

Doxiadis' legacy of urban design: Adjusting and amending the modern

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The author – after his graduation with a Bachelors Degree in Architecture and several years of practice in private sector firms in Islamabad and also with the Pakistan Public Works Department for projects of the federal government of Pakistan, having completed several projects to his credit and some ongoing in Islamabad and in other parts of Pakistan – shifted to the University of Leuven, Belgium, where he completed a "Master of Architecture in Human Settlements" and is presently engaged in a Ph.D research on the "Critical Relationship Between Theory and Practice," focusing on the application of C.A. Doxiadis' theory in the making of the plan of Islamabad – "the Intention," and its realization – "the Effect" on the assumption that in essence the plan of Islamabad is the central construct and focus through which the knowledge between intention and effect of this important planning episode of the 1950s-1960s can be unlocked. The text that follows is a slightly edited version of a paper presented at the International Symposium on "Globalization and Local Identity," organized jointly by the World Society for Ekistics and the University of Shiga Prefecture in Hikone, Japan, 19-24 September, 2005.

Introduction

The mainstream modernist agenda of universalism in architecture, formally developed and propagated through channels like the Congrès Internationaux d'Architecture Moderne (CIAM), its charters and meetings since 1928 onwards, came under major scrutiny at the turn of the 1950s by several voices within and outside the profession. The more popular and somewhat superficial grounds of the reaction towards the CIAM-led Modern movement is lamented on the basis that it was universal, sterile, uniform, ugly, inhuman, elitist, lacked meaning, and psychological effects. The substance to this scrutiny and the developing critique was partially, if not wholly, informed by the export and excursions of modern architecture and architects to the developing world – a context, being contested afresh, and beginning to come to terms with its post-colonial reality, often termed as "transition"¹ in the popular discourse of that time. The critique, though owing its origin largely to the inherent inconsistencies and internal contradictions within modernism, was reinforced

partly due to the lack of appropriate language, tools and vocabulary to comprehend and deal with the "other" context besides the disdain emerging out of the resultant environments of the modernist projects based largely on CIAM's influential Athens Charter of 1933.

The agenda of the 1950s-1960s urbanism is to replace the hierarchy of functions (Athens Charter) with a more complex hierarchy of "human association" (Team X: 1953-1959),² to deal with the issues of growth (the aesthetics of the number- A. Van Eyck),³ change and mobility, and to comprehend the city in a particular time and place, i.e. the issues of "plurality," "locality"/"context" and the loss of the "vernacular." The modern movement in architecture is dying out in favor of the shift in several directions. The internal critique is developing into a re-configurative apparatus of modernism largely owing to the members of Team X, the projects of the inter-war period of Ernst May, and the post-war practices of Le Corbusier, J.-L. Sert, Candilis-Josic-Woods, Doxiadis and several others. The agenda is trying to combine various elements and develop a new paradigm; the formation of a new language, grammar and vocabulary of urban design as how to design or deal with the "city" and its problems in an architectural way.

The starting point of my Ph.D research is that there are links, gaps and blind spots within this period (1950s-1960s) which lead to the emergence of a new agenda of urbanism: on the one side, re-invention and application of new tools and vocabulary; on the other side, splitting the profession of architecture or the belief that the city is an architectonic problem, both aiming at the re-configuration of the modern movement which in turn lead the mainstream modern movement in several other directions.

The subject of my Ph.D research is the plan for the city of Islamabad (1959-1960) by C.A. Doxiadis (1913-1975). I believe that figures like Doxiadis and specifically his project of Islamabad (1959-1960) can act as a window and inform us more about the contemporary agenda of urbanism of that time and about the transformation of modernist ideas about the "city."

The theme of this paper is based on an exploratory study and documentation of the urban design language used, its vocabulary, grammar and syntax in the making of the plan of Islamabad. I would like to argue that a specific kind of re-invention and re-configuration of urban design vocabulary, grammar and tools can be discerned in the plan which is geared towards flexibility and adaptability with the idea and aim to deal with issues of growth, change and mobility. I would also demonstrate Doxiadis' way of dealing with the element of "locality" and the "context," as a specific focus of this paper, in his rather less known, but probably the largest realized architectural project – the "Punjab University" (1959), which also acted as a precursor to the urban design language used in the plan of Islamabad.

Punjab University – 1959

Lahore,⁴ the capital of the Punjab, witnessed the location, actual area and boundaries of the New Campus being delineated in January 1959, just 8 km south from her heart, between Model Town and Multan road (fig. 1). Doxiadis Associates being appointed as consultants in April of the same year, the year 1960 saw the commencement of the materialization of the first phase of the project, the largest single architectural undertaking in Pakistan and probably on the Sub-Continent at that time.⁵

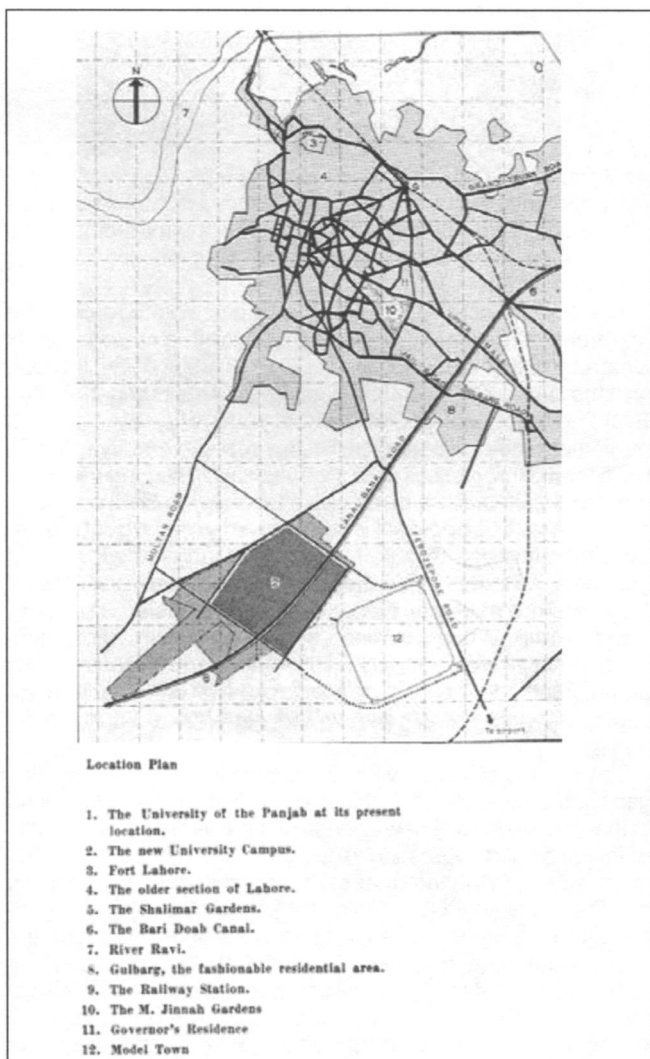


Fig. 1: Location of the site for the New Campus of Punjab University of the then Lahore (1959).

The overwhelming task presented by the project and the “intentions” (four-fold) to be translated in the “plan” are described by Doxiadis as, “*The problem presented to Doxiadis Associates by this highly cultural region with a deep-rooted tradition was one of the most complex ever handled by this office. The various tools, methods, processes and executive policies were to be employed to create an operating pattern the dynamics of which would cater to and satisfy:*

a. a partial and progressive materialization of buildings and services;

b. the transformation of traditional skills and experiences (as in construction) into contemporary techniques;

c. the preservation of the true essence of traditional patterns;
d. the climate, site conditions, etc.

The investigation and analysis concluded with the adoption of a modular reference pattern on which the incorporated sequences would eventually unfold.”⁶

The plan (fig. 2) is termed as an “operating pattern” by Doxiadis, the first and foremost aim of which is to establish an environment at the new premises in which buildings appropriate to the program, as defined by the university authorities and comprehended/conceived by the architect in question, may occur.

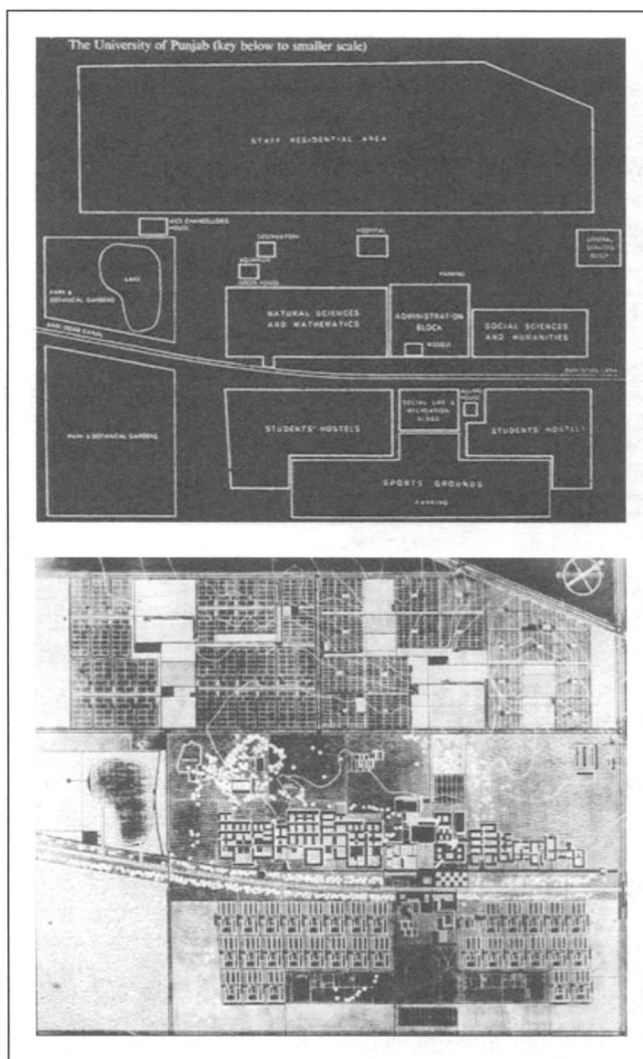


Fig. 2: Key Plan showing parts of Punjab University.

The reasons cited for the growth and proposed location of the new campus for Punjab University were: academic expansion, increased student enrolment, the allotted area became cramped, the capacity to satisfy the academic requirements proved insufficient and adjacent real-estate interests (next to the old campus) which restricted expansion.⁷ The creation of the new campus for Punjab University, partly, also had to do with the idea that Punjab University was the oldest and largest university in post-colonial Pakistan, but at the same time it was a British-colonial establishment, and through the new campus project the university/academia wanted to celebrate independence in the form of re-incarnation of the university. There is a “duality” with-

in this notion. On one side it is the implicit requirement of the university to reflect the pre-British mughal architectural legacy in the form and structure of the new campus by stressing the fact that it should show a break with the British and show a "new" era in the life of the university connected with the ancient past of the locality of the context but the explicit requirement was the "preservation of the true essence of traditional patterns."⁸ The dichotomy in this aspect of the notion is that both Doxiadis and the university authorities agree to the fact that the architecture of Lahore is a "composite" and an "intellectual" one, i.e. having absorbed the belligerent invasions and the cultural infiltrations, referring to the colonial period and the ones before the mughal as well.⁹ But at the same time, all the examples cited by Doxiadis in his reports are from the mughal period with one exception of "Taxila" probably chosen for the suitability of its pattern or being the example of ancient Greek influence during the gandhara period of the region, and there are none from the British colonial period; there is not even a single mention of the existing campus of Punjab University; its British Indo-Saracenic expressions, which are undoubtedly one of the major landmarks of the city of Lahore.

The matter of acquiring a new campus site was initiated in 1944 (three years before dependence) by the Lahore improvement trust, by suggesting the proposed location, which means that the new campus project was conceived during the colonial period. However, later the partition intervened and the question of the new site was left dormant till January 1959, when the actual area and the boundaries of the new campus were delineated. By then, the new regime of President Ayub Khan was already in place and embarked upon several projects throughout the country from Karachi till Islamabad, with the firm intention to consolidate the nation.

The journey of Doxiadis through the context accompanies this regime from Korangi (as the first) via Punjab University township to his most illustrious project – the creation of Islamabad as the new capital of the nation – and all the way to the Trans-Asian

super highway project. However, it is in the project of Punjab University in Lahore where he comes to terms with the breadth and depth of the intellectually sophisticated living architectural culture of the region and tries to assimilate the stratification of this heritage, besides the notions of pre/post-colonial and the ambivalence between tradition and modernity, through design in his plan for the New town of Punjab University, which acted as a precursor in conception but parallel in materialization to the plan of Islamabad.

The content, structure and form

The programme developed for the new university town was based on an intention of incremental approach to growth and the reduction of the university/town to three basic requirements:

- the academic,
- the student, and
- the staff housing,

to be housed in a space of 800 acres with the Bari Doab Canal passing through it (fig. 3).

The canal is a dynamic and characteristic feature of the almost rectangular (with half chamfered North Eastern edge) space, dividing it into the South Eastern one third (approximate) linear strip and the North Western two thirds (approximate) part. The two thirds part and the one third linear strip division of the space is attributed to house and separate the "Staff Residential Area," the "Academic Complex," and the "Student Hostels" respectively.

In a broad outline, the three basic requirements of the new campus town are translated as three zones/parts, allocated one third of the total space to each, and separated into different functions such as:

- the first one of academic requirements translated as an "academic complex" and separated into seven faculties, 32 departments, with several schools/colleges, research units, teaching areas, administrative and other support facilities.

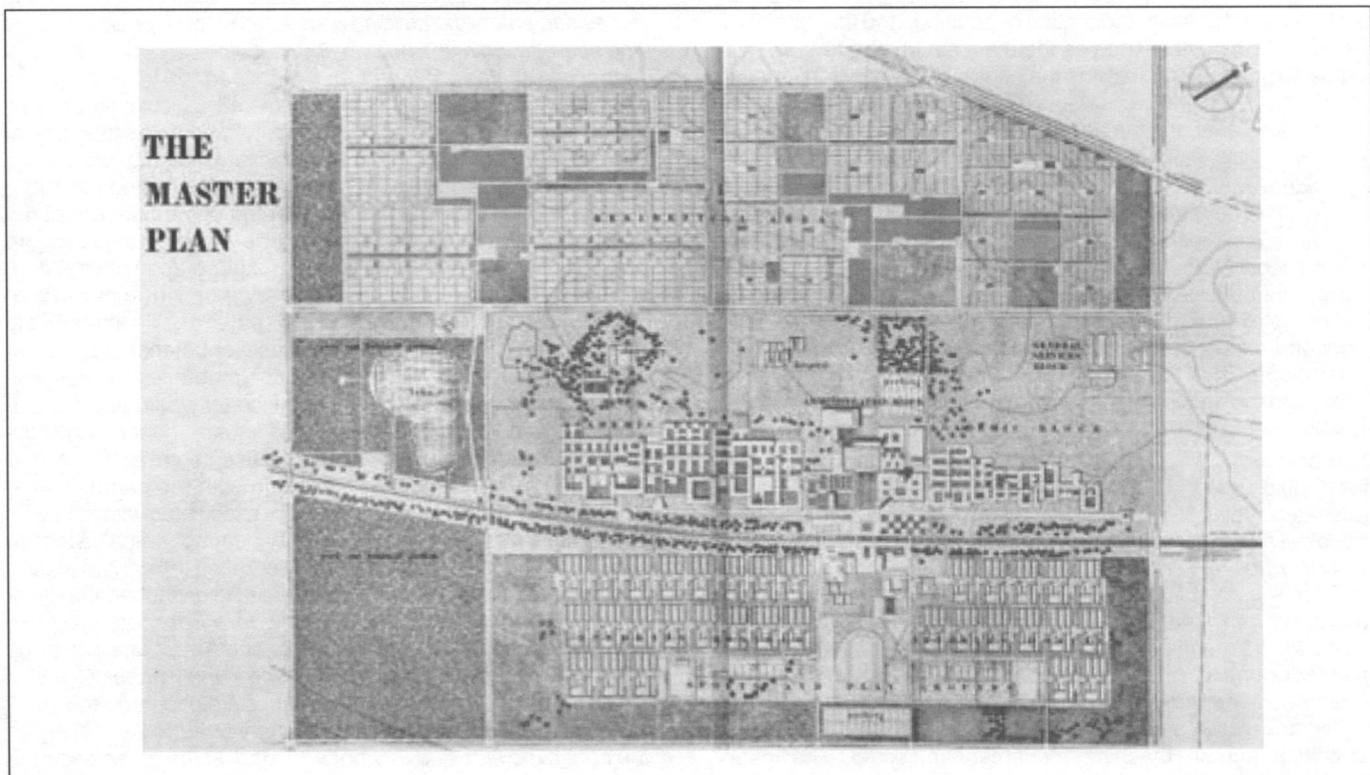


Fig. 3: Master Plan of 1959.

