

Pedagogy for Design Ideation in Architecture through Authoritative Elements

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Abstract The pedagogy for Theory of Architecture in many Schools of Architecture is primarily oriented towards lecture-centric classes, even in cases of engaging the student with exploratory physical models and supplementary hands-on activities. There is a clear demarcation between the realm of theory classes and the design studio. The main onus of theory classes in architecture is to support and facilitate the design process in the design studio. In reality, this is seldom true. This research aims at pedagogy that familiarizes learners with the process of design with a specific focus on design ideation, thereby bridging the knowledge transfer gap between lecture halls and design studios. This article explores a pedagogical model that layers the crucial elements that lend authenticity to design, derived from an exercise for students of architecture, executed over a webinar. The authoritative elements explored have been acquired from architectural theories. The subsequent model can be used effectively in courses at universities pertaining to Theories in / of Architecture. Consequently, this model will pragmatically support and complement the design process in the design studio of a practicing architect as well. The objectives of the study are to investigate exploratory pedagogical models in architectural education in order to improve theoretical and creative cognition as well explore concepts and ideas in taught modules that will ease the burden of seeking them out in design studios.

Keywords Theory of Architecture, Pedagogy, Model, Authoritative Elements

1. Introduction

Theory of Architecture discusses the vast discipline of Architecture and postulates its chief concepts to a student of architecture. It breaks down the factors and principles that govern architecture [1] and is, in its essence the unraveling of design. It helps learners analyze and make informed decisions during the design process. It aids them in arriving at their own conclusions and preferences with respect to the manner of working of architectural spatial and structural systems. It is an invaluable course to the students of pursuing a degree in Architecture who find themselves more often than not, grappling with an abstract sense of aesthetics. Similar to other lecture oriented classes that comprise the coursework for the discipline of Architecture, Theory of Architecture is formulated to supplement design knowledge. It is purposed to explore concepts and thoughts, in order that the burden of concept exploration in the design studio is lifted and the design studio focuses more on the process and product of design, rather than devotes time and resources in the initial stage of ideation or concept generation. While learners acquire design knowledge over the course of their academic program through the mode of theoretic discourses in Architectural Theory, they still grapple with the process of design in the studio, more so in the initial years of the undergraduate study. One plausible explanation for this disconnect is the fact that theory classes do not discuss history / culture / heritage in architecture in the same vein as the physical principles that shape aesthetics in Architecture such as scale, proportion, balance, etc.

Unfortunately, due to various factors, most institutions do not have a system of seamless transition of design knowledge from lecture halls to design studios [2]. In part, this disassociation (Figure 1) is due to the fact that Theory of Architecture classes deals with course content in a generic manner, merely elucidating on physical elements that generate aesthetic spaces and volumes, offering no

bridge to transition this content the design studio. Physical elements are vehicles for the manifestation of Modifying Elements and Authoritative Elements (Figure 2) but do not complete architecture. Some examples of these physical elements are hierarchy, symmetry, balance and other spatial organizational principles.

