THE ADAPTATION OF JOSÉ VILLAGRÁN’S ARCHITECTURAL THEORY IN THE REALIZATION OF THE PROJECT
– The case of architectural design of the National School of Architecture –
ホセ・ヴィラグランによる建築作品における建築理論の適応について
–国立建築学院の建築デザインの場合–

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This study aims to clarify the correlation between the José Villagrán’s theory and its adaptation to the design process by analyzing the National School of Architecture project. The authors have explored on José Villagrán’s architectural theory, sketches and historical documents according to his design methodology applied in the National School of Architecture to establish the correlation between them. Based on this exploration, it appears that Villagrán applied the analysis of the program in his theory and design process after Mexican architects within constant awareness of the importance of avoiding foreign styles and rescuing tradition.

Keywords: Villagrán’s architectural theory, adaptation, architectural design, National School of Architecture, architectural program

1. Introduction and context
The history of modern Mexican architecture is marked by constant references to the presence of José Villagrán García (1901-1982), who was theorist, lecturer, and builder. From 1920s to 1970’s, the Mexican modernity was revolved around the Villagrán’s theory. There were three circumstances that contributed to the consolidation of his influence in the Mexican architectural environment: 1) the appearance of his Theory of architecture, together with his constant dissemination from the teaching in the National School of Architecture (NSA), 2) the construction of the Institute of Hygiene and the Sanitary Farm, and 3) the solid promotion which was part of several generations of architects – Juan O’Gorman, Enrique del Moral, Augusto Pérez Palacios and others – who recognized in Villagrán, not only the master par excellence, but the authentic creator of modern Mexican architecture (De Anda, 2008). According to Cuevas Martínez (2002) and González Pozo (2004), Villagrán, in his professional beginning, was inspired by the new ideas from Tony Garnier and then from the influences of the Bauhaus, Gropius, and Le Corbusier’s work because these ideas helped him to abandon the decoration applied on the Mexican architecture allowing to understand the importance of the functional needs of the building.

Between 1917 and 1940, following the Mexican Revolution, Mexico experienced significant ideological, social, economic, and political changes. One of the most significant changes occurred within the education system. The rural population began to migrate to the cities, and with this urban population surge demands on educational services grew. In 1942, trying to attend the educational demands, the administrative and academic members of the National Autonomous University of Mexico (UNAM) decided start to work on the idea of building a university campus.

On November 25, 1946, the UNAM’s architects committee decided that, José Villagrán should design the General Architectural Program for the University City (CU) and develop the architectural project for the new NSA’s building, which would be part of general plan for the CU. This decision was a way to honoring the Villagrán’s impact on Modern Mexican architecture. Villagrán tried to build a campus in which the different schools would be completely integrated and where the concept of “city” guided the solution of the new University City: (Lizárraga, 2014). Thus, through rational mechanisms the full legibility of space was achieved. In the planning development of both architectural projects, Villagrán’s applied his ideas about the humanistic logic, the formal-functional design, and the sensorial expressions. (Lizárraga, 2014)

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In this context, our primary research goal is to find if the adaptability of José Villagrán’s theory exists in his practical work, based on the architectural design process which he applied to the NSA’s project.

Previous studies on NSA have described its location on the University Campus and the buildings that constitute it (Cuevas Sánchez, 2002), the political ideas, and confrontations that took place during its construction (Zavala, 2013). In recent years, Paz (2004) discussed NSA’s 1997-2000 renovations, while González (2002) described Villagrán’s selection process for the master plan of the main University Campus by the architecture students of NSA.

Though Dasques (2008) revealed the French theoretical influences on Villagrán during the development of his architectural theory. We perceive that, prior studies research Villagrán’s thought from the influences received during his theory development, and on the other hand, the NSA’s is showed as a building conforming the UNAM’s University Campus. In other words, Villagrán is important as a theorist, and it is not appreciated as an architect who realizes architectural works in the previous researches. So in this paper we will position Villagrán as a theoretician and architect. These studies have not discussed about if the Villagrán’s theory was applied to his building projects or how he spread his theoretical principles through the architectural design. To explore these unknown aspects of Villagrán’s theory, the authors intend to explain the adaptation of Villagrán’s theory in his practical work through the specifically study of the architectural design process applied on the NSA’s project. Accordingly, the authors analyzed the Villagrán’s theory by recognizing the theoretical foundations which support his proposal, looking to the focal points of his argumentation and counteracting it with the design process applied to the NSA.