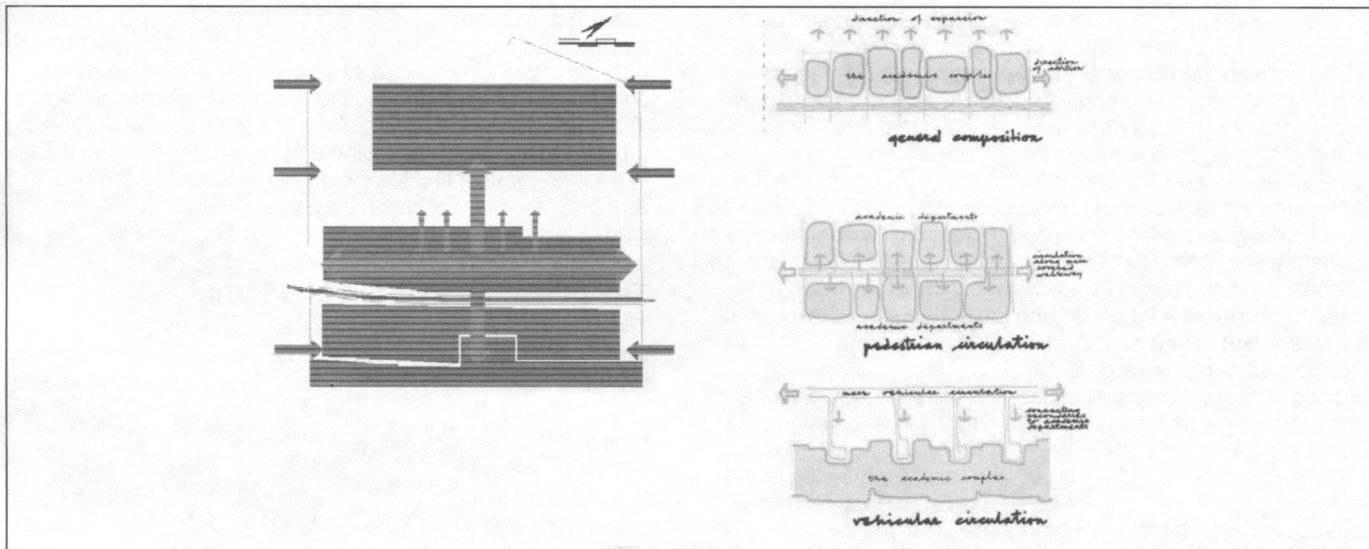


Fig. 4: Punjab University – Doxiadis' scheme for the direction of addition, expansion, pedestrian and vehicular circulation on the right and the left side sketch represents the formation of axis.

- the second one zoned as a "Staff residential area" and separated into five housing categories with two small facilities and one big central facility (shops/market).
- the third one as the "student hostels" part flanked on two sides by the standardised and repeated dormitory blocks, with sports and playgrounds, and the students' union and administrative buildings at the centre of this zone.

The three zones are separately placed together on the site, with three distinct functions/programs assigned to each and articulated into a framework that would allow independent projects, as funds became available, to develop in an evolutionary and additive way¹⁰ in the form of a clear and complete plan.

The general composition of the plan is articulated by two major orthogonal axes; the "direction of addition" and the "direction of expansion," established as the main structuring feature, the crossing point of which forms the centre of the new (university) town (fig. 4). The first axis is in a NE-SW direction following the Bari Doab Canal and the second axis is perpendicular to it.

- The first axis, with explicit configuration, structures the whole "academic complex" and also establishes its direction of growth, as well as acting as a mediating element between the academic complex and the student hostels.
- The second axis, the configuration of which is somewhat implicit, connects the student hostels area through the academic complex and the centre to the staff residential area. The second axis accommodates the "addition" of individual departments, thus the expansion of the whole through the first axis and the "addition" of parts through the second axis are given two separate directions.

Doxiadis terms this articulation as the general planning theory for Punjab University and explains this in the diagrammatically illustrated sketch as, "a multi-phased development along the longitudinal axis parallel to the canal and is called "Direction of addition." Each new academic department being built is added to the existing complex, directly united to it and developed along this axis. Individual department blocks will later be expanded along the transverse axes of "Direction of expansion." This expansion, conditional and local, does not interfere with the longitudinal development."¹¹

The articulation of the structure is further attributed to the separation of "human-machine" movement and scale. The linear covered walkway forms the spine of the internal pedestrian movement within the academic complex and is parallel to the

canal axis, described by Doxiadis as, "Into the aforementioned plan fits the student body, whose circulation is directed along a central axis provided by the main covered walkway that forms the spine of the complex. All movement perpendicular to this axis leads directly to the various departments which in turn are interconnected. Thus all pedestrian traffic is defined, channeled and unified."¹² The formation of the external vehicular access structure is attributed to the exclusion of the car from the interior of the complex and is diagrammatically illustrated and described as, "Cars are excluded from the interior of the complex, and access is restricted to the fringe of the built-up area. Secondaries from the main vehicular road, at a certain distance from the buildings, channel traffic to this perimeter from where the pedestrian enters the building complex on foot. Non-interference and segregation of the human and machine circulation and their respective scales are therefore maintained."¹³

In the name of separating pedestrian and vehicular movement, the plan acquires an "interior" (centrality) with pedestrian movement and an "exterior" with machine circulation (fig. 5). The interior is along the canal, where the human scale and the public place are celebrated, culminating at the central square of the academic complex connected through four bridges to the square of the students' union building. This square acquires the centrality of the whole new university town by virtue of the programmatic variety assigned and the spatial quality attributed to buildings located on this square. The Central mosque (cathedral), the central library (bibliothek), the monument (tower), the square, the central administration office (city hall) and the students union building all surround this square, generating activities that makes it the central public place/centre of the university, in an asymmetrical composition with the canal flowing through it. The character and memory associated with the canal by Doxiadis was that of "extraordinary beauty," which he tries to evoke and preserve in the design by creating the central square and the pedestrian axis along with it, as he described the canal as, "When one reaches the point where Ferozephure (pur) Avenue crosses the canal and looks southwest (the site), one will see large groups of children bathing in the waters of the Bari Doab canal which recedes into perspective under the foliage of trees. The scene is one of extraordinary beauty. A pathway on the right hand side and an unpaved road on the other follow the water course through dense vegetation."¹⁴ This character of the dense vegetation has been preserved by developing an espla-

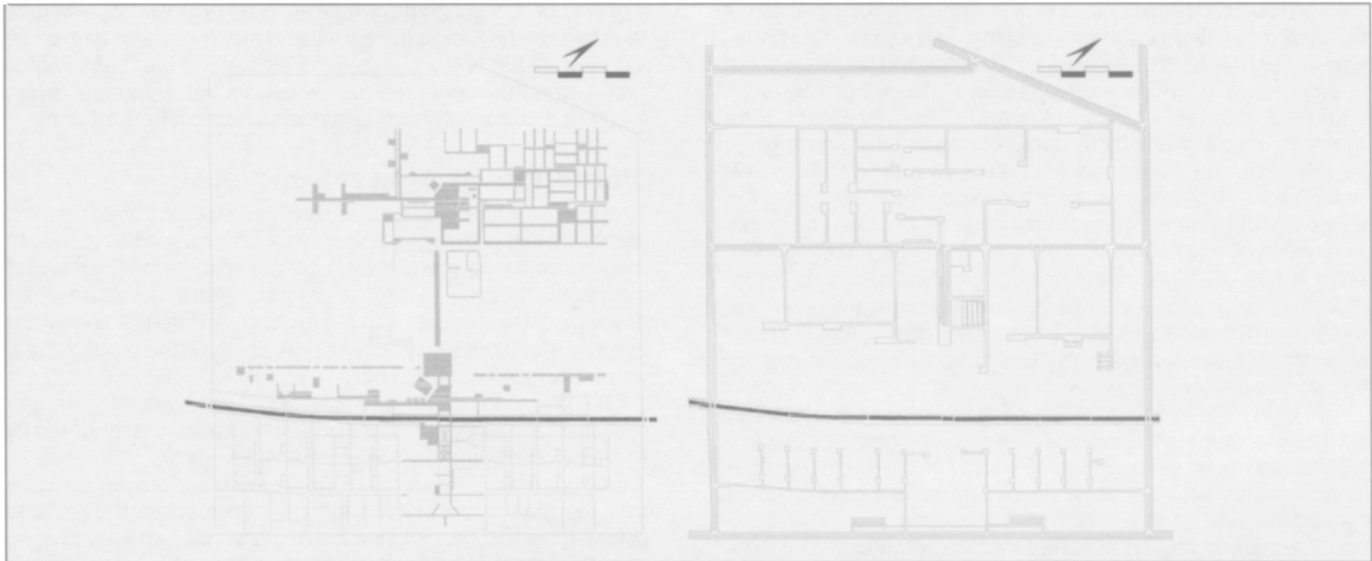


Fig. 5: Punjab University – Formation of the “Interior” and “Exterior,” Inside and Outside are separately placed together.

nade on both sides of the canal, which mediates between the extra-ordinary (the academic complex) and the ordinary (the student housing).

The exterior of the university complex is marked by the surrounding green (fig. 6), delineated by the vehicular access all around it with one primary vehicular access (with secondaries forming cul-de-sacs in front of the departments) separating the academic complex and the staff residential area. The surrounding green is in memory of the countryside surrounding a city in the past, and the facade-less vehicular access is to maintain the appropriate scale of machine circulation. The interior of the complex is adorned with finely grained courts and patios partly responding to the local climatic concerns as well as articulating the in-between spaces of the buildings with a variety of spatial effects.

The form of the whole complex shows two major aspects; the dynamics of “growth” and the mechanism of “circulation” (fig. 4),

which were not only the requirements of the university (development of the whole complex over a period of time as funds became available), but were the major factors of comprehensive planning in the 1960s¹ (Eliel Saarinen, 1965) and also issues of vital importance for Doxiadis as well. Doxiadis attributes the architectural language and pattern employed in the plan to the “growth” and “circulation” factors such as, “*The principles of these factors, successfully translated into architectural planning language form the starting point of an adroit approach. These aspects found their solution in the operating geometry of the pattern employed.*”¹⁵ The coherence of the form in the pattern employed is achieved by repeating a set of architectural vocabulary which includes: a standard size and shape of column and arcade (pedestrian circulation), single to triple height building volumes with a standard width, standard size and pattern of jalis/grills of covered walkways/bridges and staircases, standard size and pattern of doors/windows/ventilators, the standard

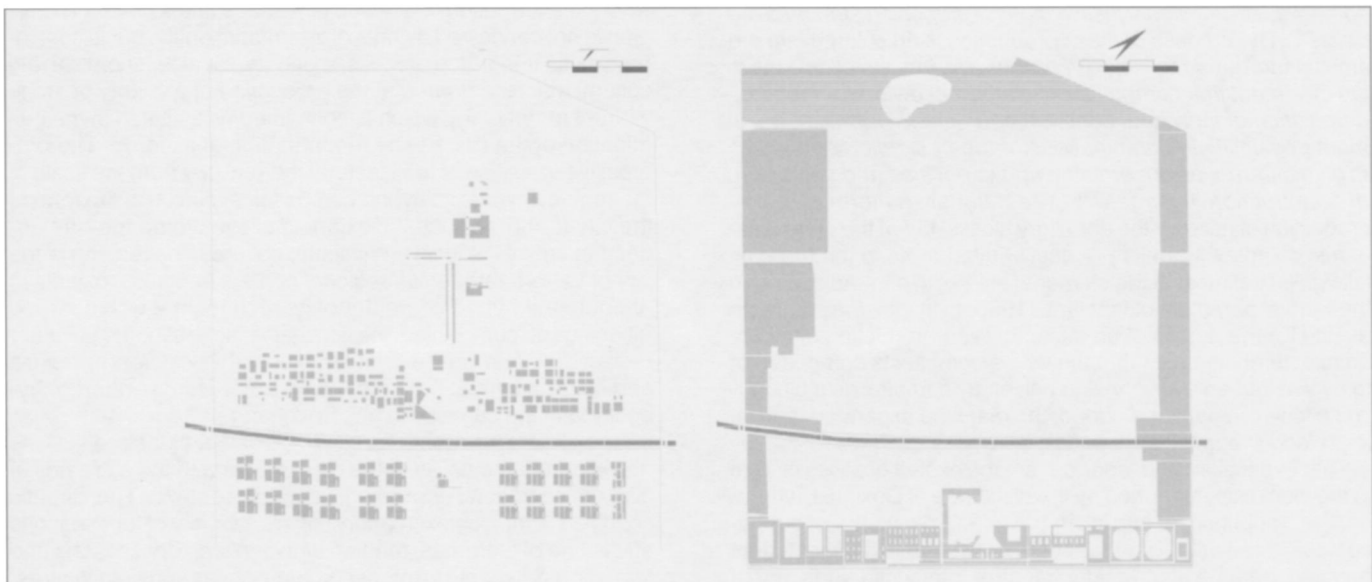


Fig. 6: Punjab University – Interior of “Courts” and exterior of “Surrounding green.”

vaulted roof with round columns of the entire 1,600 m length of the covered walkway/pedestrian spine, and so on. The grammar through which this vocabulary is composed follows a set of courtyards. The courts vary in size and shape from an exact square to a variety of rectangles and L-shaped courts. The grammar of these courts in terms of space offers a range of variety; from fully arcaded/enclosed, to half-arcaded half-colonnaded, three quarter-arcaded to continuously separated by rows of colonnades of pedestrian walkways alone and so on. The similarity of the architectural elements, the variety provided by the grammar of courts, the composition of one- to three-storeyed heights of buildings and arcades breaks down the monotony of the form into a fine grain and texture, and provides an asymmetrical/non-stereotypical composition to the form of the whole academic complex.

The individual buildings of the departments in the academic complex, according to Doxiadis, are also designed for "expansion" and a maximum degree of "flexibility" in the internal reshuffling within the skeleton of the building, and consist of a hollow rectangular one- to three-storey block with an open landscape court in the middle and attached thereto some two- and one-storey wings. The ground floor usually comprises the administration, the multi-purpose room, research labs and special vocational spaces while the two upper floors contain mostly lecture rooms, the library and staff offices.¹⁶ So the ground floors are entirely inhabited by administrative functions, which is the extension of the central administration building to the rest of the campus on the ground level, whereas the teaching activities of each department are elevated to the upper floors and hence separated from the other departments. The ground floor with its support (administrative) function to the university, by analogy, represents the chassis of a car with the basic function of support, and the superstructure of each department is like each seat in the car, separate and yet similar, the building and car both representing flexibility in their design as a pre-requisite for channelising and consuming mass-production. This becomes more explicit when we move from the academic complex to the student hostels, where the approach is changed to that based on the assumption of standardized hostel units and self-contained by form. Doxiadis, justifying the approach of mass-production and repetition for hostel units, says that, "*Standardization was employed because of its evident qualities of economy and quick construction by mass production through repetition. The great number of hostels to be eventually constructed in the years to come was an additional justification for proposing standardized units.*"¹⁷ The process of mass production is articulated into the architectural language as, "*Architecturally, the hostel as a building is laid out in a compositional pattern allowing for the standardization of individual common and general facilities, maximum possibility in combinations of the basic elements so as to give different arrangements, and capacities and expansion of construction in stages.*"¹⁸ The rationalized form of mass-production of not only the dormitory blocks, but of the entire academic complex; from its pre-cast vaulted roofs to the pre-cast jails/grills and most of the elements are not in contradiction with the Fordist paradigm of that time (1960s). In fact, the plan is an outline for the design of an assembly line production of all the architectural elements that the whole complex is composed of to evolve into an ever-growing university complex as a big machine to which parts are added, the machine expanded, but yet in an "additive" and "evolutionary" way.