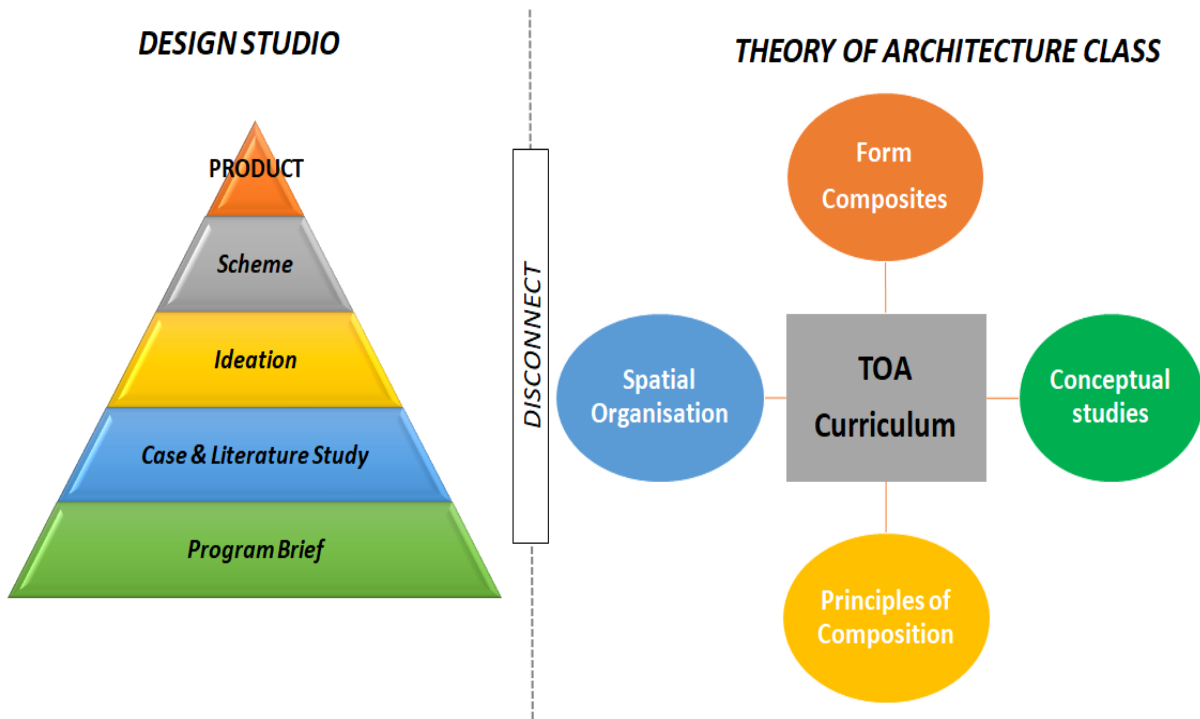


Figure 1. Work flow in Design studios and Theory of Architecture lectures (Source: authors). The disconnect between the design studios and theory of architecture class is represented as two independent courses with differing systems of work flow.

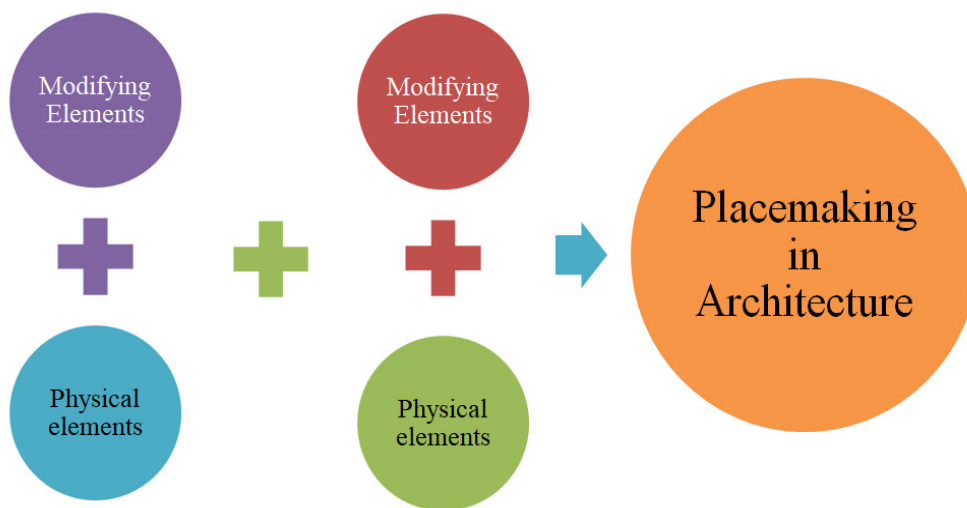


Figure 2. Elements that contribute to Place-making (Source: authors). Physical elements need to coalesce with Authoritative Elements and Modifying Elements to enable Placemaking.

