

# A single strategy: Southeastern Massachusetts Technological Institute by Paul Rudolph

## Una única estrategia: el Southeastern Massachusetts Technological Institute de Paul Rudolph

DÉBORA DOMINGO-CALABUIG

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### Abstract

Paul Rudolph worked at the Southeastern Massachusetts Technological Institute from 1963 to 1991. Despite not being one of his most popular designs at that time, recent publications have revalued this work by evidencing the coherence between thought and design in a case of large-scale construction. This new campus allowed Rudolph to conceive an 'open work' that ranged from its urban planning to its construction. Other new universities addressed this way of proceeding, but Rudolph was a pioneer in his land in the approach of a design system based on a unique strategy. Thanks to documentary sources of earlier research, this work graphically reconstructs the Arts and Humanities building, the first group to be built and considered the germ of the project. The compositional pattern and the use of a prefabricated concrete block are revealed as basic tools which allow the design flexibility. In the Southeastern Massachusetts Technological Institute, Rudolph focused his attention on the design process under the belief that it would become a product itself, thus joining the ideology of the third-generation architects.

### Keywords

Paul Rudolph; Southeastern Massachusetts Technological Institute; third generation; campus planning; new university.

### Resumen

Paul Rudolph trabajó en el Southeastern Massachusetts Technological Institute desde 1963 hasta 1991. Pese a no ser una de sus obras más divulgadas en ese momento, recientes publicaciones la han revalorizado por evidenciar la coherencia entre pensamiento y proyecto en un caso de la construcción a gran escala. Este campus de nueva planta permitió a Rudolph concebir una 'obra abierta' que abarcaba desde su ordenación urbana hasta su materialización. Otras nuevas universidades abordaron esta forma de proceder, pero Rudolph fue pionero en su tierra en el planteamiento de un sistema de proyecto fundamentado en una estrategia única. Gracias a fuentes documentales de investigaciones previas, este trabajo reconstruye gráficamente el edificio de Artes y Humanidades, primera fase construida, considerada germen del proyecto. La trama compositiva y la utilización de un bloque de hormigón prefabricado se desvelan como herramientas base que permiten la flexibilidad del proyecto. En el Southeastern Massachusetts Technological Institute, Rudolph centró su atención en el proceso de proyecto bajo la confianza de que éste devendría en producto, adscribiéndose así al ideario de los arquitectos de la tercera generación.

### Palabras clave

Paul Rudolph; Southeastern Massachusetts Technological Institute; tercera generación; campus planning; nueva universidad.

**Débora Domingo-Calabuig** (Valencia, 1972) has been an architect since 1997, after studying in the School of Architecture of the Universitat Politècnica de València (UPV) and the School of Architecture of Paris-La Défense, and a PhD architect since 2005 through the UPV. She joined the Department of Architectural Projects in the UPV in 2000 where she is currently a PhD associate professor. Between 2012 and 2016, she was the assistant director for research for the School of Architecture in Valencia and is a member of Research Academy of the European Association for Architectural Education. Her research is focused on the social consideration of architecture and urbanism during the 60s and 70s. She has developed alongside professor Raúl Castellanos Gómez a research project on the *mat-building* whose results have been published in *Boletín Académico Contemporáneo* (2011), *Proyecto, progreso, arquitectura* (2011, 2012), *The Architectural Review* (2013), *DEARQ* (2015), and *arq: Architectural Research Quarterly* (2016). Recently, this research has led her to the re-compiling of the post-war university campuses since some case studies are perfectly in line with the definition of "open work" by Umberto Eco. [dedoca@pra.upv.es](mailto:dedoca@pra.upv.es)

## Paul Rudolph, a third-generation architect

Placing architecture on a timeline is a double-scale matter: one should be simultaneously global and local. Questions cannot be formulated without considering the context (previous architecture, the contemporary and the subsequent, together with all its circumstances); the answers are not verified if the distinctive features of each project are not taken care of. Proceeding this way naturally reveals the progressive transformation of the reflections in architecture and serves to polish the stages critics and historians have drawn –not easily– with the aim of helping us to understand architectural production. In the case of the so-called architects of the third generation, the successive revision of their legacies allows to make the connection among those who acclaimed modernity and those who affirmed its obsolescence. This link is particularly visible in the career of North American architect Paul Rudolph. An excellent student of Walter Gropius in the Harvard Graduate School of Design –together with Philip Johnson and Edward Larrabee Barnes–, was a professor to Richard Rogers and Norman Foster in the Yale school of architecture and became the object of successive criticisms in the texts by Robert Venturi and Denis Scott Brown<sup>1</sup>.

According to Sigfried Giedon, the architects of the Third Generation were those whose professional career started after the Second World War, and whose works were characterized for having a great social commitment, open planning, a careful relationship with the surrounding area, an accentuated inheritance of the past and an artistic expression freed from needs and function. This description was published in 1965 in his article 'Jörn Utzon and the third generation' (*Zodiac* 14) and since then, it has been added to the successive editions of his work 'Space, time and architecture' (1941). However, there was not even one mention of Rudolph in the text. It was a young Rafael Moneo who, trying to clarify the origin of the architecture of that time, 'gathered and ordered' this third generation in "A la conquista de lo irracional"<sup>2</sup> (Conquering the irrational): architecture once again had an interest in 'the capacity to contain the form' but while Paul Rudolph, James Stirling or Oswald Mathias Ungers resorted to linguistic exercises, Louis Kahn and Aldo van Eyck bestowed a symbolic content on the form. Moneo was right when he spoke of Rudolph's prolific activity and blamed him for some of these consequences in his works.

In the mid-60s Paul Rudolph has immersed in an intense activity thanks to the acknowledgement of his previous works and to his visibility as the dean of the Yale Architecture School. At the beginning of his professional career associated with Ralph Twitchell in Sarasota, he built mainly small single-family houses according to rational modernity<sup>3</sup>. These were made known in specialised international publications –*L'Architecture d'Aujourd'hui* and *Casabella*– as well as popular magazines –*Vogue*–. Moreover, he travelled to Europe for the first time during these years, especially in Italy, where he consequently became aware of urban history and public space. In the 50s, he had alternated his independent practice in Florida with his new office in New Haven. Rupert Spade narrates how his recognition on the east coast fostered a kind of evolution on the new commissions of the south<sup>4</sup>. For example, the Jewett Art Centre came after Riverview High School, or the later Senior High School, both in Sarasota, and the aesthetics of pillars and light metallic beams of his houses evolved towards thin overlapping roofs and suspended *brise-soleils*. In 1957, he was appointed the dean of Yale, with complete freedom to develop the academic programme<sup>5</sup>. Throughout his seven-year stay, in addition to designing the new school, reforming teaching practices and giving classes, he received more than 50 commissions, 35 of which were built.

