Courtesy IBM Archive

[5] "Marcel Breuer a Memoir", by Robert Gatje, The Monacelly Press, New York, 2000

[6] Idem Breuer, Cimenteries Cementbedrijven.

[7] Architectural Record, "IBM in Boca Raton: Breuer Builds on Florida's Flood Plain"; February 1971

[8] Idem, Gatje, pp169

[9] **Marcel Breuer: Sun and Shadow: The Philosophy of an Architect Hardcover** –January 1, 1956**,** by Marcel Breuer notes by Peter Blake, 1956

[10] Marcel Breuer, Typescript of speech “About the Eye”. Marcel Breuer Writings, Archives of American Art, June 1968

[11] Marcel Breuer, Manuscript of speech for [Reinforced Concrete] Cimentries Cementbedrijven, Brussels, Belgium, 1969. Marcel Breuer writings, Archives of American Art