The research involved a comparative analysis of the books José Villagrán’s theory, José Villagrán García-Borradores, notas y apuntes (4 sketches), José Villagrán (10 drawings), as well as plans collected in the Archive of Mexican Architects (from about 500 architectural and constructive plans, we selected 264 plans concerning the NSA project), and the Archive Gabriel García del Valle (selecting 20 architectural plans). The selected sketches, plans, and drawings allowed us to obtain a sequence of the design process used in developing the building for the NSA. The archives of Mexican Architects and Gabriel García del Valle were selected for data collection because they offer a record of architectural and constructive plans that provide the necessary data to determine the stages in which the NSA’s architectural design was developed.

To pursue the research objectives the following steps have been taken:

1) We recognized the thought stage in which Villagrán designed the NSA by discussing the Villagrán’s historical background and the process to establish his architectural theory. He proposed, at the outset of his “theoretical proposal”, to include the problem of the architectural “value” in the Mexican modern architecture.

2) We recognized the methodology and notions applied during his professional practice by relating his “theoretical proposal” to the stages of the design process that are necessary to accomplish an architectural solution (practice).

3) Finally, we verified through the analysis of sketches, plans, and photographs, whether or not there was a correlation between the architectural “values” dictated in his theory and the stages applied in the architectural design of the NSA.

4. The Villagrán’s architectural theory and its connection to his practice

4.1 Understanding the Villagrán’s architectural theory

In 1901, José Villagrán was born in Mexico City. Villagrán grew up surrounded by stylistic French influences, inherited by the Government of President Porfirio Díaz (1884 – 1911), and by architectural works designed under the neocolonial style developed during the Government of Venustiano Carranza (1914 – 1920). In both governmental periods, the architects had focused their interests on satisfying the needs of the bourgeois class, minimizing the shortages of the working classes after the culmination of the Mexican Revolution (1910-1920). For 1918, Villagrán entered at National School of Architecture (NSA): his education was based on reiterating the styles coined (classical Greek orders, French architecture, and neoclassical) by the Academy of Mexico since the late eighteenth century (Vargas, 2005). In addition, he was influenced by the thought of incompatibility between the practice and theory (Vargas, 2005). At same way, Villagrán was influenced by Post-revolutionary period (1920 – 1930). This period was called “national restoration”, through which the incorporation of excluded social classes to the political and economic life of Mexico was promoted.

For 1923, Villagrán, obtained the architect degree. In 1924, Villagrán started teaching the course of “Elements of Composition”, and in 1927, “Theory of Architecture”. Through this course he began to reflect his first “theoretical proposals” in accordance of a new compositional order, starting with the implementation of a new concept of architecture tending to the radical transformation of the traditional architectural values (De Anda, 2013). According to Olsen (2008), Villagrán examined “the definition and objectives of
architecture, the science and art of construction, constructive logic, and the identification of beauty with the perfect adaptation to the end as a first approximation in the understanding of the new values.