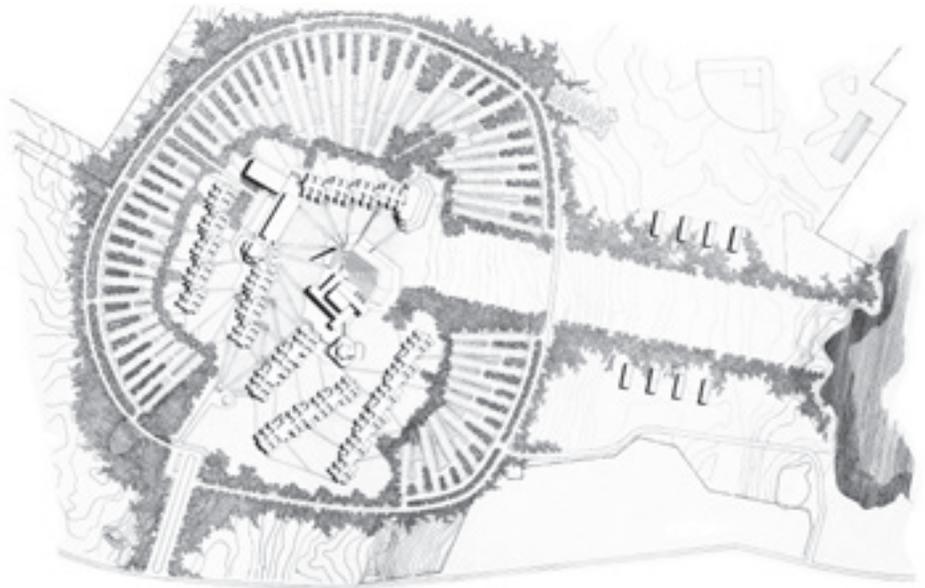
The publications on Rudolph's works are indicative of his greater or lesser acceptance in parallel to the validity of his ideas and for this, the bibliography provided by Tony Monk<sup>6</sup> two years after his death can be consulted. The culmination of his meteoric

- 1 In "Complexity and contradiction in architecture", Robert Venturi and Denis Scott Brown made two references to the work of Paul Rudolph. In the first, they declared him as a follower of the simplistic assigned to the "less is more" of Ludwig Mies van der Rohe; in the second, they criticised the access to the Yale Art & Architecture building. In addition, Venturi and Denis Scott Brown published in the *Architectural Forum* (November 1971) the article "Ugly and Ordinary Architecture or the Decorated Shed", where they used the Crawford Manor Housing for the Elderly by Paul Rudolph in New Haven to make a severe critique compared to his own work of the *Guild House* in Philadelphia. This text later became a chapter in their book "Learning from Las Vegas". The possible reasons for choosing Rudolph in those texts by Venturi and Scott Brown are analysed in: Robert Brueggemann, "The Architect as Urbanist", in *Paul Rudolph. The Late Work*, Roberto de Alba (New York: Princeton Architectural Press, 2003), 17-38.
- 2 Rafael Moneo, "A la conquista de lo irracional", *Arquitectura* 87 (marzo 1966): 1-6.
- 3 Christopher Domin and Joseph King, *Paul Rudolph: The Florida Houses* (New York: Princeton Architectural Press, 2001).
- 4 Rupert Spade, *Paul Rudolph* (London: Thames and Hudson, 1971), 7-19.
- 5 Regarding the years Rudolph was head of the teaching project in Yale, see: Robert A.M. Stern and Jimmy Stamp, *Pedagogy and Place. 100 Years of Architecture Education at Yale* (New Haven & London: Yale University Press, 2016), 163-241.
- 6 Tony Monk, *The Art and Architecture of Paul Rudolph* (Chichester, West Sussex: Wiley-Academy, 1999), 126-28.

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[Fig. 1] SMTI. Site plan. Paul Rudolph, 1963. Source: Library of Congress, Prints & Photographs Division, Paul Rudolph Archive [LC-DIG-ppmsca-32696].

career was marked by the monograph of Sibyl Moholy-Nagy in 1970, which was completed two years later with a summary of illustrations edited by Yukio Futagawa. In the 70's, he was subject to a continuous decline in commission, partly due to the recession but also due to the lack of understanding regarding his attachment to an expressive functionalism and humanistic urbanism<sup>7</sup>. The interviews published in the *Architectural Record* (1982) and in *L'architecture d'Aujourd'hui* (1989) expressed a certain contextual expiry even in the way the questions were formulated by the interviewers<sup>8</sup>. However, Rudolph's answers provided an image of an architect faithful to his convictions, grateful to his teachers and his partners, and critical against the architecture of the last quarter century. Rudolph donated his files to the Library of Congress of Washington, offering free access of his works to the public. It is likely that this generosity but also the impassioned research carried out by researchers close to him and his works have helped to recover the value of his legacy.

### The Southeastern Massachusetts Technological Institute

The merger of two local technological institutes led to the creation of the Southeastern Institute Technological Institute (SMTI), and the momentum of the times –the arrival of the “baby boom” generation to higher education and the consequent possibilities of public funding– favoured the planning of a campus with a complete disciplinary arch (science and humanities), designed for a rapid growth of students. In 1962, the work was commissioned to the firm Desmond & Lord who hired Rudolph a year later, making this his second collaboration with them<sup>9</sup>. Currently, the institution is called the University of Massachusetts Dartmouth, and from 1969 to 1991 it was also known as the Southeastern Massachusetts University.

The location for its implementation was strategic; between two traffic junctions that implied several highways, a model was defined as a ‘commuter campus’: in keeping with the north American culture at that time, it was thought that the student would get to the university in their own cars. The circular shape responded to this condition and provides the campus with a slightly displaced visual centre but set with a linear perspective towards an artificial lake [fig. 1]. Paul Rudolph defined the ensemble as a ‘spiralling mall’<sup>10</sup>, recognising the influences of the University of Virginia by Thomas Jefferson and the Florida Southern College by Frank Lloyd Wright (in turn based on the Virginia), and alluded to Venice when he described the ‘campanile’ centre. As seen in the perspectives, the scenery is the result of a careful manipulation of the landscape and a painstaking adjustment of the urban morphology [fig. 2]. Access to