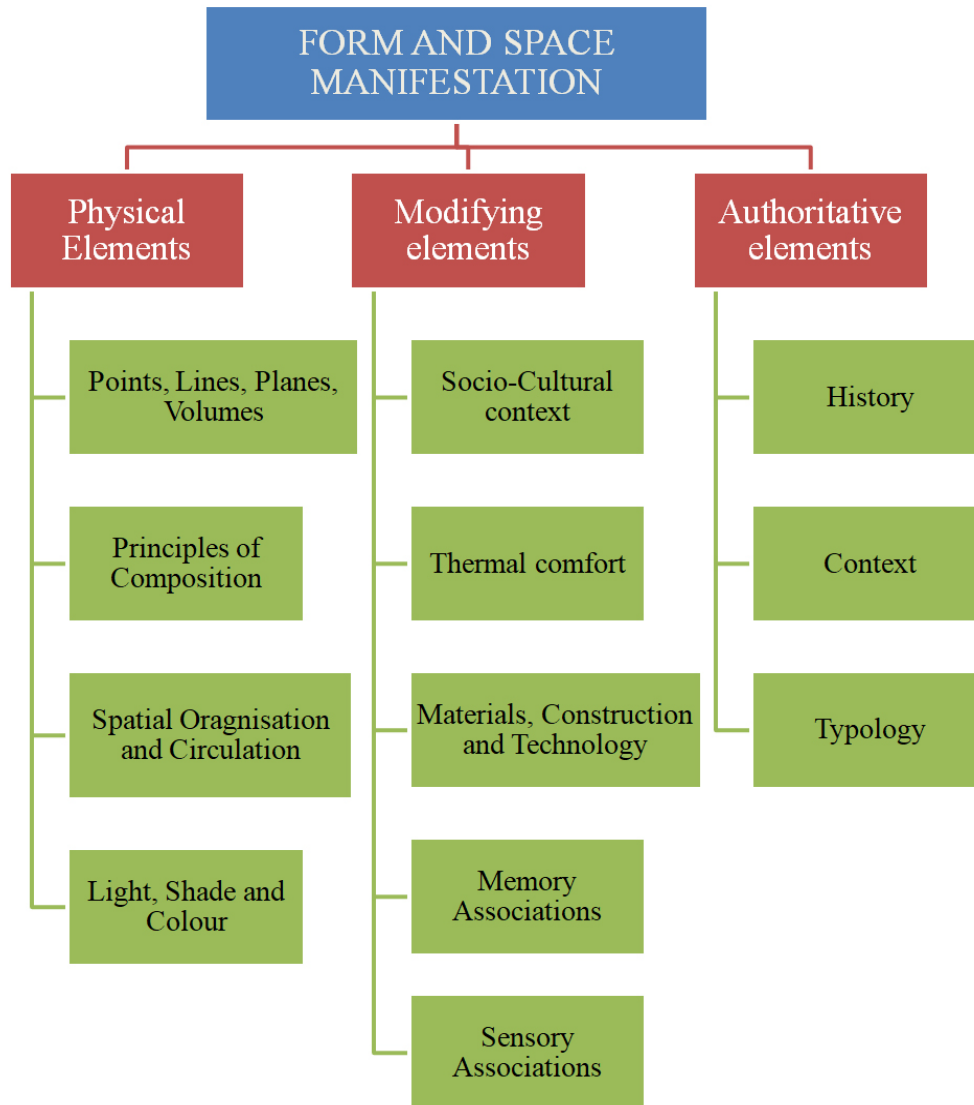


Figure 3. Classification of elements that influence design (Source: authors). Physical Elements constitute the tangible and quantifiable elements, Modifying Elements constitute the elements that are specific to each user and / or individual and the Authoritative Elements relate to the physical / cultural aspects of the program.

To combat this chasm, a model for ideation using elements of architecture which root design to a particular people and place in time is derived as the result of this research. These elements are drawn from architectural theories that can be layered to facilitate design generation through layering of Authoritative Elements of architecture in a linear process to arrive at an open ended point of design conception. This article is in continuation to the researchers' study of the comprehensive elements that constitute architecture. The researchers have previously established the importance of Authoritative Elements on design [3] [4]. The model put forth in this article intends to utilize the outcome of the study to establish the role of Authoritative Elements in design and place-making, and to derive a suitable model for ideation using the Authoritative Elements. The image above (Figure 3) lists the different elements of architecture.