Villagrán focused his first theoretical approaches on the discussion of the “value” because in the historical moment in which Villagrán lived, there was a very broad sense of social activism. This moment was characterized by the collectivist idea of solving and offering solutions to the problems of bourgeois class which were opposed to the lived reality of Mexico. This bourgeois reality found no value in tradition, it rejected the colonial historical background and misunderstood the autochthonous Mexican customs. Consequently, the Mexican architects were drawn according to the importation of European ideas and ways of life. During the development of his theory, Villagrán based his ideas on the scholastic philosophy of St. Thomas Aquinas (García, 2016). Through this Italian philosopher, Villagrán understood the spiritual needs of man in the architecture, considering them as indispensable in his designs by including a space for worship. On the other hand, he also was based on the French Catholic philosopher, Jacques Maritain (Villagrán, 1963). Through his influences, Villagrán commended the idea about the science by itself was not capable of answering the existential questions of a vital nature. In addition, he reflected on the understanding of the man from its community dimension (collective). Synthesizing his thought, Villagrán (1950), resorted to the axiology of Max Scheler, raising his architectural theory in four fundamental architectural values: utilitarian, logical, aesthetic and social (González Pozo, 2004) (Table 1). Through this philosophy, Villagrán tried to achieve a connection between culture and architecture, understanding the relation between form (architecture), means (spirituality), and purpose (the human).

From the Villagrán’s theory, the main objective of the architecture is understanding the society and its relationship with the culture: for this reason, he started defining the social value from two cultural sections: 1) The cultural manifestation, and 2) The creation of the culture. Villagrán (1964) indicated in his theory that: “The architects must consider, as the basic notions, the historical conditions and historical values which culture has.” According to this idea, the approach of the architectural program must be understood from the cultural characteristics and, in consequence, from the totality of the aims pursued by the architectural work. By understanding the social value (the culture), the architect will be able to obtain the connection between the space and the general architectural program. Simultaneously, the life style should be understood to determine the purpose of and the required areas for the

**Table 1**

<table>
<thead>
<tr>
<th>Year</th>
<th>Affiliation</th>
<th>Villagrán’s Theoretical Question</th>
<th>Villagrán’s Theoretical Approaches</th>
<th>Villagrán’s Typical Discourses</th>
<th>Works (Year and edition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954</td>
<td>Professor at UNAM</td>
<td>How to be modern while still being a national? How to be of your time while remaining in your space? Are we building the architectural form or are we building the architectural concept?</td>
<td>Architecture is the Art which is based on exact science and is applied to things which are very difficult to classify exactly in the sense that the result of an individual or collective act is a function and not the inverse of a function.</td>
<td>“It is not worth being an architect and creative artist if what we do is not what is asked to be done, if we do not manage to achieve a life of our own, artistic activity to solve our own social and personal problems, and if we do not mind being a part of the total of the architectural creation.”</td>
<td>Nacional Studium, Building for the National Lottery, Hall for the Patronage of the Mantle Chapel, Pedagogic Department &quot;The Abandoned Girl&quot;, AP, Project for the Federal District Government, etc.</td>
</tr>
<tr>
<td>1956</td>
<td>Professor at UNAM</td>
<td>What is the architecture and what is its objective?</td>
<td>Architecture is the art of building and its task is to satisfy spiritual, constructive, economic, social, and personal needs producing a feeling of harmony through the function of each part and the totality of the architectural organism; the truth is the base of moral architecture.</td>
<td>X</td>
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</table>

| 1951 | | How to avoid stylistic confusion? What is the architectural fixation? | The architect must understand the architectural economy and its objective, the science and art of building, the constructive logic, and identify the beauty with its perfect adaptation to the end. | “It is not the science of the architects" with architects or architecture. The idea is that the architect can be an architect and the architect can be a future architect, but the architect can be a future architect and the architect can be an architect. |

| 1952 | | Who is the modern man? | The man is the analyzed from the physical, biological, and philosophical point of view. The man is conceived by five modern attributes: 1) The truth, 2) The action, 3) The reason, 4) The work, 5) The mind. | “The architectural conception is the closest approximation that man has to the meaning of modernity. The meaning of modernity is the concept of the new and the conception of the new is the concept of the new. |

| 1953 | | Can the human and architectural forms be represented in the same way? What are the requirements of each complex problem? | The architectural form must be understood and its representation in the same way. | “The architecture is not just a culture, a window on the world, but the infinite experience which we obtain from the architecture in the human spirit and the human mind.” |