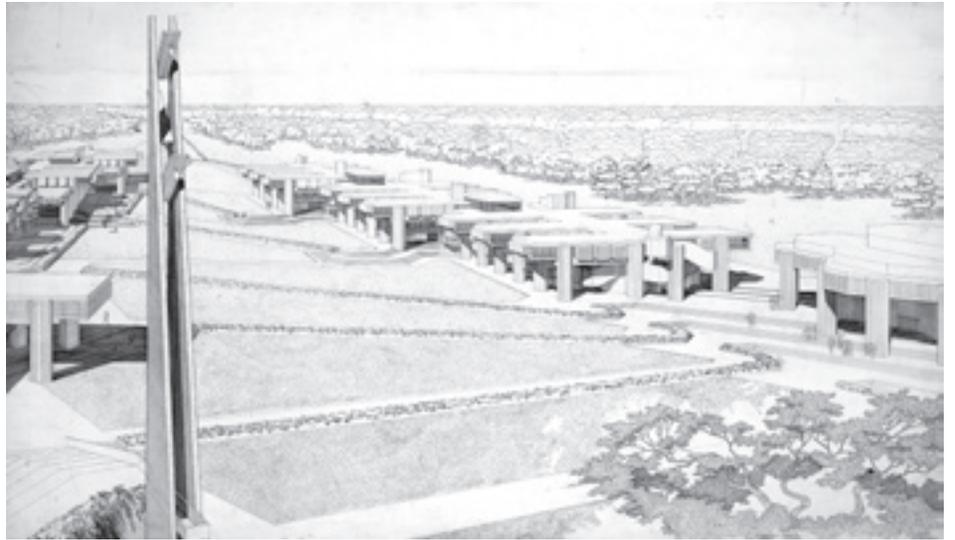
7 Milfred F. Schmertz, “A Long Life in Architecture”, in *Paul Rudolph. The Late Work* (New York: Princeton Architectural Press), 13-15.

8 “As a student of Gropius do you feel you were poorly educated?”. Jeanne M. Davern, “A Conversation with Paul Rudolph”, *Architectural Record* (March 1982): 90-97. “Votre dernier projet de Singapour ne serait-il pas l'ébauche d'une synthèse récapitulative de votre pensée?” Philippe Barrière, “Que devenez-vous, Paul Rudolph?”, *L'Architecture d'Aujourd'hui* 265 (Octobre 1989): 24-32.

9 The most recent monograph about Paul Rudolph, by Timothy M. Rohan, gathers all the detailed information synthesised here on the creation SMTI, his master plan, the foundations for the design of the buildings, and its construction timeline. Timothy M. Rohan, *The architecture of Paul Rudolph* (New Haven & London: Yale University Press, 2014), 128-40.

10 Sibyl Moholy-Nagy, *The Architecture of Paul Rudolph* (New York: Praeger, 1970), 152.

[Fig. 2] SMTI. Aerial view of the north Campus. Paul Rudolph, 1963. Source: Library of Congress, Prints & Photographs Division, Paul Rudolph Archive; [LC-DIG-ppmsca-03540].



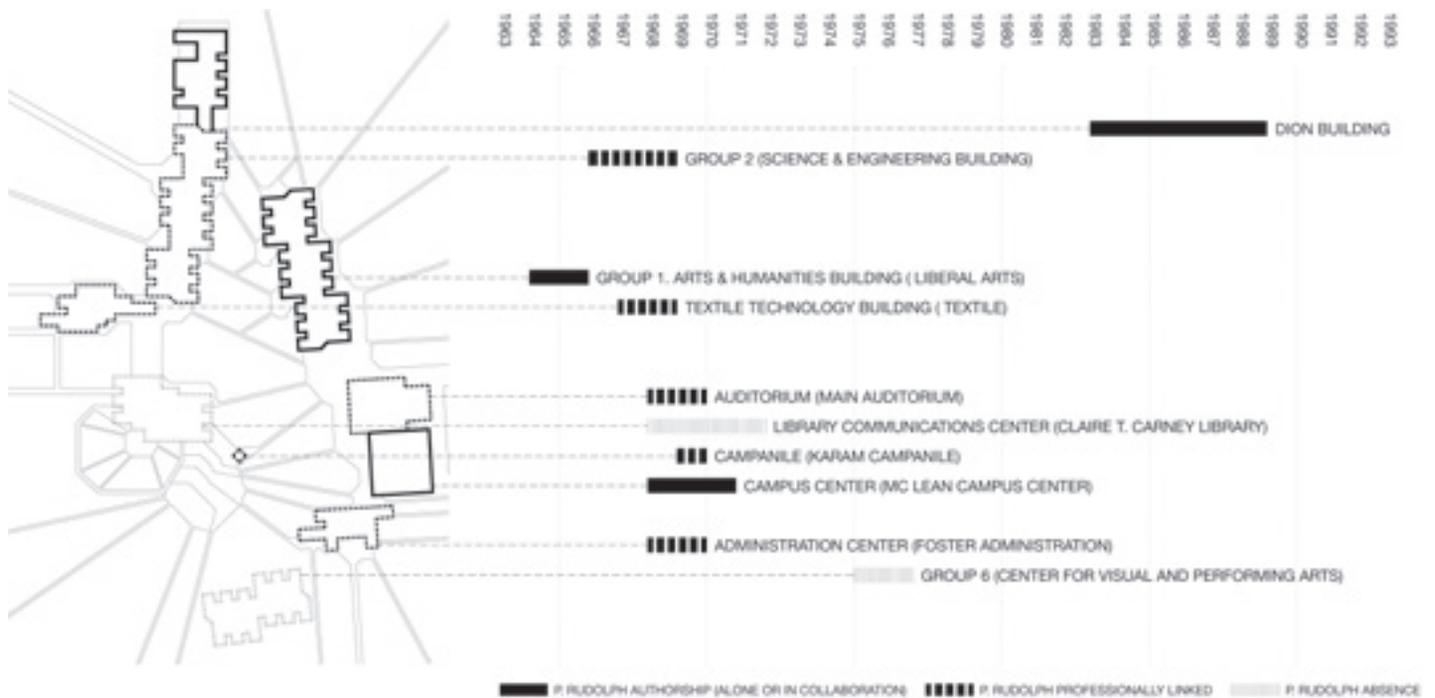
[Fig. 3] SMTI. Aerial photography [ca. 1995]. Source: Photograph by Manny Pereira. Copyright: University of Massachusetts Dartmouth Photographics.



[Fig. 4] SMTI. View of campanile and library from plaza [ca. 1984]. Source: Library of Congress, Prints & Photographs Division, Paul Rudolph Archive [LC-DIG-ppmsca-03518].



the campus is through a road that connects to the circular ring and parking which is camouflaged by vegetation. The topography was modified to generate different platforms that in a centrifugal way lead to the faculties but come together in a space representative of the union conceived as an outdoor amphitheatre. Its construction was carried out in several phases but developed as a whole. The volumes are fragmented by sections to enrich the visuals and avoid monotony [fig. 3 and 4].



[Fig. 5] SMTI. Timeline of the different construction phases and participation of Paul Rudolph. Source: Drawing by the author.