2. Literature Review

Since all of architecture concerns itself with place-making and providing meaning to places [5][6], creating places that users resonate with is not a task that is specific to the design studio. Considering that this endeavor is the whole purpose of architecture, place-making as a primary concept generator has to be introduced in theory classes as well. In the pursuit of this endeavor, Authoritative Elements are the first layer of influencers of place creation, as those that lend authority to design and cause it to exist. The elements that author design may be classified so as to encompass aspects of heritage such as History and Context and aspects of functionality and organization through Typology.

History of a place serves as a point of design inspiration by aiding architects to make choices from the layers of previous eras through active interaction with physical

patterns / socio-cultural patterns. These form the first layer of ideation generation. Learners are exposed to the choice of improving / improvising on existing patterns or the choice of rejecting the past precedents for a justifiable cause by seeking to plan and design afresh.

Typology is derived from the word Type and is similar in meaning with prototype and archetype. An understanding of a type of building or complex helps in our cognition and internalization of the layout of forms. It informs the user about the generic scheme of arrangement and is invaluable to a novice who is attempting their design at that 'type'. It helps to make sense of buildings and is a vital point of design generation. This fact is established by the author's research that the study and understanding of typology help a student of design maintain focus on the elemental framework of the program.

"Context has authority by virtue of its precedence over anything newly conceived that is desired to be placed within it" [1]. Architecture is always experienced and perceived as part of a larger context and not in isolation. It is woven historically, physically, socio-culturally, geographically and visually to its immediate and broader context. "Every architectural work exists in the presence of a chorus of contexts that can impart meaning to and, in turn, derive meaning from their associations with the work" [5]. When an architect chooses to make his / her design respond to and engage with the context, it helps with extending the design narrative out of the boundaries of the site, connecting the project physically as well as intangibly / ephemerally in a cultural and social manner that is relevant to the context.

3. Methodology

A comprehensive study of literature was undertaken to consolidate the primary elements of architecture that root and authenticate design. These elements were consolidated as Authoritative Elements and their impact on the creation of Architecture was established through a detailed survey questionnaire. Consequently, a model was developed to utilize these elements as ideation stimulators in theory classes, which would add value to the studios through the internalization of knowledge gained. The intent was to ideate design for the present while acknowledging the role of heritage in and around the site.

An exercise was framed for the Theory of Architecture webinar, in which undergraduate Architecture students participated. The exercise was consolidated after review of several learning theories [7]. The webinar was interactive in nature and saw the participation of 41 students from the first and second year from two premier Schools of Architecture in Chennai, India. The exercise was structured through a series of modules spread over the course of 6 hours including breaks, to approach design in an objective manner through layering [8]. Abstraction through sketches and physical models were the intended modes of

exploration for each module as they would aid the student in spatial understanding [9]. Each module was sequenced through a process of defamiliarisation in a manner such that it would lay the foundation for the following module, which in turn would modify, refine and enrich the physical model. Each module corresponded to one of the authoritative elements so that the resultant idea / concept would be rooted in authority. The impetus was primarily on the linear process of design exploration as a concept generator or ideation stimulant and specifically open-ended in its outcome. The following were the specific objectives of the interactive webinar.

1. To develop critical inquiry regarding external factors that influence form and space – History, typology and context.
2. To consciously use the authoritative elements to generate the framework for the form.
3. To draw from knowledge internalized through coursework at university.
4. To possess awareness of layering individual elements of Authority to add enrichment and detail to form.
5. To understand the complex interaction of factors in the creation of 'places'.
6. To use the technique of defamiliarisation to differentiate between seeing a regular phenomenon and a fresh perception of the same as a result of organic / lateral approach rather than linear / frontal approach to the program.
7. To explore abstraction as a tool to give form / manifestation to ideation.