| 1954 | | What do we mean by modern architecture? Is it possible to manufacture specific forms, without classic traditions, without sculptural ornamentation, without artificial ornamentation, without cultural reference? | Building architecture means, meeting complexity in the complex society of the modern man. | “It is not possible to manufacture specific forms, without classic traditions, without sculptural ornamentation, without artificial ornamentation without cultural reference.” |

| 1955 | | How can we establish the architectural work? | The architectural work must be understood as the capacity of the architect to understand the social conditions and cultural values which culture has. | “The architectural conception is the closest approximation that man has to the meaning of modernity. The meaning of modernity is the concept of the new and the conception of the new is the concept of the new. |

| 1960 | | What are the fundamental principles that should govern architecture? | To realize the TRUE ARCHITECTURE it is not possible to represent it in the customary architectural concepts. The architectural work must be understood as the capacity of the architect to understand the social conditions and cultural values which culture has. | “The integration of the architectural values, this means, the aesthetic conception of the architectural values in the architectural work can be verified, only, through a visual conception. The visual conception is only the eye of the architect who judges the new architectural work and the architectural project, the architectural form, and the architectural program.” |

| 1961 | | What is the theoretical foundation of constructive logic? | To realize the TRUE ARCHITECTURE it is not possible to represent it in the customary architectural concepts. The architectural work must be understood as the capacity of the architect to understand the social conditions and cultural values which culture has. | “The integration of the architectural values, this means, the aesthetic conception of the architectural values in the architectural work can be verified, only, through a visual conception. The visual conception is only the eye of the architect who judges the new architectural work and the architectural project, the architectural form, and the architectural program.” |

| 1962 | | | | | |

| 1963 | | | | | |

| 1964 | | | | | |

| 1965 | | | | | |

| 1966 | | | | | |
building design. With regard to social value, Villagrán emphasized the importance of the architectural parti pris\(^5\), which he defined as: the relative arrangement that associates the different areas or spaces because it is reached after studying the architectural program from all its possibilities: for example, the local geography and the socio-economic conditions.

Other significant aspect of Villagrán's theory is the assessment about the utilitarian value which is related to the economic and constructive viability. Through these principles, Villagrán support two indispensable aspects: 1) The utilitarian-economic defined as the delimited or habitable space (circulations, lighting, ventilation), and; 2) The utilitarian mechanic-constructive enounced as, an adaptation of the delimiting spaces to mechanical functions (mechanical loads and strokes) (Villagrán, 1964\(^{26}\)).

According to Villagrán's theory (1964\(^{26}\)), another important architectural value is the aesthetic, understood as the formal plastic qualities which constitute an architectural means endowing the spaces of language. Regarding aesthetic value, Villagrán considered four basic points: a) Morphos or figure, b) Metric or dimension, c) Chromatic or color, and; d) Haptic or tactile. Villagrán (1964\(^{26}\)) claimed that, the aesthetic qualities are directly related to the proportion because through this mean the architect will be create an harmonic composition (Villagrán,1964\(^{26}\) which guaranteed a congruent combination of architectural, material, geographic, and social means.

The fourth Villagrán's value is the logical which is defined as, the adaptation of the volume to its multiple functions. These functions are denominated, by Villagrán, as two spatial means: a) the built spaces, and; b) the living spaces. Both spaces must be connected to natural resources such as water, light, and vegetation. Satisfying the logical value in the architectural work, Villagrán (1964\(^{26}\)) proposed that, the architect must verify five basic theoretical statements: 1. Concordance between the building material and the optic-haptic appearance, 2. Concordance between volume and its mechanical-utilitarian function, 3. Concordance between volume and its utilitarian-economic purpose, 4. Concordance between external forms, particularly facades, and internal structures, and 5. Concordance between aesthetic appearance and historical time (general and specific architectural programs). The foregoing shows that, for Villagrán, the social needs and cultural characteristics represented the origin of architectural analysis. Therefore, the man and its connection with tradition, historical moment, geography, and culture were the main foundations of Villagránián architectural theory.