The Art and Humanities building, first construction phase completed, was received by the local community with some surprise and alluding to the high cost of the work, Rudolph was removed from the rest of the commissions<sup>11</sup>. The architect always recognised the loyalty of Desmond & Lord with the original design and the future buildings of the campus followed the initial steps<sup>12</sup>. The timeline of the achievements reveals the alternation of commissions and responsibilities in the final design of the buildings [fig. 5].

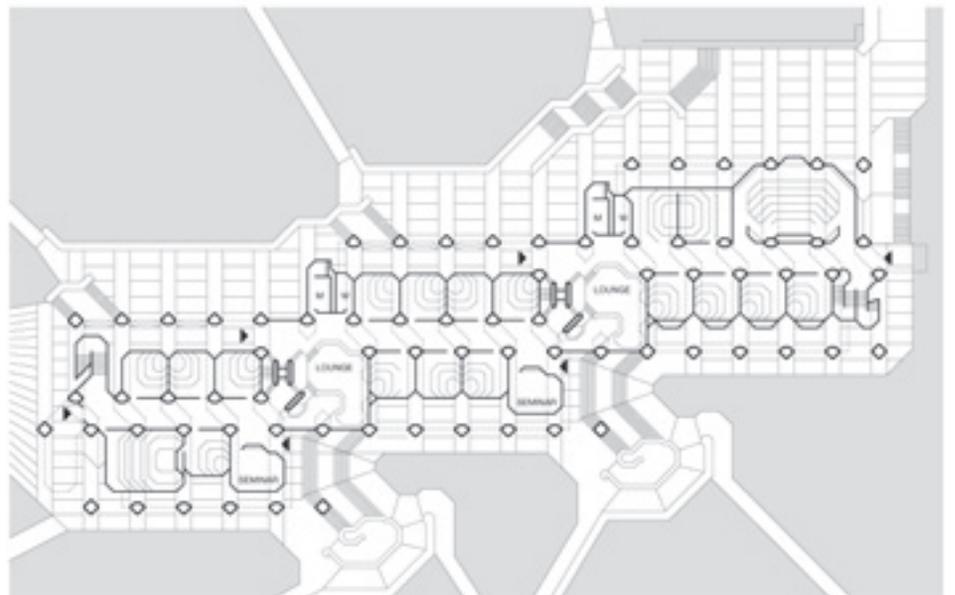
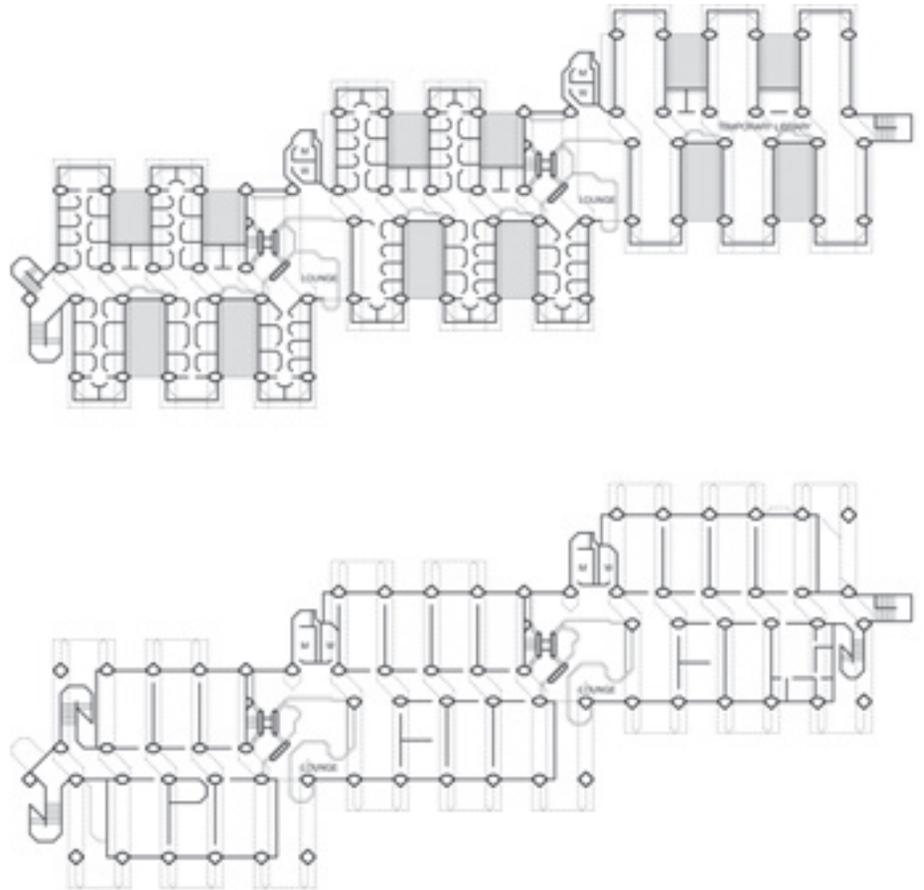
Today, the SMTI is considered one of relevant works by Rudolph due to the wide range of reflections that it covers: the territorial scale, the urban scenery, the simple resolution of a complex program and the achievement of a unitary aesthetic thanks to a systematised resolution. However, this was overshadowed by other luckier projects at the time –like the Yale Art & Architecture building, the Endo laboratories, or the Crawford Manor housing– and did not receive the attention it deserved<sup>13</sup>. Once the first phase completed, the *Architectural Record* and *l'Architecture d'Aujourd'hui* published two articles in which the planning of the campus was explained, and the Arts and Humanities building was shown<sup>14</sup>. In addition, the monograph by Moholy-Nagy included scaled graphic documentation of the building, the first photograph in colour (in addition to several black and white photographs already published) and a brief comment by Rudolph himself<sup>15</sup>. As of this moment, the work was practically silenced, and it was not until the following century when further studies arrived that it began to be revalued. A first in-depth analysis is included in the thesis by Timothy M. Rohan dedicated to post-war university architecture of Rudolph<sup>16</sup>. The same author signed the most recent monograph about Rudolph that included significant contributions regarding SMTI, and to that should be added the web source from the university library that notably gave visibility of the history of the university<sup>17</sup>.

From its publication in the first magazines, the chronicles focused on questions related to the design strategy. Specifically, the *Architectural Record* dedicated the cover to SMTI including the title 'Architecture that gives a campus the unity of a single building' [fig. 6]. In it, the singularity was highlighted of a university that was not a collection of particular buildings but that used "a unique architectural concept strong enough to control the design of an entire campus"<sup>18</sup>. There were three elements of design: a simple implantation, a structural grid that integrated the facilities and a wide range of possibilities in the composition of the elevations.