4. Analysis and Discussions

The exercise was framed to conceptualize a residence in Besant Nagar, which is a neighborhood adjacent to Elliot's Beach in Chennai, India. Within the bustling city of Chennai, Besant Nagar is one of the key areas with Colonial history. It is also one of the planned neighborhoods developed by the Tamil Nadu Housing Board. Physically, in terms of context, it is an area of upscale prime real estate owing to planned layouts with broad roads flanked by broad evergreen avenue trees. Proximity to the beach adds to its residential appeal. It also serves as a vibrant cultural hub that is extremely popular with the youth in Chennai as a familiar hangout spot and the road that runs parallel to the beach is a testament of this, in terms of being lined with eateries, street vendors selling fancy ornaments, and high end retail shops. At the end of this road is a famous Roman Catholic Church that overflows into the road with congregation and visitors on feast days, festivals and even regular mass. The long stretch of beach is an attraction in itself. It is perpetually crowded in the evenings with every category of the city's demographic – families with children and the aged, young couples, youth groups gathering for a meet-up or a game of beach football, other fitness enthusiasts and a fair share of

solitary thinkers. The beach is plentifully sprinkled with food vendors with their pushcarts, fortune tellers, youth offering horse rides on the shore, temporary stalls selling cheap toys, beach toys, local snacks and fresh sea food. 'Bessie beach' is an experience in and of itself in Chennai.

The concept was to be derived through a process of Defamiliarisation, in which, the typology of residence and the precise site location were revealed in subsequent stages of design ideation. The process was set in three stages and new information regarding the brief was revealed in each stage. The intent behind the exercise was that it would be possible to explore design conception by superimposing and layering each of the authoritative elements over each other. The sequence of ordering and layering the elements corresponded to the degree of importance and impact of each of the Authoritative elements on architectural design. This was established in prior research by the authors. On a scale of 1-10, History ranks the highest with a factor of 9.4 as the strongest author of design, followed by Typology (spatial and organizational precedence) with a factor of 7.8 and consequently context with a factor of 6.8.

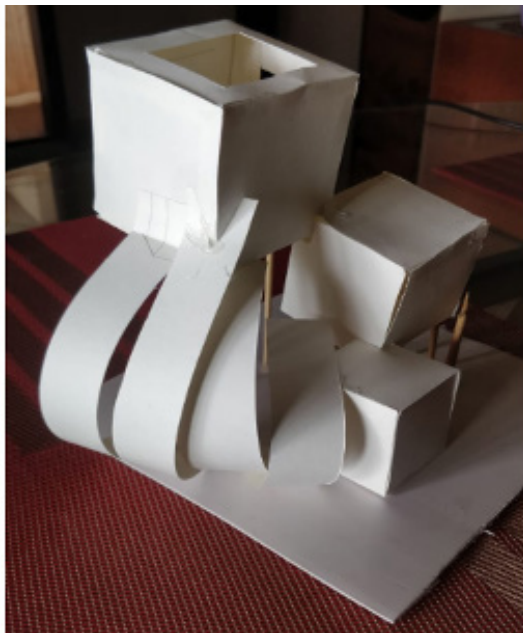


Figure 4. Abstract model responding to the history of Besant Nagar as uploaded by the participant (Source: authors). The model was uploaded in the webinar by a participant of the online class. The model expresses historic attributes in an abstract manner.

In the first stage the students were briefed that the site location for the exercise was situated in Besant Nagar. Students were asked to list 3 words that would be brought to mind when recalling the history and heritage of Besant Nagar. They were then tasked with the creation of a physical model that would best describe the three words listed. Consequently they were asked to keep the model easy to dismantle. After the exercise was completed by the students, the models were reviewed. It was demonstrated (Figure 4) that the physical models have no apparent typology being purely abstract and tied strongly to the three words of history as chosen by each student. For example, the figure shows the abstract model responding to the words Fluidity (waves) and Hierarchy (a melting pot where the street vendors share territory with the affluent).