### 4.2 Villagrán's professional practice

The importance of Villagrán not only focused on the theoretical approaches, but also on the practical exercises. In 1925, he designed and built the Sanitary Farm and the Hygiene Institute. According to De Anda (2013\(^{30}\), these projects showed, for the first time in Mexico, an architecture opposed to the historicist norms and the new architectural objectives: a) the satisfactory solution of the functions, and; b) the aesthetics derived from the material nature. These buildings were recognized and pointed out by the Mexican architects (O’Gorman, De la Mora, Barragán, Del Moral, to mention a few) as the first modern buildings in the country: becoming the tangible sample of a new architectural theory and a new plastic landmark which opened other architectural alternatives for Mexico (De Anda, 2013\(^{30}\)).

Within his professional practice, Villagrán considered indispensable the relationship between volume and general architectural program (Villagrán, 1961\(^{31}\)). Villagrán understood that to be able to carry out an adequate architectural practice it was necessary to understand that, architecture is part of the artificial environment made by the man (Villagrán, 1961\(^{32}\)). From Villagrán's thought, the architect must base his compositions on scientific research because he must solve the solution from the whole understanding of the problem. The architect should not start his creation from a style, but from the analysis of the problem.

<table>
<thead>
<tr>
<th>Theory</th>
<th>Practice</th>
<th>Social value</th>
<th>Aesthetic value</th>
<th>Logical value</th>
<th>Utilitarian value</th>
</tr>
</thead>
<tbody>
<tr>
<td>General and specific programs</td>
<td>Approaching of the problem</td>
<td>Understanding the cultural and geographical characteristics</td>
<td>Defining the plastic qualities and proportions of the volume</td>
<td>Envisioning the true appearance of the material</td>
<td>Foreseeing the mechanical and economic convenience</td>
</tr>
<tr>
<td>Design process</td>
<td>Understanding the functional need</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Architectural solution</td>
<td>Analysis of raw material according the mechanical needs</td>
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Villagrán indicated that, during the process to find the geometrical and aesthetic solutions the following stages are important: 1. Approaching of the problem, 2. Interpreting the problem from all its aspects, 3. Establishing the general architectural program, 4.
Setting out the specific architectural program, 5. Analyzing the climatic conditions of the place where it will be built and the demands of the man being who will make use of it, 6. Eliminating any prior conception of the form, 7. Basing the formal solution on theoretical foundations and mathematical sciences, 8. Obtaining the best aesthetic and mechanical solution by applying a deductive method, and; 9. Establishing the social impact analyzing the relationships between costs and viability of the architectural work (Table 2).

Villagrán stated that, when the problem is analyzed the architectural program is formulated. For Villagrán (196434), the architectural program must have as regent elements the maximum spatial use in relation to the physical and biological human needs. In conformity with Pinocelly (200435), in his practice, Villagrán identified the module which guides the architectural composition, having as main geometrical foundation the understanding of the "site" from three perspectives: the urban, natural, and cultural context. Under these conditions, there are two characteristics in this analysis: 1) The geographic-physical context, and 2) The geographic-cultural context. Applying the Villagránian thought (Vargas, 199336), we can say that, in his professional practice the modern architect must interrogate the past (the tradition)– because it proceeds the base of experience, but not as a source of formal inspiration to create the future. Neither archaism, nor futurism– actuality. Villagrán summarized in three stages the process through which an architectural work is developed reflecting truth: a) the understanding of the theory, b) the application of a design method, and c) the evaluation of each of the stages.

Summarizing, for Villagrán, the practice of architecture should be implemented under the idea that: "The current architecture should belong to its time not only because architecture has been created in it, but particularly is inspired by the culture of the man. The architects need to express the truly culture which he belongs. The architecture must be of our time and authentic as the ancient architectures applying universal principles as: a) builds for man, b) apply the science of his own time, and; c) the man achieves what the community itself allows." (Villagrán, 196337)

5. The adaptation of José Villagrán’s architectural theory to the NSA’s project

In 1949, the Mexican president, Miguel Alemán, assigned Mauricio Campos, Mario Pani, and Enrique del Moral, as managers and coordinators to define the CU’s final project and conforming the work teams to develop the projects of the schools which would make up the UNAM’s Campus. Finally, in 1951, the NSA’s architectural project was commissioned to Villagrán, who brought in his work team to the architects Alfonso Liceaga and Xavier García Lascurain.