- 11 Cristina Mehrtens, "Brutal identity: Paul Rudolph, the city and the renewal of the modern", *Arquitextos* 90.2 (November 2007), <http://www.vitruvius.com.br/revistas/read/arquitextos/08.090/189/en> (consulted 21 February 2018)
- 12 Davern, "A Conversation with Paul Rudolph", 94.
- 13 Bruegmann, "The Architect as Urbanist", 24.
- 14 Jonathan Barnett, "Architecture that gives a campus the unity of a single building", *Architectural Record* 10 (October 1966): 146-60. Renée Diamant-Berger, "Institute de Technologie à Dartmouth, Mass", *L'Architecture d'Aujourd'hui* 128 (Octobre-Novembre 1966): 2-5.
- 15 Sibyl Moholy-Nagy, *The Architecture of Paul Rudolph*, 152-65.
- 16 Timothy M. Rohan, "Architecture in the Age of Alienation: Paul Rudolph's Postwar Academic Buildings" (PhD thesis, Department of History of Art and Architecture, Harvard University, 2001).
- 17 Timothy M. Rohan, *The architecture of Paul Rudolph*, 128-140. Bruce Barnes, "Paul Rudolph and his Architecture", UMass Dartmouth Claire T. Carney Library, <http://prudolph.lib.umassd.edu/home> (consulted 25 January 2018).
- 18 Barnett, "Architecture that gives a campus the unity of a single building", 148.



[Fig. 6] *Architectural Record*, October, 1966. Cover. Source: *Architectural Record*. Vintage Cover Gallery, <<https://www.architecturalrecord.com/media/photos/115-vintage-cover-gallery>>.



[Fig. 7] SMTI. Arts and Humanities building. Floor plans. Source: Drawing by the author.

For its part, *l'Architecture d'Aujourd'hui* emphasised the creation of a project on a “structural grid of three dimensions [...] calculated to contain and distribute the technical features” and spoke of “wide hollow pillars that contain the service spaces”<sup>19</sup>. In the systematic design resides its value for adaptation, a matter that becomes evident when the floor plans of the first constructed building are observed [fig. 7].

### Universities of the 60s and 70s: open works

At the beginning of the 60s, the following situation was not strange in Europe nor in North America: the economic, political and social circumstances of a country reflected the need to significantly increase university figures. Institutions were opened to the middle classes and as a result, an increasing rate of students was expected. For a couple of decades, numerous university campuses were designed and built from scratch<sup>20</sup>.

19 “Une trame a trois dimensions a été adoptée pour la structure de tous les bâtiments et calculée pour contenir et distribuer les équipements mécaniques”. “Les très larges piliers de l’ossature portante sont évidés pour contenir des espaces de service [...]”. Renée Diamant-Berger, “Institute de Technologie à Dartmouth, Mass”, 2.

20 The overall panorama of university planning of the time can be seen in Giancarlo De Carlo, *Pianificazione e Disegno delle Università* (Rome: Edizioni Universitarie Italiane, 1968).

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In response to large-scale planning, the cases of the United Kingdom and Germany were relevant. The Robbins report of 1963 recognised the problem of elitism in British higher education and the State launched an entire operation that included the creation of new universities –known as *Plateglass Universities*<sup>21</sup>–, the increase of existing capacity, and the re-organization of the education systems. In West Germany, the national plan for education divided the territory into 63 university regions and all catered equally to the policies of the federal government regarding the design of the physical support (campus and buildings) that would accommodate the different teachings practices<sup>22</sup>. In France, however, it was the student movements of 1968 that provoked a reflection on content and institutions: after the Faure law, universities were re-structured, their autonomy was enhanced, and there was an appeal to interdisciplinarity in training.

There is no one line of reasoning for the entire US territory. The universities have diverse origins –private, state, rural...– and their development is strongly autonomous. The campuses, in their origin traditional and British inspired, began to include architectural pieces ascribed to the so-called International Style during the post-war period. In addition, the rapid growth of higher education led to the creation of new institutions where urban models were similar to the precepts of Modernism (functional zoning, separation of road traffic and pedestrian routes), but with a substantial change of scale with respect to European references. The most notable symbiosis between the educational reforms and the design of the campuses was close to the model of the ‘academic village’<sup>23</sup>, where the exterior spaces of the Italian urban tradition were referred to as the germ of life of the university community.

Whatever the policies of higher education development, all countries mentioned have case studies that are ascribed to the adoption of systematic compositional strategies. In fact, the commission parameters led almost directly to the formalising of the architectural ensembles based on modulation and seriation, for the sake of flexibility and the possibilities of rapid growth. How else can one face many users and such a vast construction in square meters in such a short period of time? Pedagogical trends also promoted departmental organisations and stressed the creation of a student environment as a favourable factor to strengthen knowledge. Therefore, the designs focused on streamlining the material and physical resources (class timetable, movement of students through the campus, standardised constructive systems) prioritising processes against results. This way of proceeding was especially backed by the architectural thought: ‘*In the past fifty years we have seen the architect move from product to process, from building design to the design of living patterns, from designing monuments for great clients to the creation of a new and broader patronage, from directing hand craftsmen to designing industrial procedures, and from posturing as a social butterfly to standing as a social advocate.*’<sup>24</sup>

Hence, while Rudolph faced the development of the SMTI, the debate about the new universities was present in the specialised periodicals, which dedicated their pages to the discussions and its results<sup>25</sup>. There is no record of Rudolph looking to other universities beyond those already mentioned by Jefferson and Wright, but it is interesting to situate SMTI in parallel to the achievements that accompanied him in time.

At the University of Sussex, Basil Spence collaborated with the firm Ove Arup to build a campus in line with the orthodoxy of modern urbanism and formalised in a series of independent pavilions sharing a common language based on prefabricated concrete slabs. The first built stage dates from 1962 and the project was widely disseminated. The German University of Marburg was designed in 1963 and is a pioneer in the ascription to a three-dimensional reticular frame constructed with serial prefabricated concrete pieces. More than the results, the magazines of the moment gathered

21 Michael Beloff, *The Plateglass Universities* (New Jersey: Fairleigh Dickinson University Press, 1968).

22 Peter Jockusch and Walter Dunkl, “University Campus Design”, *Architectural Design* 11 (November 1974): 702-17.

23 Jonathan Coulson, Paul Roberts, and Isabelle Taylor, *University Planning and Architecture: The Search for Perfection* (Oxon: Routledge, 2015), 39.

24 Forrest Wilson, “From Product to Process: The Third Generation of Modern Architects”, *Progressive Architecture* 06 (June 1970): 156-67.