The "expansion" and "addition" are the explicit qualities of form in the plan, also supported by the discourse of Doxiadis, whereas, the "repetition" is implicit in the academic complex but becomes explicit in the standard dormitory complexes for student housing, and the staff residential area totally alienates any of these qualities. It is like three contradictory elements (academic complex, student and staff housing) lying side by side giving

a quality of "duality" to the whole scheme of Doxiadis, which he tries to fix by providing horizontal and the transverse axis passing through the entire site and the element of the "surrounding green" and the interior "courts" as connected landscape layers to give it a connectedness and overall homogeneity of form.

The context and the eclectic local

The way Doxiadis conceives the "context" and the "project" therein, is in the form of a scalar hierarchy, ranging from the immediate surroundings of the site, to the scale of the "city" and to the "region" and, of course, the climatic conditions that are characteristic of the context. The city is not considered as something which is static but a developing one, of which the project of the university is to become a part.

The description of the then "city" of Lahore is that of the "extraordinary," somewhat implicit in his discourse and is rendered by some eclectic images of the Mughal buildings (fig. 7) for their intricate geometrical patterns of surface decoration, the screens/jalis, the scale of the building form and enclosures, the arcaded courts, minarets, etc., all from the monumental Lahore and none from the "ordinary" housing pattern or form of the city, though more than half of the new campus project is to provide housing for students and staff, whereas, the "growth" of the city is what he puts emphasis on and makes it more explicit.

The spatial structure of Lahore as conceived by Doxiadis in terms of importance/relevance to the project can be discerned from his deconstruction of the city into twelve parts/structural elements. The location plan marks the arterial structure of the city in black lines, the built-up area in grey shade as an amorphous mass, the new location of the university in dark grey, and the twelve structural elements as, the university at its present location, Lahore Fort, the older section of Lahore (androon-inner city), Shalimar Gardens, Bari Doab Canal, Ravi River, Gulberg – a new town which he terms as the fashionable residential area, the railway station, the M. Jinnah Gardens, the Governor's residence and the Model Town which is next to the site and is marked in a thin outline (fig. 1). The interpretation of this pattern of Lahore is where he makes the issue of growth as more explicit and uses this logic for justifying the proposed location of the new campus in terms of its "accessibility" from other parts of the city in the future and the ability of the proposed location to assimilate into the future Lahore as an integrated part of it.¹⁹

At the scale of the region, Doxiadis describes the city as a site where the formation of a hybrid landscape takes place. The region is not conceived as an extra-territorial entity, but is considered as an integrated process; a geographical, economical and cultural machine geared at the production of a variety of architectural morphology which is consumed/assimilated in the culmination of the city and by the formation of its form. The progressive transition of architectural morphology from the scale of the region towards its hybrid/composite evolution in the form of the city (Lahore) is what Doxiadis believes to be the true understanding of the local architecture culture. The reading of the city of Lahore through its regional context enables Doxiadis to attribute the hybrid character of its architecture with charged meanings of "composite," "intellectual," "highly refined," "culturally radiant" and "having the capacity to absorb belligerent invasions and cultural infiltrations" means, in other words, inherent hybridity with the capacity to absorb "change."²⁰

One of the four intentions set at the outset of the project was "the climate"; the ability of the plan to deal with the extremes of climatic conditions characteristic of the context. The climatic condition of the context (Lahore) offers a variety of four seasons and is one of extremes, ranging between long dry seasons and Monsoon downpours, intense summer heat and cold winters, which produce a lush and indigenous verdure characteristic of the Himalayan Area. According to Doxiadis, "*The contempo-*

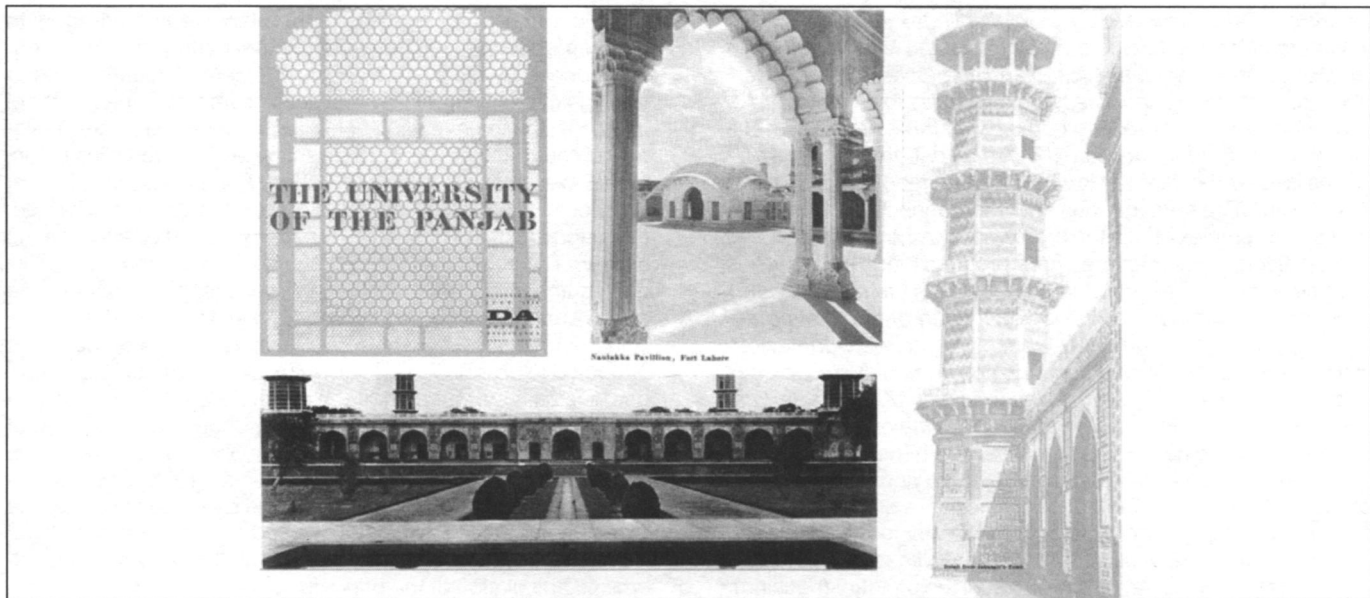


Fig. 7: Local Expression – “palaces,” Images of Mughal Architecture chosen by Doxiadis.

rary architect is faced with diverse challenges and his technical ability must be utilized to cope with these variants of nature and create within the buildings appropriate climatic and light conditions for the metabolism and physiological build-up of man.”²¹ Doxiadis takes these local conditions and confronts them with the universal/ideal for man’s well-being, showing his tendency towards inventing a (hybrid) pattern in the plan where extremes of the local conditions are dealt with in a universalistic manner. “These aspects were studied in their absolute and abstract values and were placed against the conditions which had to be ideal for man’s well-being. Half-way between the extremes we had to invent the operating pattern where the contradictory elements would eventually be transformed to become part of the architectural expression.”²²

The study of the site in the context of the city (Lahore) and its broader region makes Doxiadis consider the new plan for the

Punjab University town as the (re)invention of a pattern in which contradictory elements are combined and has the ability to transform them into a unified expression. The ability of the pattern to transform contradictory elements is something that is evident in the cities of the past, for example Taxila, leading Doxiadis to the basis of his design concept as, “The design concept for the creation of this modern university complex is based on the same functional rules that governed planning in the past.”²³ The juxtaposition of palace over the city in the plan of the academic complex is iterated by Doxiadis as “functional rule(s)” of the past. This iteration is guiding the interlocking of various departments into a “cohesive” and “continuous” pattern, which Doxiadis legitimizes through the analogy of the ancient plan of Taxila and the palaces of the Mughal period Lahore (fig. 8) as, “The mechanism of planning the various departments and integrating them into a cohesive and continuous pattern was analogous to the plan

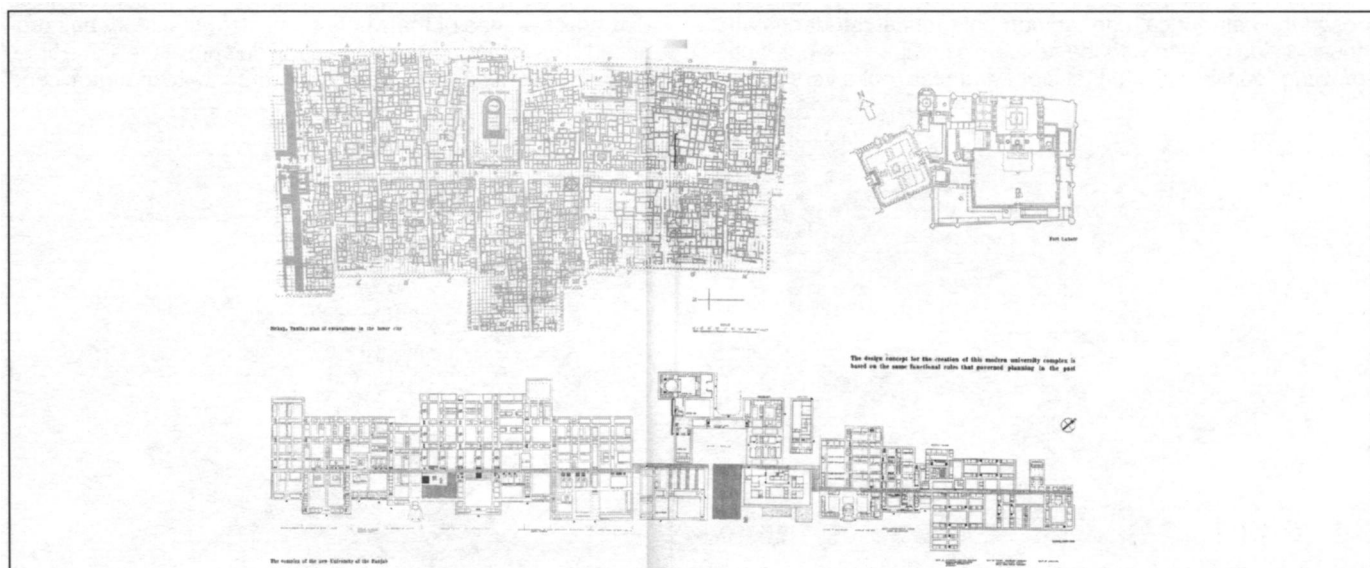


Fig. 8: The Extrovert Synthesis: Global conception with local expression – Taxila (upper left), Lahore Fort (upper right) and the Layout plan of the Academic Complex of Punjab University at the bottom.

of ancient Taxila, whilst the design of colleges follows a pattern characteristically similar to the palaces of the Mughal period, a sequence of closed, semi-closed and completely open spaces. A particular building sacrifices its individuality to become part of a broader and ever-growing complex, in the same way that a dwelling unit is integrated into the overall pattern of the town."²⁴

The issue of the "identity" is what Doxiadis renders as "opaque" in the plan. The homogenous and interconnected fabric of the academic complex brings the problematic of the "individual" and the "particular." He is aware of this problematique and defends his approach as, "It is true that the buildings themselves partly lose their individuality when viewed as part of the total homogeneous and interconnected fabric. But the individuality becomes apparent within the confines and immediate environs of the building in the microscale and localised planning and assimilates itself to the pertinent functions contained therein."²⁵

The plan of the new Punjab University is in many ways a side step, taking the university as an image and trying to make a synthesis of the Palace (Mughal) and the city (Taxila). The plan is the juxtaposition of the palace over the city in the academic complex with the multiplication of the specific (courts) and the student-staff area as the multiplication of the ordinary (housing). The ground level with the central spine and the network of pedestrian circulation is defining the armature (the "stem") and the buildings put on top of it as "web" (Josic-Candilis-Woods) or like the concept of "servant" and the "served" (Louis Kahn) or in a more abstract way, the "signifier" and the "signified" in terms of language (structuralism). The plan becomes hybrid with the ground level city and the *Zeilenbau* on top and the elements that are plugged in with the multiplication of courts along the horizontal and the transverse axis. If one erases the ground level plan, it becomes, in formalistic terms, a modernistic *Zeilenbau* plan.

The intention of Doxiadis and the opportunity provided by the project and the context, which is also evident from his discourse, was to develop a relationship between categorical (housing) and the non-categorical (palace-temple-school; civic armature of the town). From the examples that he gives about the functional rules of planning in the past by citing Taxila, it can be seen that the non-categorical is absorbed by the categorical in the case of Taxila (fig. 8), as well as it could be the same case in most examples of the cities of the past from the context like androon shehr Lahore, Jaipur, etc. Whereas, what Doxiadis has done in the plan of the new Punjab university town is that he has juxtaposed the categorical and the non-categorical (student/staff housing side by side with the academic complex) – approach showing "duality." So at first sight, the plan looks very mod-

ernistic, but with an analysis of the plan, we find attempts to develop a relationship between the two (categorical and non-categorical) by the system of axis, the central square, orientation, the interlocking of different scale levels, rectilinear form of buildings, the interweaving of landscape layers such as the variety of courts, the element of the canal and the surrounding green.

The examples of Taxila and Lahore Fort are eclectic, i.e. not A-historical; not historicized by its context but de-contextualized, de-historicized and studied as a pattern, like an opening on the history. The eclectic approach becomes more evident when we put together the two plans of Punjab university for analysis, one of 1959 and the other as later reproduced in 1966²⁶ (fig. 9).

In the first plan, the whole south-western edge of the site is attributed to be a 600 m x 1,400 m (approx.) park and botanical gardens as a surrounding green of that side with a lake, an orthogonal access, the canal passing through it and a square at the intersection of the two axes at the edge of the canal. In the second plan, this park is changed in location and is placed between the "academic complex" and the staff housing, near the vehicular access to the academic complex. The surprising thing is that this new park has no similarity with the earlier very modernistic articulation of the park, but is a replica of the 17th century Mughal "Shalimar gardens" of Lahore. The second element is that of the central mosque with the theology department at the central square. In the first plan the form of this element is articulated in an orthogonal manner, similar to the rest of his plan. In the second plan, a replica of the 17th century Mughal "Badshahi Mosque" with domes and a large rectilinear courtyard in the direction of "Mecca" and does not follow, as visualized and illustrated in the first plan, the two directional orthogonal axes, but is a clear unwanted/unfitting addition to the plan. A similar element of the mosque, though at a much smaller scale is also added in the central market area of the staff housing in the second plan. The third element, which is somewhat ambiguous, is the demarcation of the periphery of academic complex and student housing with a grid of eight columns/towers, at least six-storeyed (the tallest structures in the campus). The function of these eight towers is unclear, as they may be overhead water tanks or just free-standing columns/towers for monumental or symbolic reasons, but they do mark a precise geometry, scale and are repeated following a grid; a larger grid of the site. The reasons could be to develop a symbolic sense of orientation in the 1,600 m long academic complex.