After a short break following the creation of the first model, the webinar resumed with a brief discussion and lecture on the typology of residence, since the participants were in the early years of the course. At this stage it was made known that they were to design a residence for their respective families. Residence was chosen as the program for design because it is most personal to the designer and most reflective of one's lifestyle and worldview. It would also be a typology that would be very easy for the students to relate to. The students were expected to merge the abstract model from the previous activity that resulted as a response to historic attributes with the typology. The participants worked back and forth between sectional sketches, conceptual diagrams of the plan and remodeling the abstract. As the stage ended, the transition was reviewed. The focus of the feedback in the review was on the successful superimposition of the residential typology on a heritage / cultural base and did not consider structural, technological or zoning law feasibility, as this was not the objective of the exercise (the purpose of taught modules being exploration of processes rather than conclusion of a product). At this point in the exercise they had a conceptual idea that was taking form, though still very much in the hypothetical realm. The prototype of residence, builds on the historic attribute "Deconstructed Landmarks" (Figure 5).

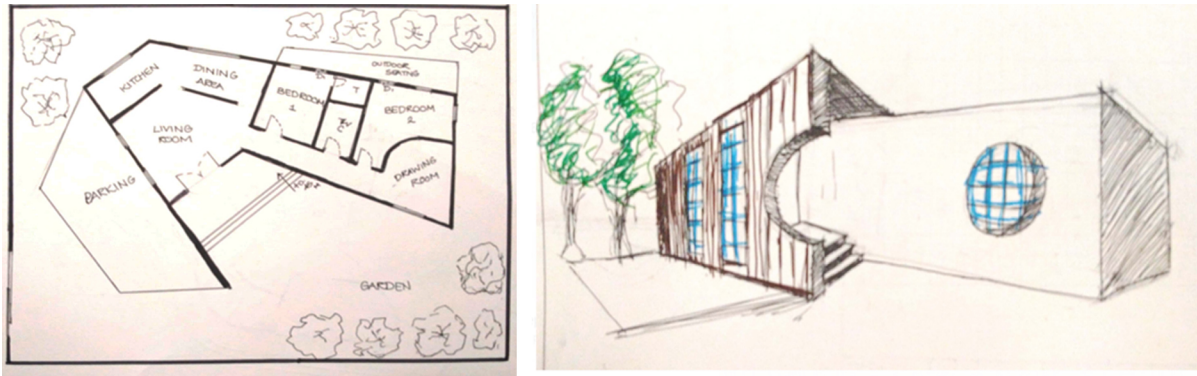


Figure 5. Layering Typology over History as uploaded by the participant (Source: authors). The process of transforming an abstract model inspired by historic attributes (deconstructed landmarks) to a habitable residence is depicted in the figure. The understanding and application of the typology of residence is key in this stage.