25 Among the monographic editions or extensive reports on the new universities, the following are highlighted: *Architectural Forum* 124, 4 (1966), *L'Architecture d'Aujourd'hui* 137 (1968), and several editions of *Le Carré Bleu*.

the creative process through graphics and diagrams that explain their systematic nature. The media success of the Free University of Berlin cannot be ignored: from the proposal of the competition in December 1963 until the completion of the first phase 10 years later, Candilis, Josic and Woods gave an account of their reflections in numerous publications and debates maintained within Team 10. Other notable examples are the Simon Fraiser University, by Erikson & Massey, which began to have visibility around 1965, and the University of Loughborough by Ove Arup, whose master plan of 1966 became a reference for later executions. All these developments reveal an approach in clear harmony with the proposals of the SMTI.

### **A piece and a grid: The Arts and Humanities building**

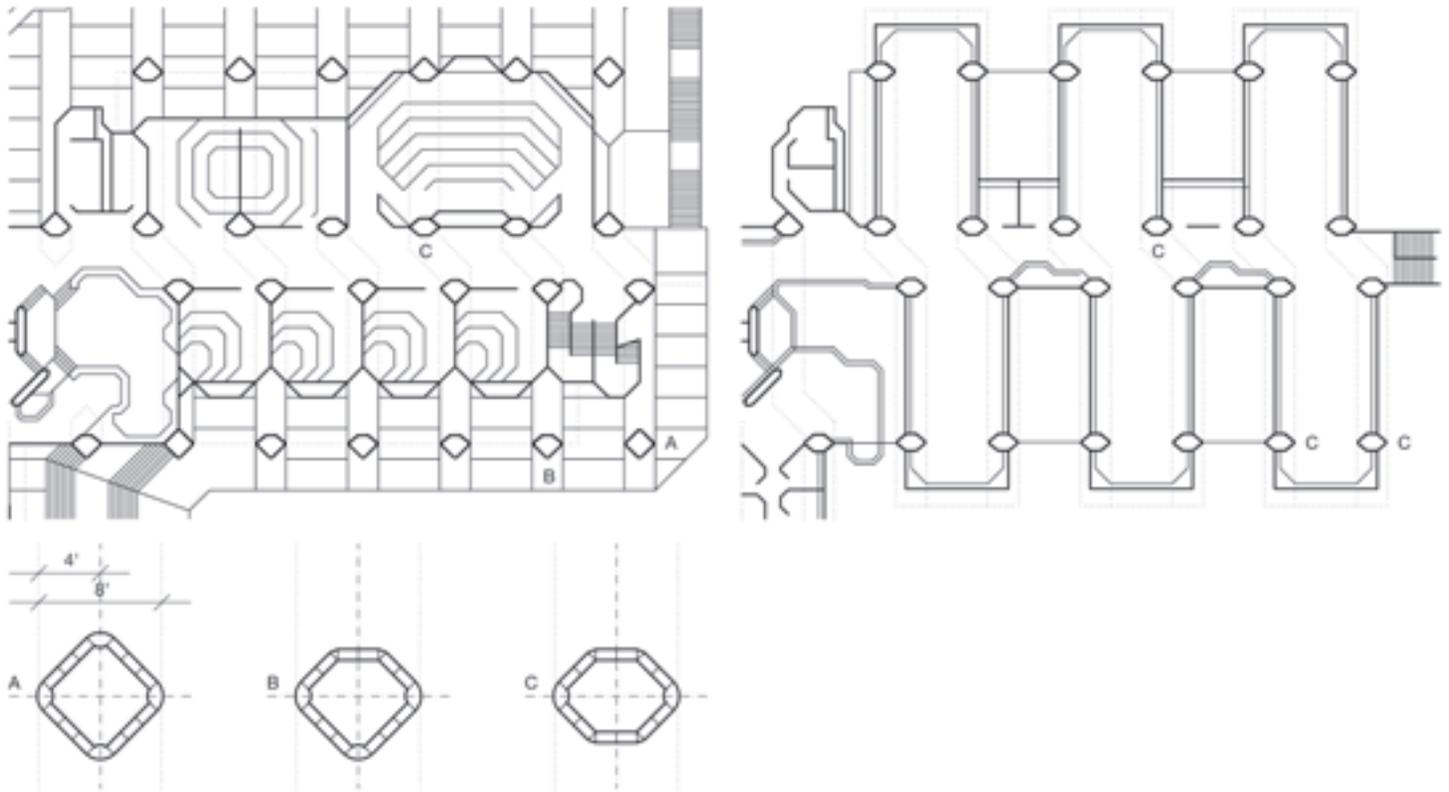
Rudolph defined the SMTI as an 'open design', and in the interview given to the *Architectural Record* in 1982, he explained how this argument was dual. On the one hand, urban planning was a spiral, therefore, it was already an open form. Therefore, it was understood that the campus would admit complementary buildings beyond those defined in the master plan since there was enough space available until the parking areas were reached. On the other, the project *'is also open-ended in its parts because there are knuckles on the rear side of the buildings, which invite attachments and extensions. It involves circulation –there's enough space for expansion between the parking and the purely pedestrian precincts. The structural-mechanical is open-ended since there are hollow columns and double-beamed space forming a three-dimensional space that accommodates additional mechanical systems throughout the campus'*<sup>26</sup>. Bearing in mind his reasonings, working in any other way on such big projects would be naïve, since there was little expectation that the architects would complete all the phases (as it happened to him). In addition, these types of design strategies were particularly complex because the built-up sets had to appear finalized after closing a stage, but they should be open to future expansion. This is the case in the building analysed here, whose design in serial fragments converts the end of the main circulation into the first and second floors, in a sort of indeterminate point resolved with an emergency stairwell [fig. 7].

What follows is a speculative graphic reconstruction that aims to illustrate the design strategy used by Rudolph for the SMTI. The analysis focuses on the first phase of the campus, the Art and Humanities building since it is considered the germ of the whole and carried out with Rudolph as the architect responsible for the works. The starting data originate from three different sources. Firstly, the plans with graphic scale published by *l'Architecture d'Aujourd'hui* in 1966 (and subsequently by Moholy-Nagy in 1970) are used. In addition, the information is complemented with the original drawings by Rudolph that librarian Bruce Barnes collects on the UMass Dartmouth website in relation to group 1 of the project. Finally, the statements of professor Rohan<sup>27</sup> are considered when describing the compositional grid of the project, a 28x14 feet module, and the uniform use of a material, the concrete block of 8.5x16 inches.

Actually, the piece of concrete and the grid are the keys to the composition of the project. The block is used to build a square type column rotated 45° and of round corners. It is a hollow pillar, able to accommodate service facilities, and therefore numerous sources refer to works by Louis I. Kahn where servant spaces were integrated into the structural elements to differentiate from served ones. In this case, in addition, the pillar acquires a certain plasticity because, depending on its location in the building, it deforms, gets crushed... it is sculpted to meet its objectives; It can even happen that a pillar changes its section from one floor to another [fig. 8]. In any case, the pillar thus formed defines a strip of 8 feet that is equivalent to the passage of the double beams between which the pipes also run. This strip will become the common sub-module of the whole grid.