The eclectic way of choosing a pattern out of context gives Doxiadis free use of the whole archives that history has produced. So, in that way he is open-minded but at the same time, very narrow-minded as he has a pre-conceived pattern and

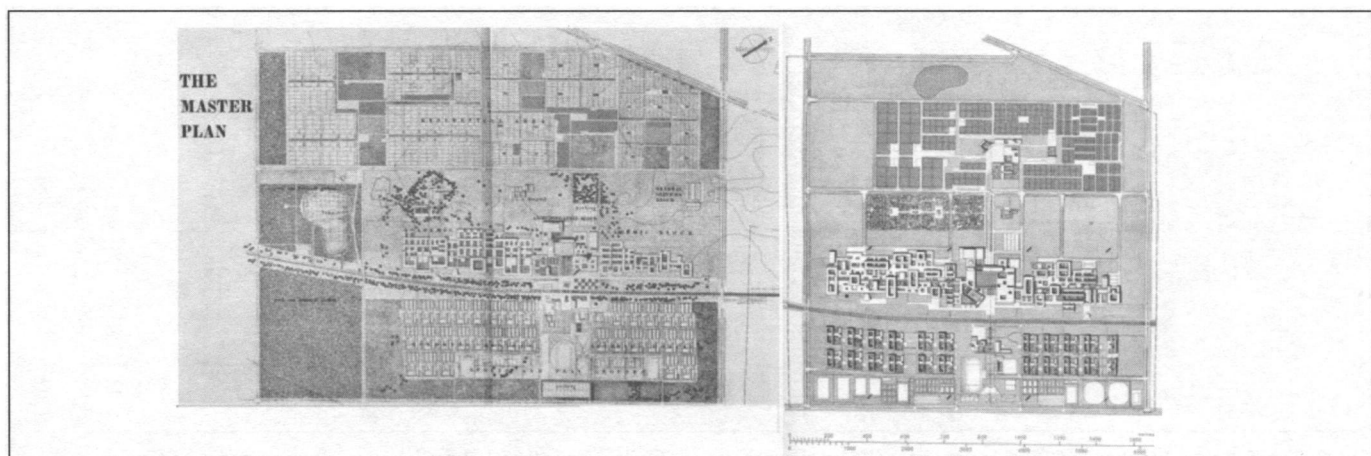


Fig. 9: Master Plan of 1959 (left) and Revised plan (right).

chooses what suits the case. Doxiadis has an evolutionist view on history; looking for pure examples which are not corrupted by capitalism and other contemporary forces, but at the same time, are very selective (for example not choosing any British period examples with which the city of Lahore is adorned).

The 1950s-1960s urbanism is developing with a heavy critique and as a reaction to the "alienation" developed by the "machine for living" metaphor and projects relying on mainstream modernist dogmas based on rationality and universal order (Athens Charter). The agenda is bringing to the fore the real-

ization that rationality in itself needs the human scale and human association, i.e. the need to adjust/amend and gear modernism in architecture leading towards the adaptation of human species, bringing the concepts of scale, flexibility and adaptability to the fore. What Doxiadis is doing is the multiplication and repetition of the elements to address the issue of "growth," dissociating them and then re-configuring which still is a functionalistic approach with the exception of "human scale" and "locality" that he advocates to be necessary for human association (fig. 10).

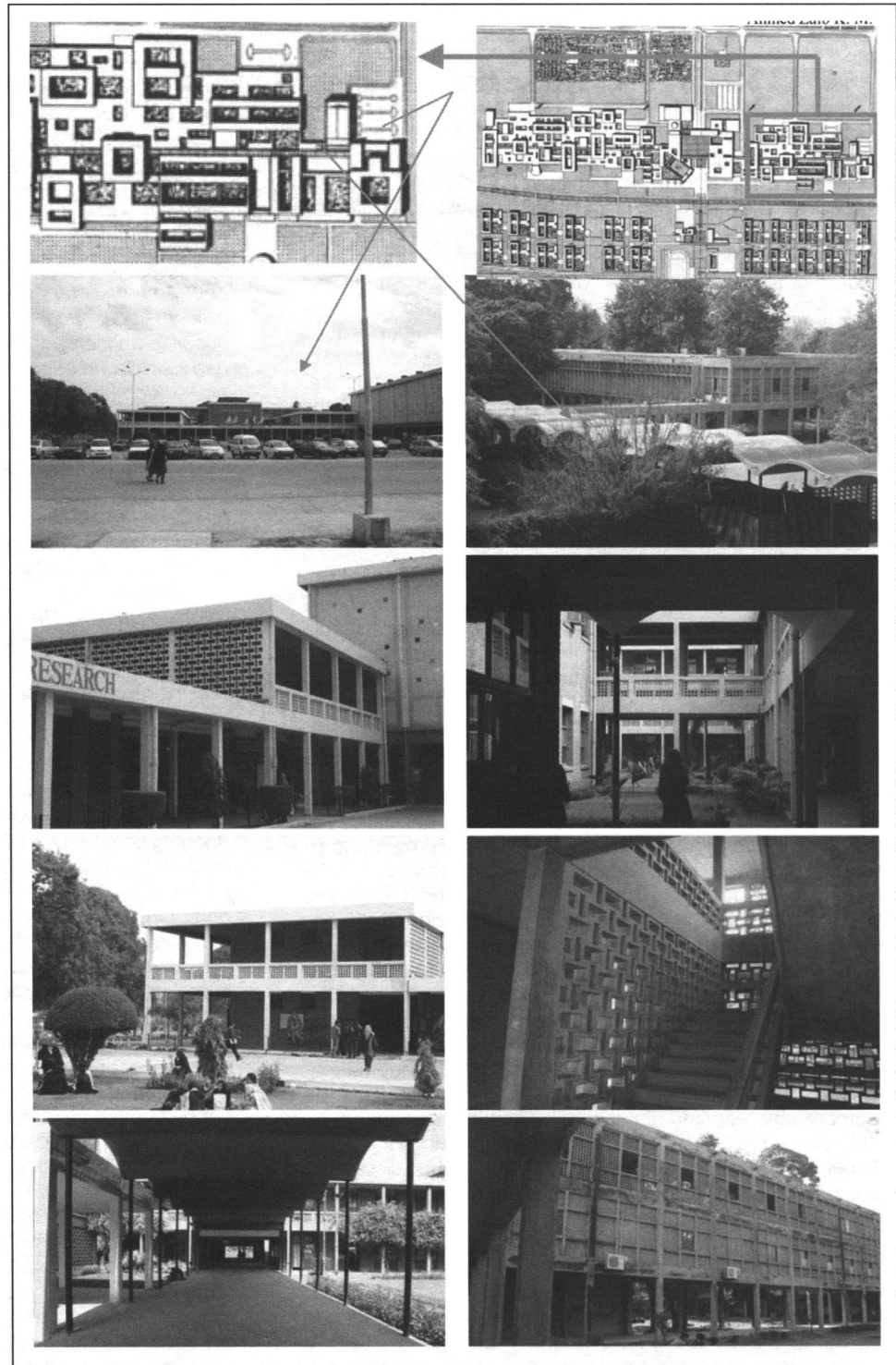


Fig. 10: Punjab University Faculty of Education, new campus, 2004.

Islamabad: The city of the future – 1959-1960

In February 1959, Doxiadis was appointed as advisor to the Special Commission for the Location of the New Capital. The New Capital of Pakistan was given the name of ISLAMABAD (the City of Islam) on February 24, 1960. The preliminary Master Plan of Islamabad and the planning principles that Doxiadis claimed would make this capital a model for “*A City of the Future*,” were presented to the Cabinet and approved by H.E. the President of Pakistan on 24 May, 1960.²⁷ The most ambitious plan of the 20th century, as a dynapolis conceived at the megalopolitan nodal point of the northern Sub-continent, for 2.5 million inhabitants marked the beginning of its materialization in the late 1960s.

The ambition of the “City of the Future” (COF) was to (re)discover and lay down the foundations for the creation of an architecture based on “extrovert synthesis.” The aim of extrovert synthesis was to generate the architecture of the city in a way that is “Human” and “Universal” in its conception, yet “Local” in expression – the resurrection of architecture towards a *Universal Human Style*.²⁸

The COF was not based on a “Master stroke” – a singular ideal figure or a utopia, but rather with rigorous methodology and analysis of the self-created “Ekistical” canon, the idea was to understand the forces at work on the contemporary urban organization at large and to develop a synthesis for the proposition of an “entopia” – something in between “dystopia” and “utopia.” The intention was to (re)invent a language and grammar for the composition, articulation and structuring of the city in the form of a “Dynapolis” for the production of a Universal Human Style architecture. The COF, translated as an ideal scheme in the form of a “Dynapolis,”²⁹ the dynamic city and the proposition of the Universal Human Style, was presented at one of the most prestigious institutions of architecture like RIBA (London) and Arkitektforening (Oslo) etc. in March 1960 (just two months before the submission of plans for Islamabad), as a new model with all its spell binding effects; claiming to be less of a utopia more of a synthesis, in contrast to the Athens Charter and in line with the emerging agenda of urbanism of the 1950s-1960s (Team X).

“Dynapolis”: An extrovert synthesis based on the Universal Human Style

There is a certain degree of ambiguity as to the universality of the COF when seen in the context of Doxiadis’ own understanding of universality, as he sees the urban organisation (city) through the dual lenses of the “developed” and the “developing world.”³⁰ The problems that he considered common to all cities were due to the unprecedented universal increase of population, the introduction of the machine and the gradual socialization of the patterns of living. These factors were attributed to the improvement in public health that has counter-balanced all destructive forces leaving the world with a huge net gain in numbers and the multiple impact of the machine and modern technology which has made large concentrations of people in the same area by reducing distances, by making possible multi-storey structures and by introducing mass production for large numbers.³¹ Doxiadis magnifies these problems when discussing them in the context of the developing world as:

*“All these problems ... as being common to all countries have been magnified to an unbelievable degree in those countries which are now entering an era of development. These countries are caught in a period of transition between two worlds that differ both technically and culturally. This is particularly true where changes are taking place at a very fast rate.”*³²

The changes that acquire more gravity in the developing con-

text, as described by Doxiadis, are characterised:

- firstly, by increase of income; considering the developing countries as non-urban cultures where people abandon their congested-thatched roof huts in order to move to brick or concrete houses, or whose income allows them to abandon a mud road to move to new quarters with paved roads, water supply networks, transport, electricity and other facilities;
- secondly, the development of new family patterns; the breaking down of the large patriarchal family into smaller units, each demanding higher standards of living, more houses, more facilities etc.
- thirdly, and most importantly, as described by Doxiadis, the change resulted from the new social order, generated by development; change of old feudal pattern of land ownership to land reform, redistribution and in the place of Lords and Serfs, now the rural dweller and the urban dweller, who are both fully recognized citizens.³³

Analysing the impact of “overgrowth” on urban form through the classical examples and highlighting the possibilities that the machine has to offer, Doxiadis argues that, “*Rome and Constantinople are probably the best examples of cities whose overgrowth caused the loss of their cohesion and identity as rational and compact settlements. But now the machine has made cities of about ten million people quite possible and, in doing so, has brought about additional problems. The machine has also made possible an increase in income and productivity, which in turn had a profound effect on the people who live in the contemporary settlements.*”³⁴ By presenting the challenges and opportunities offered by the forces at work on the urban form leads Doxiadis to make a distinction between the quantitative and qualitative aspects of the problems as, “*all these three developments have caused an immense increase in the demand for settlements, in the broadest sense of the word. The increase of population and the introduction of the machine have affected the demand mostly as far as size is concerned. The gradual socialization has also affected it as to size, but its primary influence refers to quality. The qualitative effect of socialization on our cities introduced a great number of “essentials” which a short while ago were not even known.*”³⁵

In the more universal context, the structure of the cities of the past were considered by Doxiadis as possessing characteristics that they have inherited from older traditions and they have kept up to now merely because of inertia, as they have never been thought of as cities that would serve the entirely new types of human communities existing today.³⁶ Doxiadis claims that, “*there is no doubt that the cities of today are completely inadequate for the machine age, whereby the machine becomes a major commodity in serving human needs by providing transportation within as well as to and from the city.*”³⁷

The most important change brought about by the era was considered by Doxiadis as the change in the notion of how a human settlement “expands.” While illustrating the phenomenon of the modern city spreading all around endlessly and continuously by analysing several cities, he concludes that in the modern city the fourth dimension, the dynamic growth through time, is the dominant feature and that it must take precedence in all our planning considerations.³⁸ The man-machine competition for space was considered yet another change and described as, “*The unit of magnitude, man, was replaced in our cities by the new unit, the machine, which covers a proportionately much larger space, drives at much higher speed and brings into conflict its hard surface with the soft human body.*”³⁹

The analysis of the cities of the past, the present, and the holistic comprehension of his era, leads Doxiadis to propose the concept of “Dynapolis” (fig. 11) as the ideal scheme/model for the city of the future. The description of dynapolis is given by Doxiadis as, “*The proper name for the city of the future is dynapolis, the*

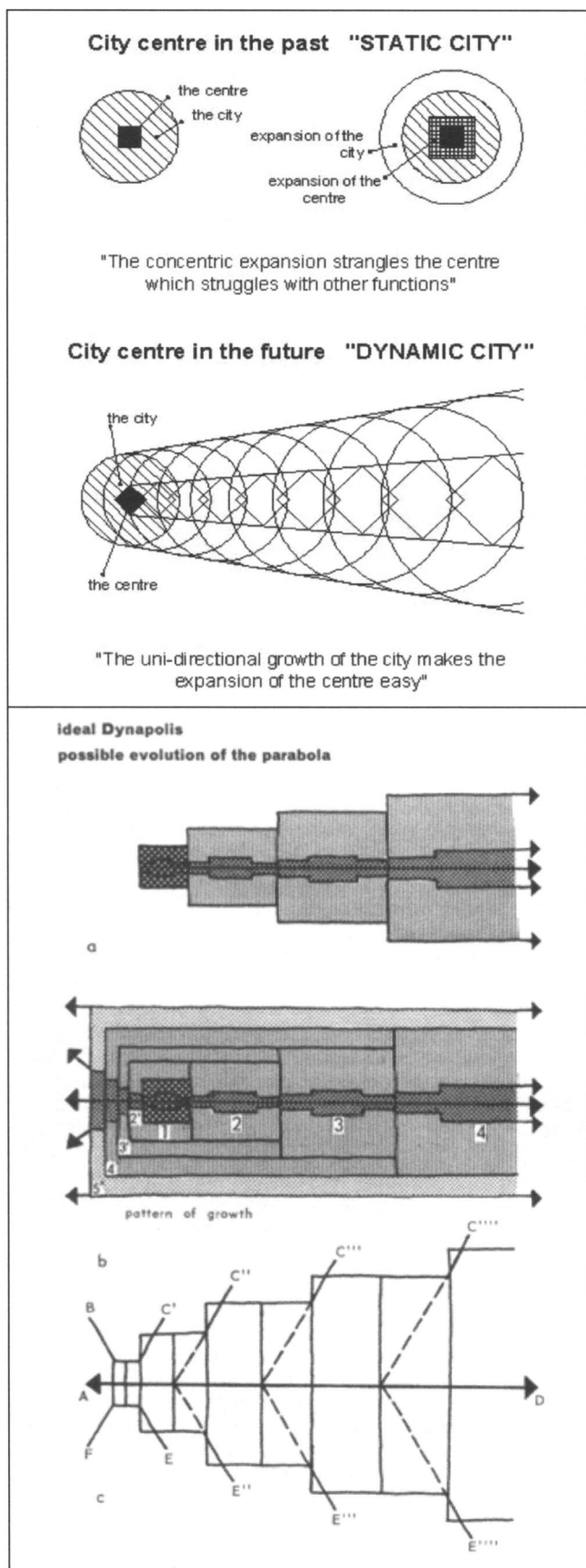


Fig. 11: The concept of "Dynapolis" – Form and shape. (Source: C.A. Doxiadis, "Islamabad," *Town Planning Review*, vol. 36, April 1965, pp. 16, 17 and 21).