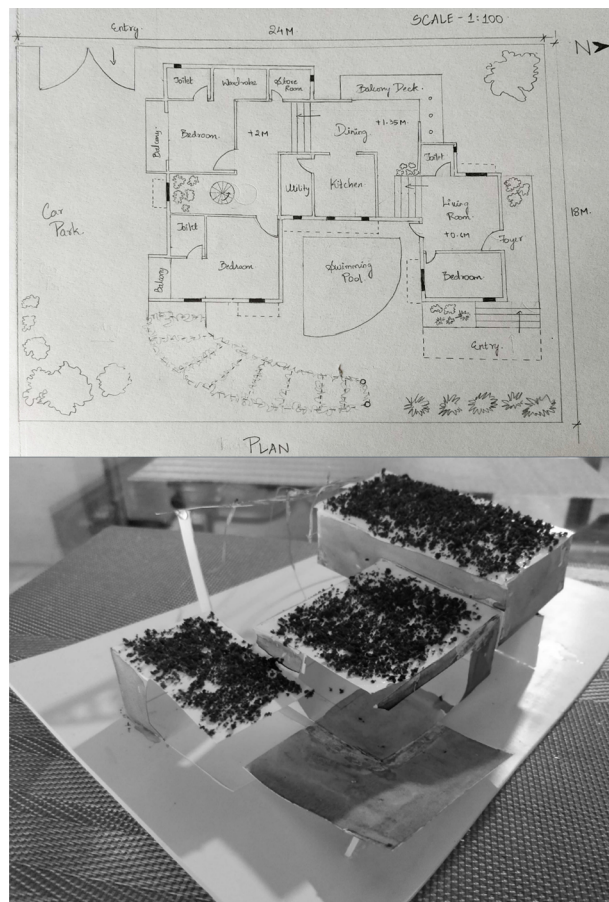
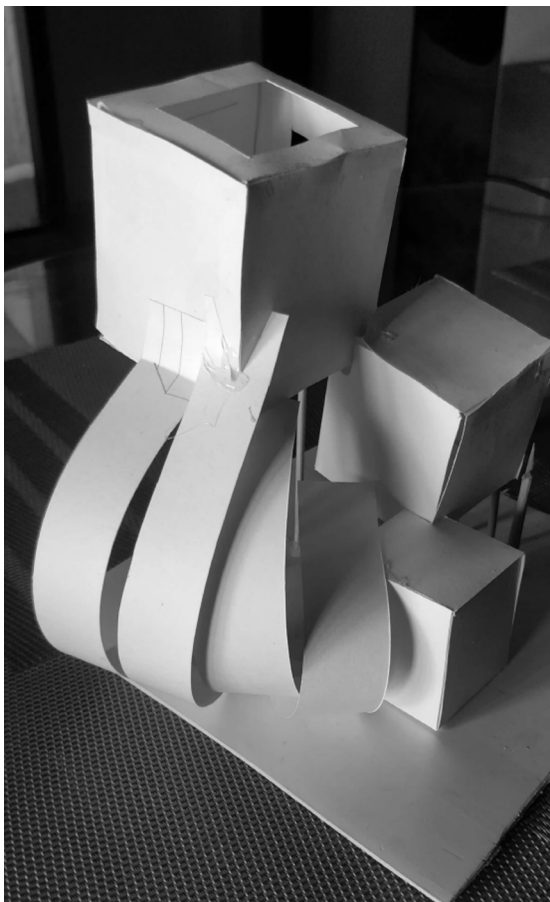


Figure 6. Process of design in response to the authoritative elements as uploaded by the participants (Source: authors). The figure details the process of transformation of the design during the design process.

The subsequent layer of superimposition was Context and the precise location for the program was shared with the students. The site was identified on the road parallel to the shoreline, with a view towards the beach. The students were further asked to modify their model from stage 2 to accommodate the specific site context. At this stage it was interesting to note that many modifications occurred in the envelope of the buildings, which turned themselves outwards to embrace the neighborhood and sea, engaging

with the physical and cultural context. It was a response to the context in a manner that would stimulate the senses to result in architecture of vision, hearing and smell [10]. The concept of leveled terrace gardens overlooking the beach illustrates this observation (Figure 6). The feedback included a review of the journey of the design process that had concluded in a detailed, enriched and experimental form within a span of 6 hours.

The design process is a breakthrough, especially when

one considers that the process is responsive to the heritage (micro/macro context, physical/cultural history) while also responding with clarity to the brief at hand. Any experience as faculty in a design studio would equip one with the knowledge that it is not possible to achieve the degree of response and detail for a program, albeit simple, as was achieved in the webinar, when students are introduced to the brief in a traditional manner in a design studio. This is because the stimulant / generator of design ideation is time consuming as students grapple and wrestle with many directions that suggest themselves as concept generators. The webinar suggests a pedagogical model for design ideation providing a clear linear path by layering elements of authority. While the path of exploration is linear, it is unconventional in its essence. It takes the learner through the process of defamiliarisation, as laid out by Andrea Simitch and Val Warke in *The Language of Architecture* [5]. The 'routinely seen' transforms into the 'freshly perceived' which consequently aids the design sensibilities of the student. At the end of the design process is a concept that is intense, thoughtful and poetic in its existence and engagement with the context at hand, designer and audience, thereby fulfilling architecture's responsibility towards authoring a 'place'.