26 Davern, 'A Conversation with Paul Rudolph', 94.

27 "Rudolph's building system was based on an underlying rectangular grid of 28-by-14-foot modules, a standard that suggested limitless possibilities for expansion. The basic element of the "single structural mechanical system" was a giant hollow pier that formed the framework for the building and contained all the heating, ventilation, and air-conditioning ductwork. [...] Rudolph rotated the piers on a 45-degree angle to contrast with the underlying grid and inject a quality of motion into the building. [...] The use of the same material for all buildings, a rectangular 8½-by-16-inch concrete block, also imposed coherence. [...]". M. Rohan, *The architecture of Paul Rudolph*, 136.



[Fig. 8] SMTI. Arts and Humanities building. Pillar type and variations of ground and second floor. Source: Drawing by the author.

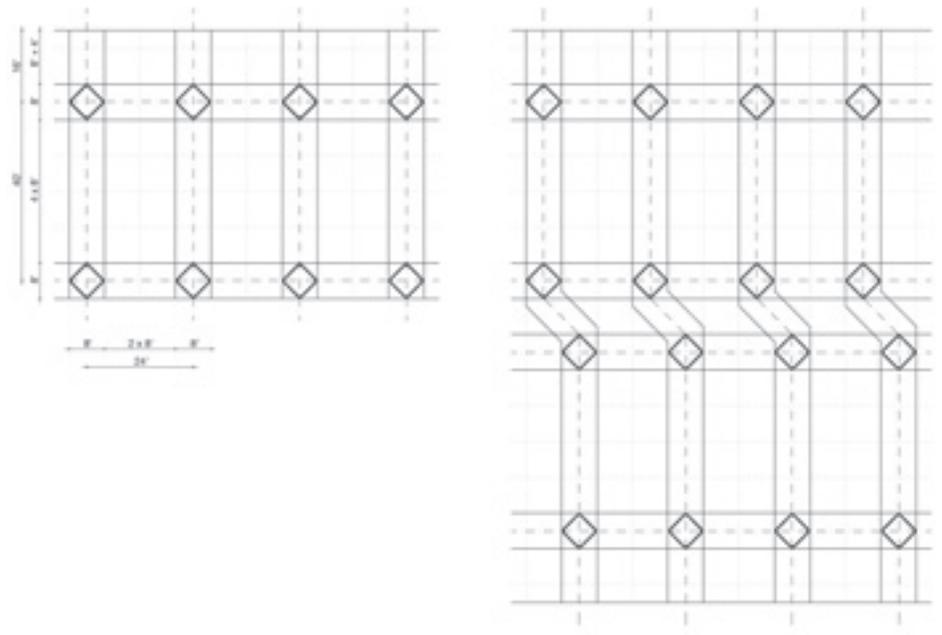
The pillars compose frames of 40 feet span (4x8 feet, plus 2x4 feet), with a lateral cantilever of 16 feet. Likewise, 24 feet (2x8 feet, plus 2x4 feet) is the separation between frames [fig. 9 left]. The sequence of spaces thus formed can accommodate dimensionally the different parts of the program: classrooms, seminars, offices ... Thus, as there are no intermediate pillars, the spaces of this grid can join to accommodate larger surface needs. For example, this building contained the temporary library of the campus until it was built independently at a later stage, as shown on the second floor [fig. 6].

The next spatial operation, once a wing of the building is defined, is to duplicate it to obtain a central corridor that gives access to teaching spaces on both sides. Far from operating by a simple symmetry, Rudolph introduces a displacement of one wing with respect to the other. This is produced based on an angle of 45° and a stripe of 8 feet [fig. 9 right] Finally, the building fragment defined by the two wings of 6 frames is repeated as a block, shifting again a 40-foot strip [fig. 10]. A simple operation of using the square on the drawing board is the added factor to enrich a simple tartan pattern.

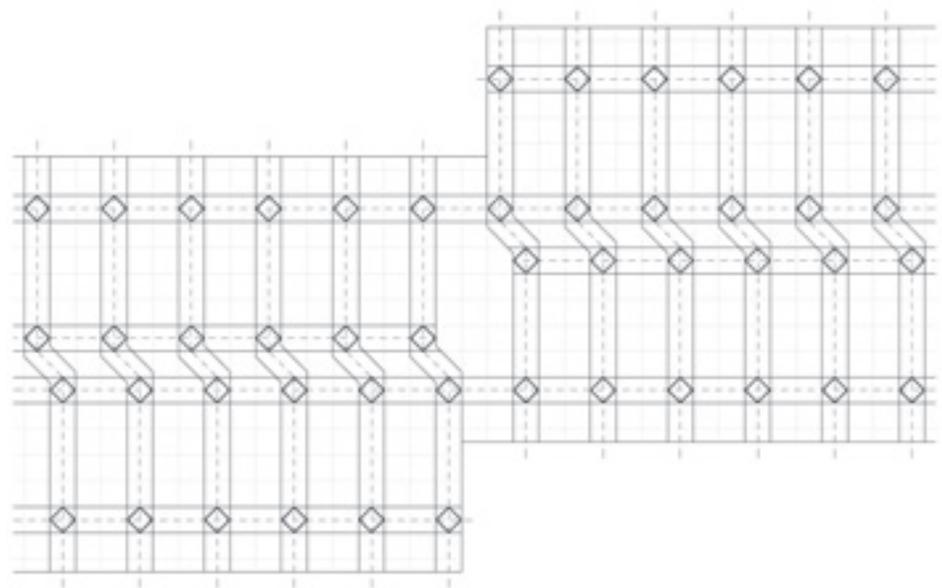
The mechanism of introducing of diagonal lines in the design is decisive in different approaches to the project. In the short distance, the pillar rotated 45° is visually slimmer. It is worth remembering that the pillar is oversized (to be able to hollow out and contain the facilities), and therefore its orthogonal layout to the portal frame would have been rough. In addition, the diagonal chamfering of partitions between spaces (classrooms, offices ...) produces a similar lightness effect and gives fluidity in the circulations.