dynamic 'polis' or city, which in contrast to the static 'polis' or city of the past will possess the characteristics of dynamic development, will have development built in it. Thus this city will be able to develop freely and naturally along a planned and pre-determined course."⁴⁰ The number of principles, emanating from the comprehensive planning tradition, that he sets as rules for the elaboration of this scheme sets on the foundation of the first principle – **"unity of purpose,"** the "purpose" here meaning the pursuit of a democratic society. He elaborates this principle as, *"The right solution is the one which satisfies the economic, the social, the political, the aesthetic and the cultural requirements. We must understand from the beginning that we are referring to nations, basically democratic, and cities in which everybody is provided for, where privileged groups do not exist and where the inhabitants are considered to be entitled to equal opportunities."*⁴¹ The second principle concerning the structure of the city is **"hierarchy of functions"** stressing that the order and hierarchy of functions are indispensable elements for the survival of our cities, therefore, *"we must follow a certain functional hierarchy in our design that will make all functions part of a well-coordinated system of interdependent activities."*⁴² The third principle – **"freedom to develop dynamically"** refers to the fourth dimension of "time" considered by Doxiadis, *"as an element in design time must influence the very basis of its conception, its formation, as well as its physical expression."*⁴³ The fourth principle is that the city of the future has to be built on various different scales and by different scales Doxiadis means the elements that will determine the basic dimensions and proportions of our city (human scale, cars, aeroplanes and even rockets at a later stage).⁴⁴

As to the question of size, by definition dynapolis grows continuously and therefore no limits to its size, and limiting the size of the city in the present era is considered by Doxiadis as rather a utopia.⁴⁵ The unlimited size of the city by means of production and consumption aspired by the present era of the "growth" is something considered by Doxiadis as normal. He defends his argument as, *"Again it will be asked if we should not reverse or stop this trend (growth and size). This from the point of view of production is unreasonable and from the point of view of consumption of all kinds of goods and services is uneconomic. We have therefore to accept this situation as a normal one."*⁴⁶

The form of dynapolis is attributed to the conception of a pattern which will permit the natural growth of the city, and specially, its centre, without allowing the new additions to break up the already existing pattern. Doxiadis explains this conception of form as, *"an analysis of all possible forms that a city centre may assume points to a solution that will permit free expansion along a pre-determined axis. This axis will comprise the original central core of the city and its new development on both sides and along the central core. Such a city will follow one topographical direction and its expansion will be mainly uni-directional ... (further elaboration of the scheme propounds that) ... expanding at a much greater speed in one chosen direction, while it is also expanding at much lower speeds in the other three. Thus, Dynapolis, besides its uni-directional movement also possesses a well balanced development all around."*⁴⁷ The exact form of the dynapolis is attributed to depend on the speed of growth of population, economy, the relationship between the two and the control exercised on the growth of the city.⁴⁸ The city of the future is conceived by Doxiadis as a city built and developing at varying rates along a system of perpendicular axes and defines the three basic rules about the form of dynapolis as, *"a. the rule of one main direction, b. the rule of development on a system of vertical axes and c. the rule of a pattern of highways based on different expressions of the hexagonal pattern (but never of hexagons or diagonals) on the vertical system of axes within the city."*⁴⁹

The structure of the city is attributed by Doxiadis to the repe-

tion of the “sector” – the new modulus of the city of the future, which has to correspond to the hierarchy of its functions and its main axes. Doxiadis makes a distinction as to the repetition of the sector and to its size as that, *“the sector should remain the basic unit of the structure of Dynapolis, but the way in which it will be repeated in space should not be the same as happened with the block within the city of the past ... As the sizes of sectors will vary according to physical considerations, sizes of plots, incomes etc. it is the classification by communities which can give a more permanent pattern on which we can base our hierarchical structure of dynapolis.”*⁵⁰ The community classes range from I, II till VIII with 75-100, 300-500 till 4.5 to 7.5 million persons and community class IV with 6,000 to 10,000 persons is described as “human community” where internal connecting lines are based on human movement only whilst the machine is limited to the external – peripheral connections,⁵¹ which by analogy corresponds to the size of a village.

The ideal scheme of Dynapolis, as claimed by Doxiadis, is capable of guiding the development of cities in both the developed and the developing world, but it is equally capable of guiding new cities to be created right from the start and existing ones that have to be transformed into cities of the future.⁵² He explains this latter claim in the case of new cities, apart from the modification of the theoretical pattern depending on the context which is to be *“useful only as a guide line, while in practice the city will be adjusted to the limitations of the physical landscape ... (and in the case of existing cities) ... The method to be followed in each case should be a matter of judgement.”*⁵³ He explains this matter of judgement by illustrating seven of his projects based on the Dynapolis conception namely, *“the future extension of Washington D.C.”*, *“Athens Region – principles of Dynapolis applied,”* *“Greater Khartoum Master Plan,”* *“Baghdad – Master Plan,”* *“Beirut – The proposed Administrative centre,”* *“The future extension of Caracas,”* and *“Greater Karachi Development plan,”*⁵⁴ all presented by a unique phenomenon pertinent to them, attempting to prove the universality of the dynapolis model. His belief in the functionalist rationality on which his model of dynapolis is constructed coupled with his obsession with the unlimited growth of urban organization at large takes him to the extremes like, *“There may be instances, however, where the chances of affecting free development along one axis within the city may be impossible. This will probably be the case in such larger cities as Moscow, New York, London and Tokyo. We cannot hope to find within these cities a completely non-built up sector which could play the role of the expanding central core. We may be able then to transform a certain sector from the central core outwards ... a widespread conviction that large cities have reached their maximum of development and are destined to decay. This is false. The decay of our cities is not a matter of size but of an irrational development. We must always keep in mind that we are not at the end of an evolution, but more probably just at the beginning of one.”*⁵⁵

This all-purpose/universal scheme of Dynapolis for the production of a “universal Human Style” architecture is probably the biggest prophecy of 20th-century urbanism for a model and most controversial of Doxiadis’ claims which eventually (within two decades) makes the dynapolis run out of steam and collapses under its own weight. Nevertheless, a widespread application of the Dynapolis model was materialized in tens of projects by Doxiadis around the globe in the late 1950s and 1960s but none as memorable and complete as Islamabad. It is the project of Islamabad that immortalized the concept of dynapolis for generations to come.

The conception of the Plan

The agenda of Doxiadis for Islamabad was clear and firm from the outset, and he expressed the need of the federal capital to

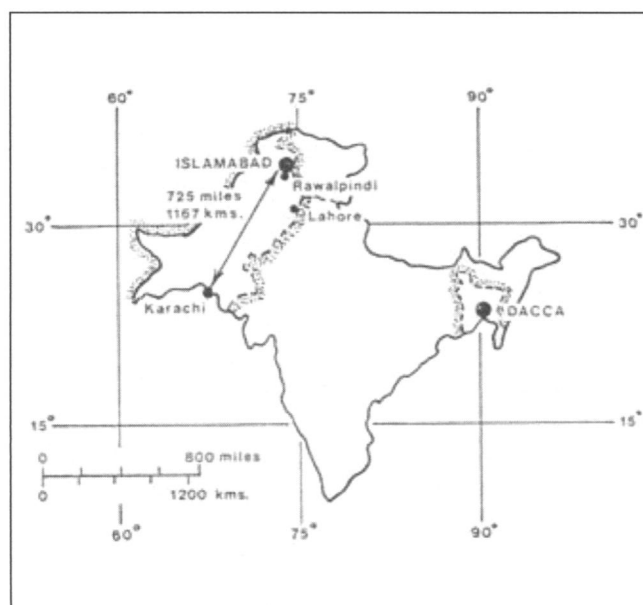


Fig. 12: Location and distance of Islamabad from Karachi. (Source: G.V. Stephenson, “Two newly created capitals: Islamabad and Brasilia,” *Town Planning Review*, vol. 41, October 1970, p. 319.

be based on the concept of “dynapolis” (fig. 11) in one of his earliest reports for Islamabad as, *“If every city needs the recognition of this new principle, the new federal capital needs it even more. This is by far the city in the country which will live on its centre, whose purpose is really the existence of its Federal centre. There can be no solution found for the problems of the capital unless this principle is recognized.”*⁵⁶

The first important decision that Doxiadis aided the Federal Capital Commission (FCC) in making, was the choice of the site in altogether a new context, up north, almost 1,100 km from Karachi (fig. 12), at the foot of the Margallah Hills on the Pothwar plateau right next to Rawalpindi – the GHQ (General Headquarters) of the Pakistani Army. Doxiadis describes the merits and the opportunities provided by the new location as, *“Many factors influenced the decision regarding the location of Islamabad, such as transportation and communications, factors of national interest, defense, economic factors, civic factors, existing facilities, etc. After a careful study of these, the present area was selected. The nearby existing city of Rawalpindi would offer Islamabad considerable aid in facilities and initial housing needs. The Chaklala airport of Rawalpindi will help air transportations, the Rawal dam will secure water supply, the existing railroad and highway connections will serve communication needs. All these will contribute towards avoiding large investments during the first phase of development of Islamabad.”*⁵⁷

The master plan of Islamabad (fig. 13) covers an area of 1,165.5 sq.km (450 sq.miles), with three main divisions, the Islamabad Urban area covers 220 sq.km (85 sq.miles), the Islamabad Park of equal area reserved exclusively for recreation, sport and entertainment and the existing city of Rawalpindi. The form proposed for Islamabad was an elongated triangle wedged between the east-west range of the Margalla Hills to its North and the Rawal Lake to its South. The agglomeration of Rawalpindi was contained within the grid of four highways. All citywide activities are grouped along linear spines capable of gradual extension as the city centre/CBD (like the academic complex of Punjab University – an “extrovert” synthesis). Two separate spines (two foci dynapolis) are proposed for Islamabad and Rawalpindi. The government centre with the administrative and public buildings area has a fixed position, is placed at

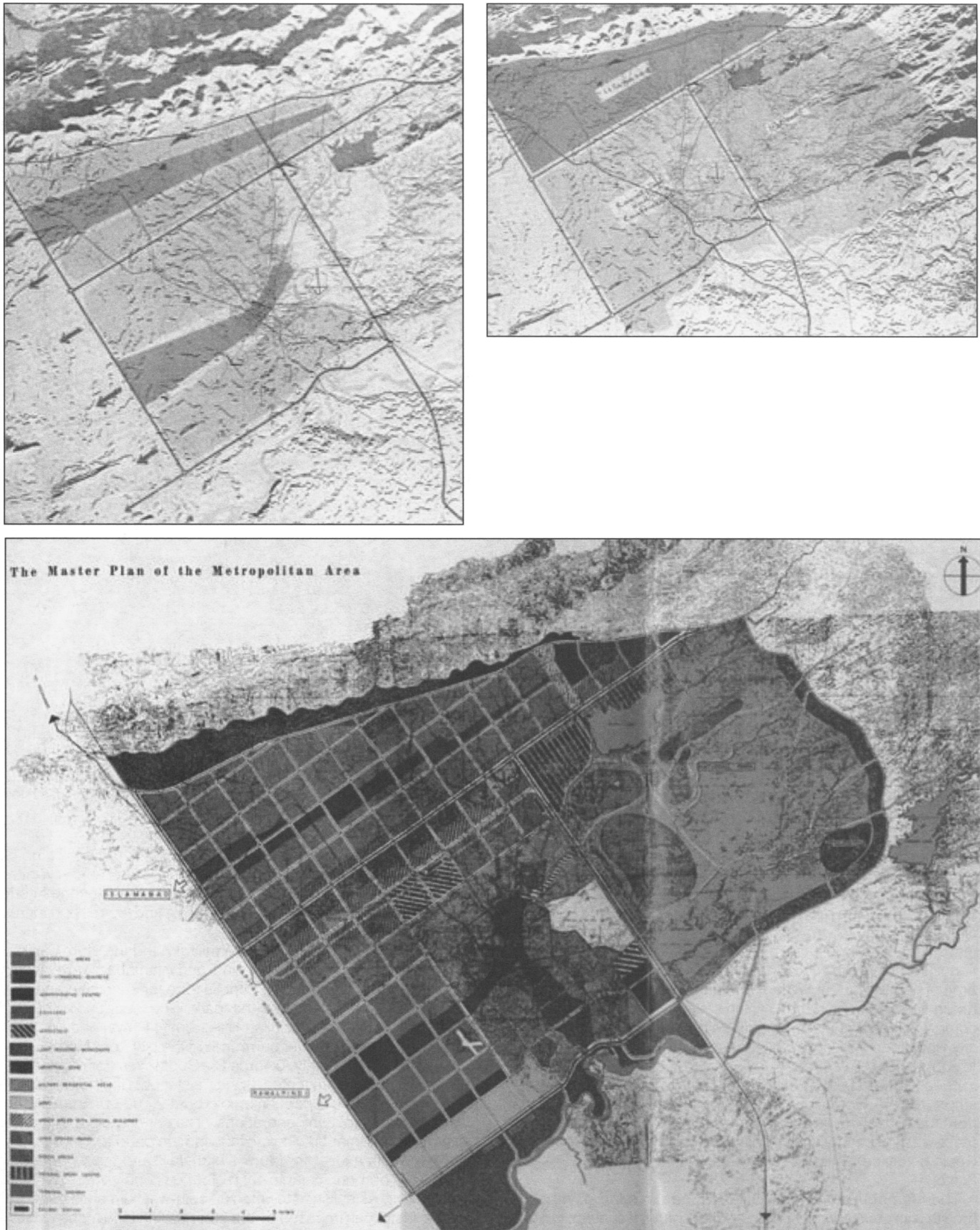


Fig. 13: Top: Three elements (Islamabad, Rawalpindi and National Park) separately placed together and Schematic Layout of Dynapolis. Bottom: Original Master Plan with dynamic growth of metropolitan area by Doxiadis Associates, 1960. Each of the three parts, Islamabad, Rawalpindi, and the National Park area, defined by the alignment of the main axes of the metropolitan area, is subdivided into sectors.