According to Villagrán’s book of sketches, on September 6, 1951, (Fig. 1 and 2) Villagrán began with the definition of general and particular programs, as well as with the first NSA’s metrical sketch. The original architectural plan was composed by a museum, auditorium, library, offices, classrooms, and eight workshops with two plants each one ( Cuevas, 200238). The NSA was situated on the ground in an isolated way adapted to the topography and architecturally connected to the buildings of CU.

Villagrán based his first NSA’s design approaches on the understanding of the student’s community from their academic needs. According to Del Moral (195639) the NSA’s architectural problem arises from its logical and natural bases of the composition and proportion, as well as, on its relation among the different spaces as a logical consequence of a rigorist analysis of the general and specific programs. Using a meticulous analysis of the function of the metrical and functional needs, Villagrán, designed a logical form, an adequate and harmonious solution (Del Moral, 195639)

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Fig.1 Villagrán NSA’s sketch (September 6th, 1951). It’s possible to recognize the Villagrán’s analysis of: general and specific program, the first draws, and the anthropometrical needs of each space40
Villagrán proposed, as methodological base of his design process, two fundamental stages: a) the general architectural program, and b) the specific architectural program. These proposals are confirmed by the first notes found on the NSA. Through the figures 1 and 2, we can observe that, Villagrán emphasized, by circled numbers and underlined, the NSA's general architectural program and then he described the specific program for each required space which are related with the social value. On the another hand, we perceive that, considering the aesthetic value, Villagrán drew the first sketches of the metric approximations of the spaces, revealing a preview modulation of the constructive elements and trying to achieve a relationship between geometry of the space and volume. Having these first architectural schemes, Villagrán could intuit the mechanical efforts (utilitarian mechanic-constructive value) that the building could withstands and propose the general structure. However, a mathematical study was also realized to rectify the building structure.

The NSA's architectural design was influenced by a specific territorial characteristic and a single landscape–it was constructed in the Valley of Mexico, in an area called El Pedregal. According to El Pedregral’s topography, natural, and architectural context, Villagrán designed the NSA's building on several platforms. In addition, he applied glazed surfaces on the façades and in the vertical circulations, allowing the visual contact with the outside and connecting the users with the landscape that surrounds the NSA (Fig. 3).

In this project, Villagrán implemented his notion of rescuing the tradition by exposing the nature of the materials. For example, he avoided using flattened walls, allowing instead the bricks to appear in their natural state, and simultaneously applied the aesthetic parameters of modern international architecture using the steel, glass, stone, and béton brut. (Fig. 4, 5)
The resource applied by Villagrán to verify his theory was the constant evaluation of the phases of the design process because it allowed him to understand the problem from a comprehensive assessment of needs. We can intuit through the NSA's sketches, plans, and draws that, to make the formal solution for the problem, Villagrán established three main phases in his practice: 1. The metric analysis of space needs, is the approach to the problem and the first draft of the program, as well as, the analysis of the spatial metric needs of users who will develop activities in the building; 2. The elements disposition and geometrical composition, in this phase, the architect is analyzing the environmental, geographic, and urban context which surrounds the project, and simultaneously, thinking on the previsualization of the three-dimensional architectural form; 3. The evaluation phase, in which, the solution is analyzed to determine if it can solve the architectural problem (Table 3). Indeed, such a cycle may not be a very distinctive methodology today. However, in the social situation of the racialism after the Mexican Revolution, it can be said that, the practice of Villagrán's rigorous theory avoids imitating the finished form and makes Mexican architects aware of the importance of modern Mexican architecture in a regular way.