From the point of view of the general design strategy, the diagonal offset of both wings allows the symmetry of the corridors to be broken: the pillars do not face each other, nor do the exit doors of the classrooms (a functional issue that affects the flow of people when leaving class). Ultimately, the fragmentation of the building into several blocks, also displaced by 45° diagonals helps to break the excessive length that the corridors would have had, but above all, they favour “articulation” spaces between one part of the building and another in which Rudolph focuses all his attention by turning them into spaces of relationship. The accurate design of

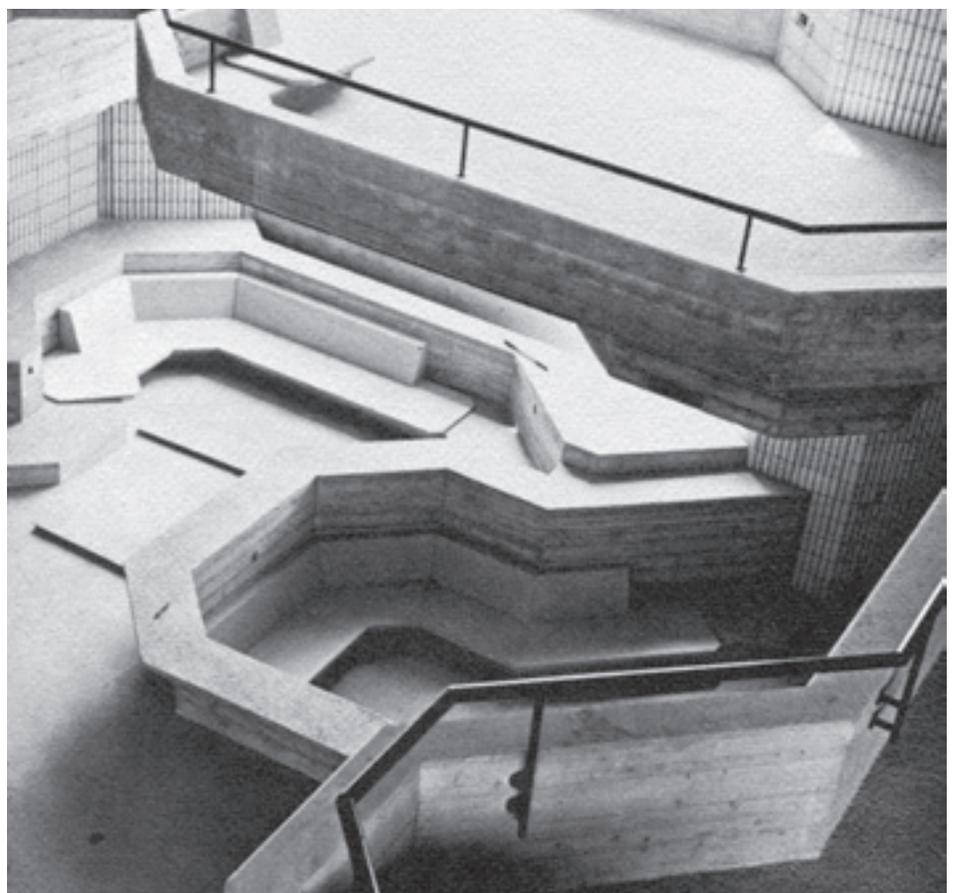
[Fig. 9] SMTI. Arts and Humanities building.  
Compositional grid. Source: Drawing by the  
author.



[Fig. 10] SMTI. Arts and Humanities building.  
Grid of two blocks of the built set. Source:  
Drawing by the author.



[Fig. 11] SMTI. Arts and Humanities building.  
Photograph of the interior lobby [ca. 1966].  
Source: Photograph by Joseph Pacheco.  
First Academic Building Pamphlet. History of  
UMass Dartmouth and the University Archives,  
<[https://www.lib.umassd.edu/archives/  
umassd-history](https://www.lib.umassd.edu/archives/umassd-history)> (accessed on 2 May 2018).



#### DÉBORA DOMINGO-CALABUIG

A single strategy: Southeastern  
Massachusetts Technological Institute  
by Paul Rudolph

Una única estrategia: el Southeastern  
Massachusetts Technological Institute  
de Paul Rudolph

the stairs, the platforms (whose plans vary in each one of the floors), the integrated furniture ... evidence as to the extent this space was entrusted to the construction of the academic community. The first colour photograph of the building portrayed these halls, showing the red of the textile pieces that Rudolph chose with interior designer Bill Bagnall [fig. 11].

### ‘Architecture that gives a campus the unity of a single building’

Redrawing the plans of the Arts and Humanities building allows us to understand to what extent the design strategy is profitable in terms of a complete definition of the space when the aim is to give a rapid response to the client and achieve an efficient construction. Using a slightly elaborated grid, Rudolph manages to print a general order difficult to be modified in the future. On the one hand, the teaching functions are housed in the existing wings on either side of the corridor, regardless of its size: meeting rooms, classrooms, offices, conference rooms ... everything fits into the frames seriation. On the other hand, the stairs and the restrooms are in the spaces resulting from the displacement between the two classroom wings. Finally, the place where the building fragments are joined become the central spaces for meeting and contact between students. These triple-height lobbies feature a delicate design of balconies with benches; it is about observing and seeing, a space to enjoy cross-views. In this way, the decisive placement and formal assignment of served and servant spaces, of static spaces and circulation, protects the integrity of the design against possible distortions. The idea arises that an ‘open work’ needs the definition of a formal structure to guarantee its identity, while aspiring to flexibility and change.

With regards to instruments, the 3 segments of the building were drawn by using only a ruler and a square: 5 points were knitted in 3 rows, but the chain of knots could be weaved further, with a similar pattern, or with small variations. Is this the answer to Moneo’s observation about a work of Rudolph “*continuous, without time to breath, not even looking back on what has already been done*” in the article initially quoted “A la conquista de lo irracional” Thus, the design is absolutely indebted to the graphic tools used, and this is proved when the reconstruction is carried out with digital media. This is a T-square and 45-triangle design, where once the accuracy of the grid is determined, the continuity of the lines –orthogonal and at 45°– prevails more than the dimension. To a tracing paper base with the pattern of the tartan fabric, other sheets with superimposed lines should occur where the chamfers of the corners, the location of the doors, the distribution of the smaller spaces, the benches of furniture... no longer needed a scaler.

Otherwise, in a reconstruction of the design operational, the question about the work on elevation and section is unavoidable. The ground floor definition is profuse, and yet, it can hardly be appreciated with the topographic levels represented in the floor plans. Few elevations and sections were published, and the perspectives and the sections seem to explain the project more to third parties than to be a design reflection. This apparent oversight of the third dimension is not strange in projects that aspire to a systematization of spaces, where the graphic expression of the elements is usually codified. The design is three-dimensional, but it is concentrated in a key drawings series which contain almost all the information.

It is finally necessary to make the parallelism between the approach of this work in Rudolph’s career and the general temporary range in which it is inscribed. The SMTI is a project that looks back and is conceived as a series of functional volumes (the faculties, the library, the administration ...) arranged on the campus green carpet. However, it also looks towards what is to come and is defined as a device

built based on standardised pieces that are assembled in a certain way, aspiring to be changed or expanded in the future. This is the personal path that Rudolph takes from his homes in Florida in the 40s and 50s to his mega-structures imagined in the 80s: from the 'form follows function', to an open form to house any function.

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