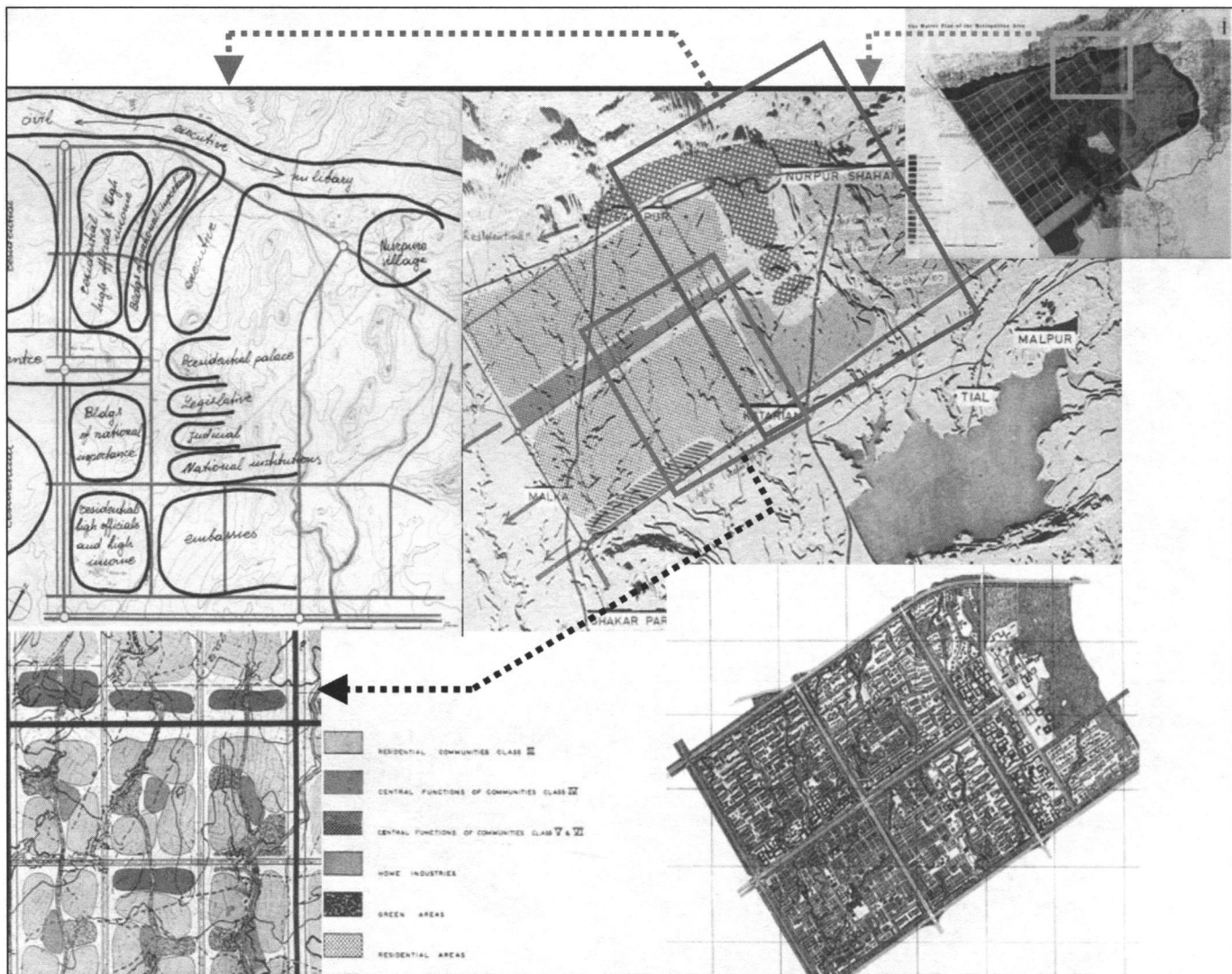


Fig. 14: Islamabad – Dynapolis of the “Capitol” and that of the “City”; Translation of the hybrid intentions in the “Heart of the City” (the first four sectors and the Capitol area).

the tip of the triangle, where the main axis (spine) of the town terminates, which parallels the hill range, whereas the city can grow infinitely towards the west along its east-west axis, provided by one of the main highways. The city is divided into distinct administrative, public, diplomatic, residential, commercial, institutional and industrial zones. According to a rigorous functional hierarchy, the city is composed of square sectors with an area of approximately 324 ha, and an average gross density of around 100 persons per ha. Each sector was supposed to become a self-contained community with its own centre, when the city would become large. These sectors are further divided into sub-sectors. The sectors designated by letters and numbers in checkerboard fashion, with letters of the alphabet for vertical strips (North – South) like E, F, G, H, I (from A-F in total), etc. from the hill downwards and numerals for the horizontal strips (east-west) from 1, 2, 3 to infinity. Thus the “G” strip of sectors would be divided into G-1, G-2, G-3, G-4, G-5, G-6 and F-1, F-2, etc.

The idea of urbanity that Doxiadis had in mind (Dynamic growth with synthesis of human and mechanical scales), the local settings of the landscape (foot of Margallah Hills, the Pothwar plateau and the city of Rawalpindi), the geo-political context and the regime/client’s brief (modern, progressive but should also express the link to tradition) for representing the national culture

and a representative of the ideology of Pakistan, were some of the major factors for the conception of the new federal capital city. The plan is that middle ground where these hybrid intentions and choices are translated into form and expression for realization (fig. 14).

The old and the new city - the military and the state capital, both of these elements, Rawalpindi and Islamabad – are placed side by side as a two-foci dynapolis (one for each city) and juxtaposed by a third element of the “park.” The “surrounding green” is in the form of the Margallah Hills, Simly, Rawal and Loi-bher dams and the Soan river surrounding the city from North-East-South and is open only towards the South-west for expansion. This scheme was presented as the master plan for the metropolitan area for a future population of about 2,500,000 inhabitants within a period of two generations. The separation of the three elements (Islamabad, Rawalpindi and the park) are marked by the two main axes: the “Murree highway” and the “Islamabad highway,” perpendicular to each other; secondly the expansion of the city is established towards a south-west direction because of the limitations imposed by the surrounding landscape of hills, lakes, rivers and the city of Rawalpindi; and thirdly the division of the whole metropolitan area into sectors of 2 x 2 km forms a specific pattern of highways within the city. These three interventions for the articulation of form precisely follow the three

rules for the form of Dynapolis established by Doxiadis as, “a. the rule of one main direction, b. the rule of development on a system of vertical axes and c. the rule of a pattern of highways based on different expressions of the hexagonal pattern (but never of hexagons or diagonals) on the vertical system of axes within the city.”⁵⁸ But this form of Dynapolis was supposed to be the capital of Pakistan, and therefore, once again Doxiadis had to play the “eclectic local.” He explains the reasons for the vertical axes and the geometrical/orthogonal pattern of the city supported by the above three rules of dynapolis, the landscape as well as the addition of cultural reasons and citing examples of the pattern of cities that suits his case as, “Finally, for cultural reasons Islamabad, a symbolic city of Islam, cannot abstain from the rules of design and synthesis which are characteristic chiefly of Islamic culture. Every large and important synthesis of Islamic culture is based on pure geometry. We only have to think of the great mosques with their squares, of Fatehpur Sikri and its synthesis on the basis of a vertical axis, of the Fort of Lahore, or the fort of Delhi, to be reminded that Islamic culture always designed with pure geometry. Even if we go to the smallest details in Islamic culture, we shall find that basically geometry gives the pattern right down to the decoration.”⁵⁹ Along with this, he also adds the illustration of another ancient city of the past, just like “Taxila” in the case of Punjab University; here it is Mohenjo-Daro, the ancient city from 2500 BC of Pakistan’s Indus valley civilization for its pattern displaying the vertical axes system of the articulation of its form. In the case of Islamabad, just like that of Punjab University, there is not even a single mention of any British colonial example, though dozens of new towns were planned during the British era in Pakistan.

Architectural space of the city and the urban form

The space that Doxiadis conceives through his four-dimensional city (Dynapolis) is something that he believes can be created only architecturally. He believes that, “we can no longer limit ourselves to single buildings, and our idea should no longer be to create monuments through which we shall influence their surroundings, but rather to create a total architecture and recreate the whole space architecturally... Not only our houses and buildings but also our squares and roads, indeed the whole space surrounding us, must be architecturally moulded... must architecture fulfil itself and be a four-dimensional complex, serving the actual needs of the people in a dynamic, not a static, synthesis... The results of our research and thought have convinced us that not only the single house or building, not only the square or road, the sector or the town, but a whole region can follow certain rules of synthesis, rules which we later find to be the same as those in nature.”⁶⁰ This notion of architecture and its capacity is something that he developed as far back as in 1936 through the thesis of his doctoral dissertation “Architectural Space in Ancient Greece,” in which he comes to the conviction that, “The ancient Greek system was total. It took all space into account, and all three-dimensional masses, man-made or natural, were incorporated as volumes in space. Voids as well as masses had their form, since together they constitute the **architectural space** – the space that is created by man to enhance his sense of well-being.”⁶¹

The plan of Islamabad gives us an opportunity to analyse how the total space of the city is moulded architecturally. As far as his proto-form and the conceptual scheme of dynapolis is concerned, it lays down the elements of the city side by side – “disassociated,” and it is this architectural configuration, following a specific language and grammar based on “extrovert” synthesis, through which he develops the relationship between them.

The site chosen for the capital city lends itself to form the architectural space by going through a process of interventions.

The strategies that guided these interventions (axis, formal grid and the eco-grid, etc.) are, mainly, geared to organise the landscape of the area. Nature (man-made, hybrid and natural) and Networks (all transportation lines, highways, roads, pedestrian paths, etc.) are used together to form the pattern of the architectural space of the city.

Any element, whether natural, man-made or symbolic, that could set a precedent while conceiving the shapes and volumes for this architectural space comes out of two co-ordinates:

- the first co-ordinate is the “project” – a capital city and the idea of a dynapolis with already its proto-form established and marked;
- the second co-ordinate is the “site” – the landscape pattern of the area and the size of the city which is already being established.

The architect’s intuition and his idea of urbanity have to act as an interface to the two co-ordinates in order to determine the scale of the city.

In the discourse, the way this architectural space of the city is composed follows the principles of functional hierarchy, which in a nutshell would mean; the larger the function the larger would be its volume and the space around it, the wider would be its connection with the rest of the city etc, and vice versa. This is substantiated by Doxiadis as follows: “As a whole the city must have a hierarchy of spaces and volumes, and a hierarchy which corresponds to the hierarchy of functions.”⁶² His discourse degenerates the city into a scalar arrangement of 15 elements starting from Anthropos, room, dwelling, dwelling group, all the way to the scale of the city, metropolis, and megalopolis and so on. He advocates that each space (its shape, size and volume) has to be dealt with at the corresponding scale level (one amongst 15) separately first, and then make sure that it connects the ladder, from top to bottom in a nested hierarchy of functions, with its all corresponding elements. This is to say that a master synthesis or “*extrovert synthesis*”⁶³ as he calls it, in the end, should be the product out of the design process, in order to formulate the scale of the city. The whole discourse of Doxiadis about the plan is structured in the same hierarchical way, in a typically structuralist fashion, which makes it harder to discern the partial insights that can, partly, inform us about the dualities and contradictions of his plan. Therefore, the reliance on the reading and description of his plan gains more ground than the discourse.

The architectural vocabulary that is being made use of in the plan of Islamabad is intriguing but at the same time raises doubts as to its originality and authenticity. The architectural vocabulary closely corresponds to the various scale levels (interior of the community at the human scale, periphery at the vehicular, centres having a synthesis of both and the CBD corresponding to the larger landscape), along with using nature and hierarchical order of centres (urban services centres and facilities for the city and its residents) as structuring and continuing elements of the design (fig. 15). The scalar arrangement of architectural types is achieved by adopting a principle which Doxiadis termed as “unity of scale.”⁶⁴ This was considered absolutely necessary to achieve cohesion between the various elements of the town, according to Doxiadis, “the city is not a conglomeration of isolated and unrelated spaces, but one entity of interrelated spaces.”⁶⁵

On the one side, the huge size of the grid – sectors, the width of Rights of Way (ROWS) and main Axis orientation (on which the location of grand mosque and Capitol) – shows us the attempt to deal with the monumentality of the capital city. On the other side, the architectural type chosen for the central area (which is to grow) and the residential area (which is to be static) attempts to translate the concept of his amorphous Dynapolis with dynamic and static parts respectively.

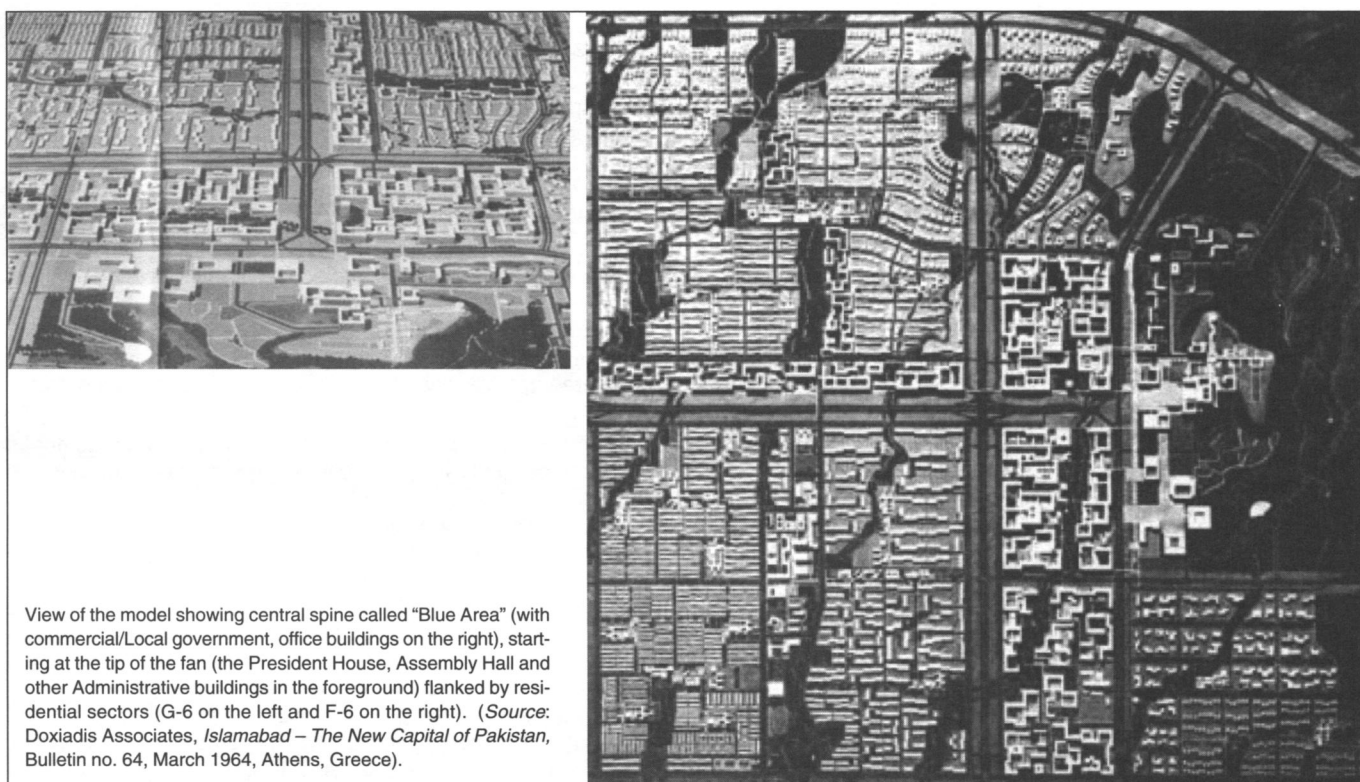


Fig. 15: Model of the central part of Islamabad consisting of the capital area (right center) and the first two sectors-moduli, community class V (Sector G-6 lower and Sector F-6 upper left) and the Blue Area (CBD) along the central spine. (Source: C.A. Doxiadis, "Islamabad," *Town Planning Review*, vol. 36, April 1965).

The architectural type for the **CBD** or called "**Blue Area**" (figs. 15 and 17), representing the dynamic part, is forming a continuous, linear, pattern of blocks (4-8 storeys) with a variety of enclosed courts and open spaces, which is similar to the "academic complex" of Punjab University, but with more open texture, thicker grain and lesser ground floor continuous connections. The architectural space that shapes this type is not organized by streets or paths, but by a system of open spaces, enclosed squares, open squares, half open and half enclosed, rectilinear and so on, and whereas the width of the block remains the same. The width of the block does not stop, running through the space, articulating it into a uniform rhythm of solids and voids, and in many ways dealing with the open landscape. This uniformity of the rhythm makes the whole of the CBD area as one single architectonic object, which is continuous and growing and this is the quality that Doxiadis attributes to an 'extrovert' synthesis, i.e. a form capable of expansion by repeating similar elements in a synthesis and not "introvert" – which is complete in itself and is not capable of expansion. However, it seems like a mega structure, but it does not create monotony or symmetry; rather, it creates variety. The variety is within comprehension and is articulated with precision and clarity as the concept and ability to articulate space through such a structure is known to Doxiadis long ago. Describing the principles of group forms in ancient Greece, "One finds in every grouping that a building comes into view at the point where the view of another building ends. Precision and clarity were all-important elements in the formation of space ... sizes of building and the spaces in which they stand appear to man's eye in simple ratios such as 1:2, 1:2:1, 2:1:2, 1:1:1, 2:3:2:3. The total mass of each structure was calculated and its effect determined ... appear to form symmetry, which did not exist in reality."⁶⁶ The layout of CBD architecture in the plan represents the same polar co-ordinates system with simple ratios of 1:2, 1:2:1, 2:1:2, and so on, which represents the uniform

rhythm but not in symmetry, as Doxiadis tried to correspond to the "reality" (the last sentence of the above quote).