6. Conclusion

Through the NSA's study is observed that, there is a direct relationship between Villagrán's architectural theory and his practice. Both of them [theory and practice] are related to the careful assembly of the "program", next, a group of buildings consisting of museums, auditoriums, libraries, offices, classrooms, etc. are drawn, respecting the natural landscape in the Valley of Mexico and he set up the curtain-wall. And avoiding the use of flat walls, to make brick appear in its natural state, at the same time Villagrán applied modern vocabulary using steel, glass etc. However, Villagrán is considering social factors that intervene in building projects from theory to practice, from the practice of design to theory through a cyclical design process. On the same way, at NSA’s project, Villagrán resorted to the program analysis, which connects the problem to the solution and in the solution is reflected the architectural values (social, aesthetic, utilitarian, and logical). Finally, we argue that, Villagrán applied the meticulous study of the program as a mechanism to create awareness among Mexican architects designing modern architecture avoiding the use of foreign styles and, instead, rescuing traditional styles.

Reference

6) Zavala, Y.: From the form to the integration. Construction of the National School of Architecture, Mexico, FAUNAM, 2013 (in Spanish)
14) García, G.: Interview with the Villagrán’s Grandson Gerardo García del Valle by Aguileria Veyra Ana Silvia on June, 30th 2017
20) Vargas, R.: José Villagrán García – Life and Works –, p. 19
42) In the author's opinion, the design process and Villagrán's stages in his practical work

Notes
*1) From Villagrán's theory, the theoretical proposal is the set of ideas and principles working as a bridge between theory and professional practice.
*2) For Villagrán, the values are qualities of an object which are independent of time and space. In the case of architectural value, Villagrán described it as a value composed of a series of primary and autonomous values that cannot be excluded in any work because they allow the recognition of the essence of the genuine architecture.
*3) Social activism is an intentional action with the goal of bringing about social change. Social activism is linked to socialist ideas. Consulted online: September 10th, 2018 https://www.amherst.edu/campuslife/careers/amherst-careers/in/government-nonprofit/jcs/careers/social_activism
*4) According to Villagrán, the general architectural program is the plan delimited by the geophysical environment in which culture develops, and the specific architectural program is the set of purposes that the architect intends to pursue through the design of the spaces.
*5) A parti pris is the primary organizing thought behind an architect's design, presented in the form of a basic diagram.

和文要約
1. はじめに
ホセ・ヴィラグラーン（1901-1982）は、メキシコ近代建築史におけ るその理論は度々参戦され、また20世紀の頭半の新世代建築家 にとって最も重要な教師であったことが知られている。
この時期、メキシコ社会はつなげ緊張状態にあり、ブルジョワ階級 は植民地の歴史的背景を拒絶し、歴史というものに価値を見出さなかった。それゆえに、メキシコの建築家はヨーロッパの思想や生 活様式に価値を見出すことができた。ヴィラグラーンはメキシコ近 代建築家が直面する問題を察知し、「近代」が含意するところの理 論的原理を発展させると、それは重要な役を果たしていた。そして伝統的な 表現の曲解を回避し、かつてメキシコの都市的、歴史的なコンテク ストと無関係な外国の建築表現の横を止めようとした。
ヴィラグラーンはメキシコ近代建築が直接よ りによって条件づけられる ことを見出した。すなわち、ムネリック（社会）、経済的要因、政治的要因、 そして近代的な材料の生産である。ヴィラグラーンによれば、「伝統 に 基づくメキシコ近代建築は、取り繕ったり模倣することなく追求 で、この貧しい国の社会の現実を反映していなければならない。打 ち放しのコンクリートや煉瓦がもともと純粋な表現となるであろう。」ヴィラグラーンはデザイン・プロセスにおける2つの根本的な 考え方を示した。1. 空間のアクティビティに関わる建築のプログラ ム（簡潔に「プログラム」と呼ばれている）の注意深い分析。 2. 建築的提案を検討する前に「教義」についての完全な情報を得る必要性。このように、我々はヴィラグラーンの理論をいくつかの本を通して理 解することができるが、その理論の実践の関係は既往研究では論じられていない。
2. 研究の目的
我々の研究目的は、NSA（国立建築学院）（1951-1954）のプロジ ェクトのデザイン・プロセスを通して、ヴィラグラーンの実作における 理論的適用の様態がどのようなものであるかを明らかにすること である。ヴィラグラーンは1924年から1972年のあいだメキシコにお いて245件以上の建築プロジェクトに従事しているが、NSAにい ては500枚以上の図面・関連文書が残され、最も重要なプロジェクト であることがわかる。また、このプロジェクトの時期は、ヴィア グラーンの思想が建築の学生や建築家たちのあいだで流行していた 20年経っていることから、NSAのプロジェクトという任務はヴィラグラ ーンが自らの理論を実体化する重要な機会であったと思われる。
既往研究において、ゴンザレス(2002)はUNAMの大学キャンパ
スのマスター・プラン（1948）において学生作成案とヴィラプランの選定を解説している。クエバス（2002）は、大学キャンパス内でのNSAの位置づけや建物の構成について詳述している。ラバ（2013）はNSAの建設における政治的な問題や組織委員会での軒轍について論じている。また近年では、バス（2004）が1997年から2000年にかけてのNSAの建物改修について明らかにしている。他方、ダスカス（2008）はヴィラプランの理論形成におけるフランクの理論的な影響を明らかにしている。しかしこれらの既往研究においては、ヴィラグラムの理論の建築プロジェクトへの適用や、そのデザイン・プロセスについては論じていない。

3. 方法論
本稿では、『ホセ・ヴィラグラムの理論』（1964）、『ホセ・ヴィラグラム・ガルシア＝ポラドレスのノートとスケッチ』（2013）（4枚の図書）、『ホセ・ヴィラグラム』（1986）（10枚の図面）、ならびにメキシコ建築家アーカイブによって収集された図面（約500枚の計画図と施工図）からNSAのプロジェクトに関する図面（264図面）とガブリエル・ガルシア・デル・ヴァイエ・アーカイブの図面（20枚の建築図面）を用いる。これらの一連の図書、計画図などを分析するために、まず1）このプロジェクトの初期段階で提案されたヴィラプランに対する論理（建物の価値の問題を含む）を検証する。2）次に、プロジェクトの具体化の方法論を着目して、NSAのデザイン・プロセスを分類整理する。そして最後に、3）ヴィラプランがその理論において言うところの建築的な「価値」とNSAの建築デザインへの応用との対応関係を明らかにする。

4. 分析結果
結果として、3つの点を見出すことができた。
1. 理論的提案：必要な空間の分析が最初の段階であり、建物をつくる上での必要寸法や動作動線について分析することによって「プログラム」の案となる。
2. 建築的要素の配置と幾何学的な構成の段階。建築家は「敷地」について周辺環境や地理的、都市的なコンテクストを分析し、同時に3次元的な建物形状の芽生の概要を描く。
3. 立体的な立ち上げの段階。解決策の可能性を分析し、建築的な問題を解決することを決定するが、最終的なものではない。デザイン・プロセスにおいて思い切り発展する要因が見つかる可能性に開かれていなければならない。

5. 結論
結論として、ヴィラグラムの理論的提案とNSAのプロジェクトのデザイン・プロセスには直接的な関連があることが分かる。両者は共に「プログラム」の新しい構築に基づいて関連づけられ、博物館、講堂、図書館、オフィス、教室等から構成される建築群が形成され、メキシコの教会に含まれる自然の景観を尊重してファサードにカーテン・ウォールを設定した。そして平らな壁の使用を避け、レンガをその自然な状態で現れるようにして、同時に鉄骨、ガラス等を使い近代的なポリュームを適用した。しかしながら、ヴィラグラムは、理論から実践へ、またデザインの実践から理論へ循環的なデザイン・プロセスを通して建築プロジェクトに介入する社会的要因を検討している。

たとえこのようなサイクルは今日においてそれほど特色のある方法論ではないかもしれない。しかしながら、メキシコ革命後の民族主義的社会状況において、ヴィラグラムの厳密な理論の実践は、