Doxiadis' acquaintance with the group form design is also recognized by the celebrated S. Giedion, "the Greek city planner Doxiadis made an early attempt to establish the distribution of building masses according to a system of polar coordinates, so thatthey are optically evenly distributed ..."⁶⁷

The group form of the CBD represents not only the even distribution of space-continuity, but also represents a dynamic order. This dynamic order can be discerned by comparing the difference of the total volume of the group form of the second sector (which is wider) with the first sector (where it begins and is narrower). The transition of group form from one sector to the next is a very critical issue, i.e. the issue of "growth," which is also represented by the increase in width and the volume of group form structure in the second sector. This increase, when worked out, turned out to be a "golden section" ratio, i.e. 1.618.⁶⁸ In other words, Doxiadis deals with the issue of growth, by means of the classical notion of the golden section ratio, while translating it in the plan.

The way Doxiadis organizes the architectural space of the **residential areas** or the **sector**, considering the hierarchy of functions and the sixteen parts theoretical division, is not like C. Alexander's "city is like a tree," but interconnecting with sub-sectors and overlapping with natural level (ravines – fig. 16). The orientation of streets and plots follows the East-West (Margalla Axis) and North-South (Islamabad Axis) direction in conformity with the direction of the main axis and the formal grid, but at the same time, keeping the orientation of some sub-sectors towards the next (neighbouring) sector, creates an ambivalence, which accords the existence of the informal eco-grid (the grid created by the organic structure of ravines) as well as the continuous repetition of the sectors over the entire urban area. The tree becomes more interesting and more complicat-



Fig. 16: Islamabad – Articulation of the space: Overlap and non-hierarchical spatial structure.

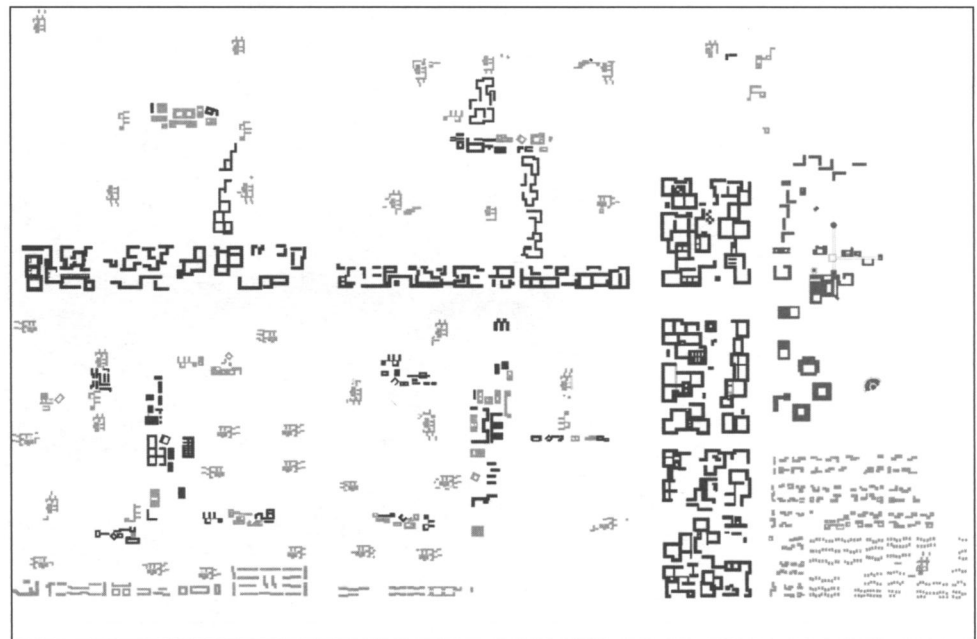


Fig. 17: Islamabad – Urban form I: Dynamic articulation of space.

ed; something more than hierarchy – hybrid, using the diagonal (ravines mostly running diagonally through the sectors) through landscape as an ordering element; a collector of extraordinary things within an ordinary environment. Orientation and geometry, a precise system of sizes; a very regular organization but not leading to a stereotypical rigid grid, but a variety, that is, at the same time fitting within the grid and also not stereo-typical formulation.

The architectural type for the sector, representing the static part, is rows of attached housing. There are hardly any detached houses. The rows of attached houses help to shape the space of the street as well as of the built space. It does not let the space be lost, but rather framed and defined by its boundaries.

This point of attached housing is also in conformity with the discourse as he considers it as an obligation to the landscape, “*If we cannot do otherwise than have detached houses, then the obligation to landscape by using the system which has detached houses will work against the City’s scale. It will not merely disrupt it but will destroy it ... In the past, the space was enclosed by walls. It was thus specific and positive. Now space is quite often lost like a fluid between buildings ... large plot width does not allow for the formation of a continuous mass of buildings, but forces us to create detached buildings. In such cases the whole of continuity of built-up and open space is lost ... positive space or enclosed space, we have to keep in mind that this is valid both for private (court-yards, gardens, etc.) and public (roads, squares*



Fig. 17: Islamabad – Urban form I: Dynamic articulation of space.

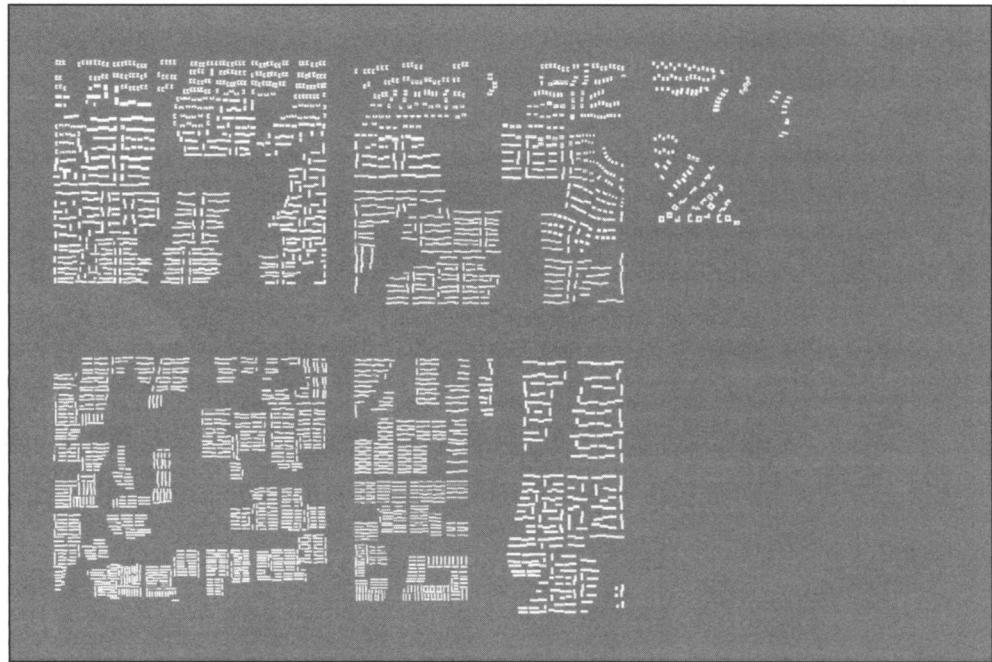


Fig. 18: Islamabad – Urban form II: Static articulation of space.

*etc.) spaces.*⁶⁹

The only place where the shape disappears into shapelessness is the point where it meets the natural green of the eco-grid. This transition is usually marked by a cul-de-sac. The natural green in turn helps to achieve an end to the street and does not let it cross through all the way from one end of the sector to the other. This, in another way, also helps to translate the concept of “human community” with human scale, i.e. if the streets which lead to the houses are connected all the way, they would become thoroughfares and thus the space would not be able to provide intimacy for the small community. Thus the complementation of the formal grid with the informal grid proves its capacity to even help secure the intimate scale for the communi-

ty.

Doxiadis, while keeping the CBD and the sector as separate entities in theory and also in the proto-form – one dynamic and the other static (figs. 17 and 18) – in the plan we see that he takes the typology of the CBD inside the sector as well, though in a much finer grain. This characteristic of the plan is not discernible from his discourse. The quality through which breaking the scale of architecture of the central spine of the city and taking it inside to the sectors in a much finer grain, thereby harmonizing it with the scale of the housing. In the earlier plan of Punjab University, this quality was lacking as the typology of academic complex was not taken inside the student hostels or staff residential area, and it was only through the mediation of the cen-

tral square and the vertical axis that the three elements were partially integrated. However, in the plan of Islamabad he refines this quality of integrating contradictory elements like housing and the CBD, largely by reducing the scale of the CBD typology when inside the sector, leaving enough natural green element and providing the inter-sectoral road along with it, thus creating homogeneity and cohesion in the structure of the city in terms of gradually shifting levels of scale from the residential, to commercial, and to the monumental scale level of the city.

The use of the diagonal – the natural element (eco-grid) – in the organization of architectural space of both the residential sector and the CBD area, plays a crucial part by providing variety in the treatment of both landscape as well as buildings, and thus becomes an intriguing element. This element is used in both areas irrespective of their hierarchical requirement of being static (sector) and dynamic (CBD). The diagonal of nature unifies the composition of the entire architectural space of the city, though in contradiction with his hierarchy, as it not only connects one part of the city with the other but also opens up views to the surrounding landscape of the city. Since the background hill of Margalla is a very imposing element of the landscape, it is also used as an element of composition not only at the scale of the city but at the scale of a small part of the city as well. Here again, the diagonal is the one which lets the viewer see the hills in the background of the buildings, acting as an element of composition. It is worthwhile, given the importance of the diagonal, to probe into this element of design, to know if it is only a coincidence or otherwise.

Doxiadis was aware of the importance of this element in organizing the architectural space, as early as 1936. One can discern from his conclusions which say, *“One angle, frequently in the centre of the field of vision was left free of buildings and opened directly to the surrounding countryside ... it was the ‘sacred way’ ... the buildings were often disposed so as to incorporate or accentuate features of the existing landscape and thus create a unified composition ...”*⁷⁰ He explains the same diagonal/open path as, *“A path always formed an important feature in the disposition of the buildings in relation to the landscape ... Throughout, one can sense the desire to connect the outlines of the different structures with one another and with the lines of the landscape, to form a continuous unity, and within this unity to emphasize one opening: one clear and unobstructed path leading out into the Landscape.”*⁷¹

Similarly the housing and ancillary facility areas inside the sector occupy the voids created by the overlapping of eco-grid (ravines – organic structure) and the infrastructure grid (inorganic structure). The discourse of the plan based on hierarchy tries to attempt an order, but the plan shows a different kind of order; an order both in natural and man-made objects. This can also be discerned from Doxiadis' pioneering magnum opus on architectural space as, *“Each site was divided into sectors, allowing for extensions within the over-all plan. The placing of the buildings was directly related to the contours of the landscape, because the Greeks continually sought to achieve order in space, no matter the space was natural or man-made. For example, when seen from the main entrance to the Altis at Olympia, at the southeast corner of the site, the outline of the Hill of Kornos, to the right, formed an essential balance with the temple of Zeus to the left ... The effects of different shapings of space were studied (see Euclid's Optica), and the lines of buildings were brought into harmony with each other and with the landscape.”*⁷²

The analysis of Doxiadis shows that the architectural space in ancient Greece was having nature and urbanity both as an integral part. But this tradition was lost and, astonishingly, he gives a very early break away of this tradition as, *“... the former impression of a path leading directly through the sanctuary into the landscape was utterly destroyed. The Roman Altis has be-*

*come fully enclosed. Thus, many of the principles that had governed the composition of the site during the classical and Hellenistic periods – in particular, the use of landscape as an integral part of the plan – had now been abandoned.”*⁷³

The making of the plan of Islamabad and, more specifically, the formation of its architectural space, in many ways, seems like a resurrection project of the architectural space of ancient Greece, as understood by Doxiadis, towards the resurrection of a “universal Human Style” architecture: the space where nature and the city are integrated in order to enhance the citizen's sense of well-being.⁷⁴ However, his discourse represents a more simplistic and reductionist view at times, whereas his plan resolves many inherent contradictions that seem to obscure the conviction of this resurrection.

In the project of Islamabad, Doxiadis chooses “nature” as the very foundation and assigns it a complementary role with the city/urbanity, in the making of the plan, thereby causing the de-generation of the city, but in turn breaks down the classical notion of urbanity.

The urban form proposed in the plan of Islamabad strikes at the rural-urban continuum, the ever growing sprawl and shapelessness of the contemporary urban organization at large; the urban form which is structured by the soft element of nature – “the heterotopic rural landscape” and the hard element of network – “the wall, later turned ring, of the historic city.” The urban form with its intention of bringing back nature into the city and the concepts of “hybridity” (a synthesis of extrovert-introvert, dynamic-static, ordinary-extraordinary, hybrid green as a “green wall,” etc.), “duality” (linear and grid, formal and informal grids, capital and the city, etc.) and proposes a new dimension of aesthetics destined to deal with the scale of the region.

The plan displays a dual pattern in the form of linearity and the grid – the concept of Dynapolis and human community; growth in a linear direction with the aggregation of a static sector and the dynamics of the grid over the contoured site. Doxiadis tried to make a synthesis of political stability and dynamic urban growth. The political stability is a prerequisite for the implementation of Doxiadis' plan because of its autocratic nature; the linear incremental/aggregate growth of the city by the addition of sectors in a predetermined direction requires a strong political authority to clear the villages in the way, avoiding any room for public opinion rather giving supremacy to the rational order and the technical opinion of the planner over the local tradition and the will of the masses; whereas, the dynamic urban growth is translated in the form of a dynapolis, i.e. the city and its centre both grow in the same direction in space and time. The plan of Islamabad is in confrontation with the model of Brasilia, in adherence to the Chandigarh model, and marks its point of departure by dealing with the scale of the region – a plan of the regional city; dispersal of the city into a region of satellites.

The plan of Islamabad is a quasi-democratic plan (flexibility as to the content of the sector – structure and infill) with an authoritarian control (the way the grid is guiding the growth of the city) – showing the intention to facilitate democracy and pluralism in the workings of the national government. The huge size of the grid, articulation of the Capitol area (Modern State) originating an ever widening CBD and the city shows that the power is expressed through a belief in the dynamic urban growth with centralized authority of technological and administrative rationality. The various elements of the nation-state; leadership, administration, wealth, military command, political legitimacy, symbolism are no longer synonymous, but are separated and dispersed throughout the various buildings of the capital city. Buildings housing parliament, their staff, ministries, and other state bureaucratic agencies now stand alongside the presidential palace as centres and symbols of national power in the administrative complex/capitol. The representation of the modern

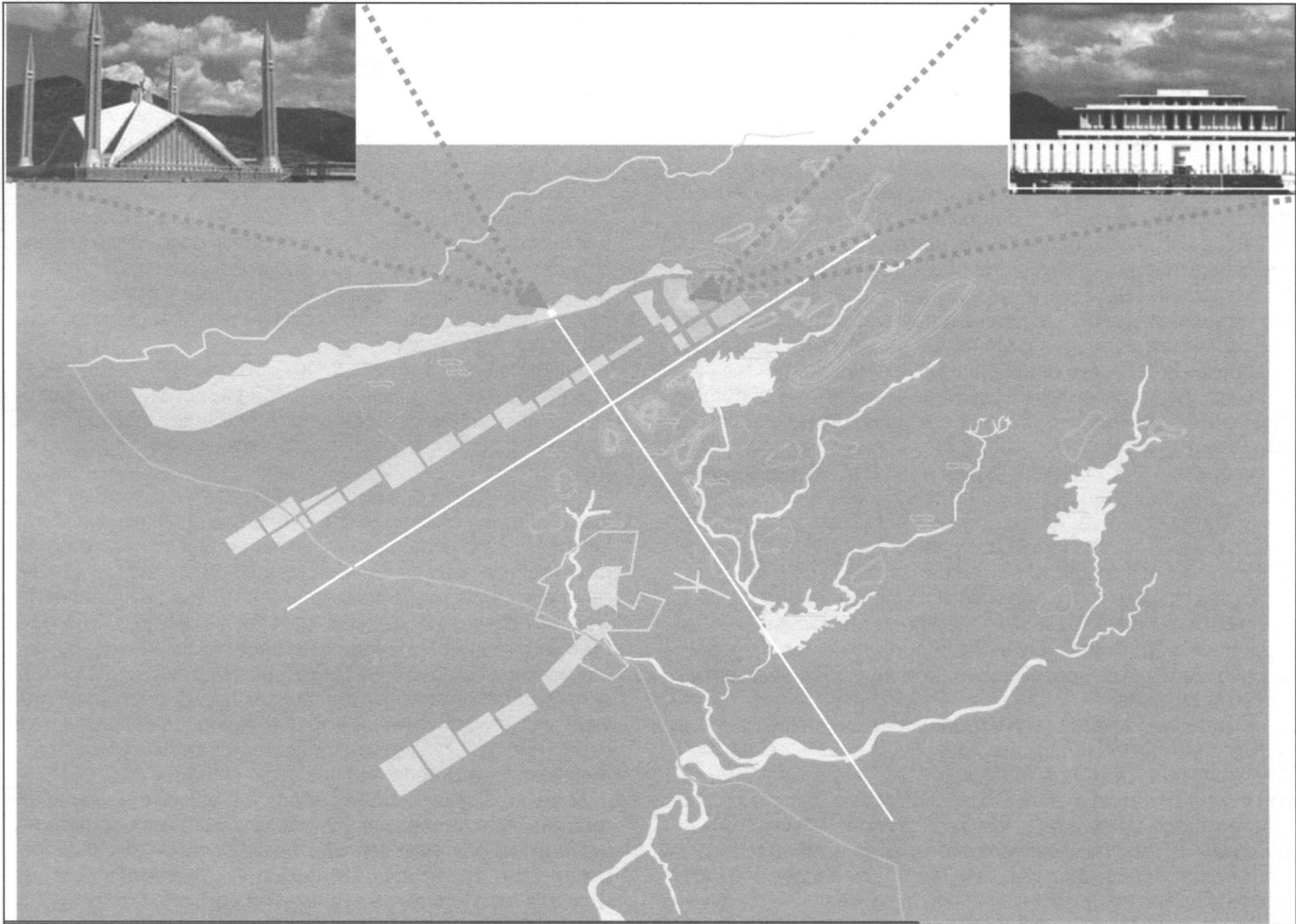


Fig. 19: Islamabad – Location of the “Grand Mosque” and the “Capitol” on the two major axes.

nation state with its apparatus in the form of an administrative complex at the tip of the East-West axis, and the location of grand mosque as a symbolic representation of the religion at the tip of the North-South axis (figs. 19 and 20), translates the ideological duality of the state in the plan.

Conclusion

The theory and practice of Doxiadis attempts to mimic the figure of “Hippodamos,” according to Aristotle – a man able to comprehend the experience of his era and express it in the cities he designed (DOXIADIS, 1968, p. 14). The conception of the four-dimensional city (Dynapolis) and the construction of it with an “extrovert” synthesis of architecture is the outcome of Doxiadis’ comprehension of his era that he attributes to his analysis of the urban organization from antiquity to the present. His analysis are based on a plagiarized interpretation of the structure and function of cities, of their spatial configurations and activities and how and why they came to be what they are. The interpretation has universal applications, both in time and space. It embraces the thinly distributed and static cities of archaic eras, the thick profusion of super-sized and growing cities of the modern age, and the ultimate city of the future – the Ecumenopolis.⁷⁵

The core of Doxiadis’ theory dwells in a global *dystopia* – an urban hell, which was based on the rapid population growth, socialization, mechanization of transport, industrialization and modern technology, urbanization and economic development. Ekistics’ heaven is the co-existence of all these forces in the form

of the city of the future, rationally organized; it affords every individual and family the optimal setting for self-realization. “Dystopia and Eutopia are the malign and benign faces of his theory. Of Ekistics’ many percepts, this one is crucial: Cities can grow to indefinite size so long as that growth respects the human being, obedient to the Aristotelian tenet that the sole reason for a city’s existence is to satisfy man’s need for safety and happiness. Thus for all its colossal proportions, the city of the future, ekistically designed, will yield the humaneness and contentment of the ancient Greek settlements, an era when skies were clear, water pure, and the size of cities scaled to the pedestrian’s pace, a leisured tempo permitting one to cultivate the arts and mind, with unhurried time for family and friends.”⁷⁶

The problem is not the analysis of Doxiadis rather, the visual displays of historical facts, however, were clearer than the conclusions they led to.⁷⁷ The problematic part is his convictions and prophecies. For example, his conviction of squaring the circle, echoing the Dutch painter Piet Mondrian, that, “*What we shall look forward to is the construction of large buildings and colossal parts of our cities on the basis of the repetition of the horizontal and the vertical.*”⁷⁸ Similarly his prophetic tone regarding the evolution of architecture as, “*I have learned to be able to visit not only other areas but other times as well. I have been able to turn back the clock of my mind 3,000 years in the swamps of Iraq, thousands of years in the delta of Bengal, many thousands of years with the Nomads of the desert, and centuries with the settlers of Australia and America. I have been enabled to see how people live and to understand their problems. I have*



Fig. 20: Satellite image of the developed part of Islamabad, 1999.

*thus learned to see the evolution of architecture.*⁷⁹ What annoys most people is that Doxiadis, in his spell binding of potential supporters, does not give credit to the ideas of pioneers in the field and cite examples of their work as precedents for his own.⁸⁰ This is also one of the reasons that have obscured the original contribution of Doxiadis to our field.

The analysis of the two projects (Punjab University and Islamabad) attempts to show the (re)invention of an architectural typology based on what Doxiadis calls an “extrovert” synthesis, which is capable of expansion while preserving the human scale, adaptable to a range of programmes and contexts, flexible in articulation and guarantees cohesion and homogeneity of form. The example of the successful implementation of such a typology is the “academic complex” of Punjab university, whereas Islamabad offers us its application at the scale of the city or rather a region in the form of the CBD. The academic complex is a horizontal multi-courtyard plan allowing for future programmatic changes while evoking Pakistani vernacular architecture; whereas the articulation of CBD typology offers us an opening to urbanism and its large scale and multi-speed movement, programmatic complexity, giving space to the active unfolding of urban life without losing order, and to landscape and its surface and temporal qualities.⁸¹

The extrovert synthesis articulates the building as a flexible framework rather than a rigid container. The building type introduced by Doxiadis in an “academic complex” and the “CBD” area is low-rise and high density, homogenous in its layout; it consists of a systematic repetition of simple elements such as

columns in colonnades/arcades, modular rooms, Jalis/screens, and restores the relationship with ground by providing a dense mesh of courts, etc. The repetition provides the framework, both conceptual and spatial, for different possibilities of inhabitation. Framework replaces form and inhabitation replaces function as the guiding concepts of this 1960s rift within high modernism.⁸²

I do not want to imply that the genesis of this typological innovation was happening in isolation only in the works of Doxiadis. The predecessors whose work led to the emergence of this typology, just to name a few, were Bernard Pite (English Mission Hospital, 1893-1896), Le Corbusier (University city for students, project 1925, “Fort L’Empereur” project Algiers, 1931-1934, the extendible museum, 1939 and La Sainte-Baume, 1948), Louis Kahn (Philadelphia, proposal for change within existing urban structure, 1956), J. Bakema (Lijn ban, Rotterdam, 1956), Aldo Van Eyck (Children’s Home in Amsterdam, 1957-1960), etc. There were also contemporary architects with Doxiadis as well, such as Kenzo Tange (Tokyo Bay Plan, 1960), A. Isozaki (Spatial Structure, 1960), Piet Blom (Noah’s Ark project for the urbanization of the Netherlands), etc. who were working with the same typology.

The extrovert synthesis was developed throughout the 1960s by several other architects such as Candilis-Josic-Woods (Toulouse-le-Mirail, 1961-1974, Frankfurt/M urban renewal project and the free university Berlin, 1963-1973) and crystallized by Le Corbusier’s project of Venice Hospital of 1964 and reached its prominence in the works of H. Hertzberger in the 1970s, where it was re-formulated as “Poly-Valent form.” In

1974, it was re-introduced as “field typology/urbanism” by Alison Smithson, though, largely accrediting it to the works of Candilis-Josic-Woods but an interesting historical link that she provided was that of the example/illustration of “Fatehpur Sikri” as probably being the earliest predecessor, which is the same example that Doxiadis also analyses along with several other examples from the region for developing his extrovert synthesis.

The debate identified by Alison Smithson’s article of 1974 and Le Corbusier’s Venice Hospital project relies on the crisis brought in by Team-X to the mainstream modernists’ practice in the form of “Mat or Field Urban Typology” by attempting to assimilate the North African and Arab vernacular on one side, and the other trying to enrich architectural conception with the problematic combination of structure and infrastructure with an increasing programmatic complexity of larger projects. Doxiadis presents us with a parallel track, somewhat advanced but at the same time problematic; he gives mat a much older/historical precedence (Mohenjo Daro, Taxila and Fatehpur Sikri) and ingenuity, but also practically demonstrates the ability of the typology to deal with the scale of a single project to that of the scale of the city. We find overlap and interlocking of various layers and scale levels in the plan of Islamabad (1959) that Christopher Alexander was strongly advocating for (in 1966), which advances Doxiadis’ project way ahead of its time well into the future but at the same time losing the opportunity to become a canonical reference. In the plan of Islamabad, at one level there is overlapping of elements like nature/landscape and infrastructure by integrating the formal grid (2x2 infrastructure) and the eco-grid (ravines-organic structure), but within this process of articulating the structure of the city, he develops voids that are carved out of this nature-infrastructure overlapping. These voids are charged with the programme of the “Human Community” which includes housing/residential, schools, market, civic and other amenities, etc. These voids are the discontinuous spatial elements of the plan, “A place for rest in a restless city ... An Oasis with a Metropolis.”⁸³ In other words, the plan of Islamabad offers a spatial pattern of discontinuous continuity.

The extrovert synthesis of architectural form or field typology was not only instrumental in translating the agenda of 1950s-1960s urbanism but also helped Doxiadis to crystallize his own thoughts enabling him to further develop its vocabulary and grammar through his practice/projects. Besides accommodating “structuralism” in architecture and urban planning, it is the only element out of Doxiadis’ legacy, which is considerably original/genuine contribution that has stood the test of time and proved itself valid. It has found its revival in the contemporary discourse and is recently being resurrected as “Mat Building revival” or “Mat” typology/Urbanism, supported by documenting and illustrating the use of it in even contemporary projects because of its numerous qualities of flexibility, universal applicability, adaptability and also pointing towards its enormous unlocked/untapped potential for the future.⁸⁴

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 7. *Ibid.*, p. 2.
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 9. *Ibid.*, p. 1.
 10. *Ibid.*, p. 2.
 11. *Ibid.*, p. 4.
 12. *Ibid.*, p. 4.
 13. *Ibid.*, p. 4.
 14. *Ibid.*, p. 3.
 15. *Ibid.*, p. 4.
 16. *Ibid.*, p. 5.
 17. *Ibid.*, p. 5.
 18. *Ibid.*, p. 5.
 19. In the words of Doxiadis, “A broader consideration of the urban pattern of Lahore, its zoning, and trends of growth indicates the suitability of the location of the site and opens up the possibilities of its successful integration into the developing city. Its grounds cover an area of 800 acres which are to accommodate the new complex of the university town. The contemplated road system in the area and the dynamics of growth in Lahore will eventually make the site accessible from all parts of the city, by public or university transport.” (DA - Doxiadis Associates, *The University of the Panjab*, Bulletin No. 56, July 1963, Athens, Greece, p. 1).
 20. The understanding of local architecture culture from the scale of the region to the city is described by Doxiadis as, “The path to the understanding of the Punjab and its culture winds through the remote passes of the Khyber and the wilderness of Hindukush and continues along the existing ancient road (G.T. Road on which Lahore is located), bisecting the whole of the subcontinent and linking this country with Iran and the rest of the world. Along this road one still sees the remains of fortresses, caravan-serais and inns lying at distances of one day’s riding on horseback. Following this road, one notices a progressive transition in the architectural morphology. To the eyes of the modern architect this morphologic transition starts from the warlike austerity of the Khyber fortresses, changes to a more peaceful rural character in the plains, and finally evolves into the composite and intellectual architecture of Lahore. This is the road to true understanding. At the cross-roads of Central and Western Asia, the Punjab is one of the oldest cradles of culture. Having absorbed belligerent invasions and cultural infiltrations, it finally established itself into a highly refined and culturally radiant centre for the whole country.” (DA - Doxiadis Associates, *The University of the Panjab*, Bulletin No. 56, July 1963, Athens, Greece, p. 1).
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64. Doxiadis Associates, *Islamabad – The New Capital of Pakistan*, Bulletin No. 64 (Athens, Greece, March 1964).
65. *Ibid.*
66. C.A. Doxiadis, *Architectural Space in Ancient Greece* (Jaqueline Tyrwhitt, ed.), (MIT Press, 1972), p. 23.
67. Sigfried Giedion, in *Architecture and the Phenomena of Transition* (Cambridge, MA, Harvard University Press, 1971), p. 9 (quoting A. von Gerkhan in a review of Doxiadis' thesis, in *Gnomon*, 14 (1938), pp. 589-634).
68. This ratio is also something not to be found in Doxiadis' discourse, but it can be precisely measured in the plan.
69. C.A. Doxiadis, *The Scale of the City* (Islamabad, Pakistan, C.D.A. Library, 1962), pp. 19-20.
70. C.A. Doxiadis, *Architectural Space in Ancient Greece* (Jaqueline Tyrwhitt, ed.), (MIT Press, 1972), p. 5.
71. *Ibid.*, pp. 8 and 72.
72. *Ibid.*, pp. 20-21.
73. *Ibid.*, p. 76.
74. *Ibid.*, p. 22.
75. Louis Winnick, "The Athens Center of Ekistics: The Urban World According to Doxiadis," *FF Urban History* – Chapter VII, Part 3 (May 1989) – FF Archives, pp. 38.
76. *Ibid.*, pp. 38-39.
77. *Ibid.*, pp. 44-45.
78. C.A. Doxiadis, "Architecture in Evolution," Annual Discourse at the Royal Institute of British Architects, London, March 10, 1960. (Reprinted from the *R.I.B.A. Journal*, September, October, 1960, p. 20).
79. *Ibid.*, p. 23.
80. Ezra Ehrenkrantz and Ogden Tanner, "The Remarkable Dr. Doxiadis," abstracted from *Architectural Forum*, vol. 114, no. 5 (May 1961), pp. 112-116, 154 B.
81. Hashim Sarkis, *Case: Le Corbusier's Venice Hospital and the Mat Building Revival* (Munich, Prestel Publications, 2002), p. 14.
82. *Ibid.*, p. 14.
83. Quoting Aldo Van Eyck in Smithson, Team 10 Meetings, 89, p. 78.
84. Hashim Sarkis, *Case: Le Corbusier's Venice Hospital and the Mat Building Revival* (Munich, Prestel Publications, 2002), p. 16.