The design process is encapsulated through a model (Figure 7) that can be used effectively in theory classes in the course of architecture to creatively analyze programs and the manner of generic response to history, typology

and context, arriving at an open-ended design solution that is rife with potential and possibility. The figure elucidates the four stages of the design process. The first stage is one of investigation where the students assimilate the information pertaining to historicity of their site location. Assimilation and informal enquiry take place in a parallel manner at this stage. The next stage occurs as the first element of Authority is layered to commence the process of design, through abstraction of phenomenology. The investigative phase informs design at this point as the historic attributes are interpreted through an abstract model which is aesthetic in its composition. Thus the objective of the artistic phase is fulfilled. The students engage in critical inquiry in the third stage to successfully superimpose typology (the 'type' of residence in this case) over the layer of history. They evaluate the habitability and spatial organization of the model derived from the artistic phase, following which it is suitably adapted and modified to render it usable. The fourth and final stage is the perceptive phase where the context is layered over the model at hand. At this stage since the entire program is revealed, students are able to engage in formal enquiry with respect to their context. This enquiry enables the modification of form so that the form and layout of the model now adequately manifest the impact and influence of context. The final model is a testimony of a comprehensive design process that merges the aesthetics of form with the richness of its heritage, while retaining functionality.

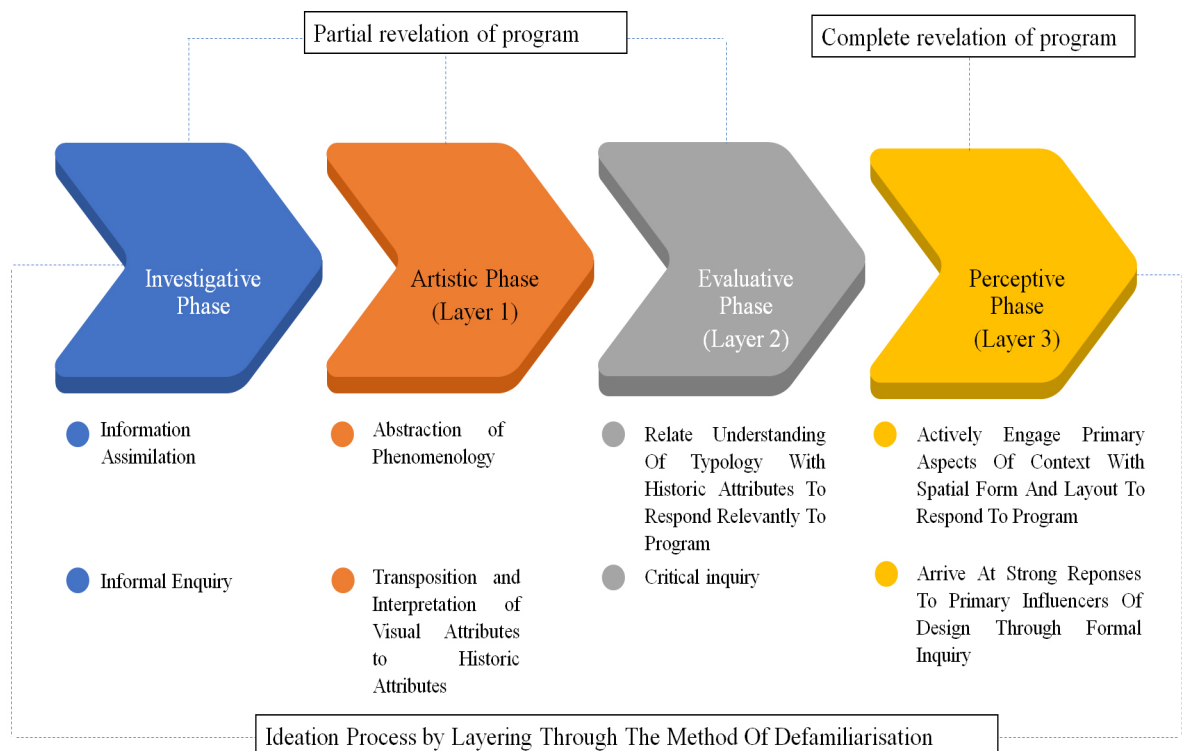


Figure 7. Ideation model through layering of Authoritative Elements as proposed by the researchers (Source: authors). The process of design ideation by defamiliarisation of the program has been illustrated.

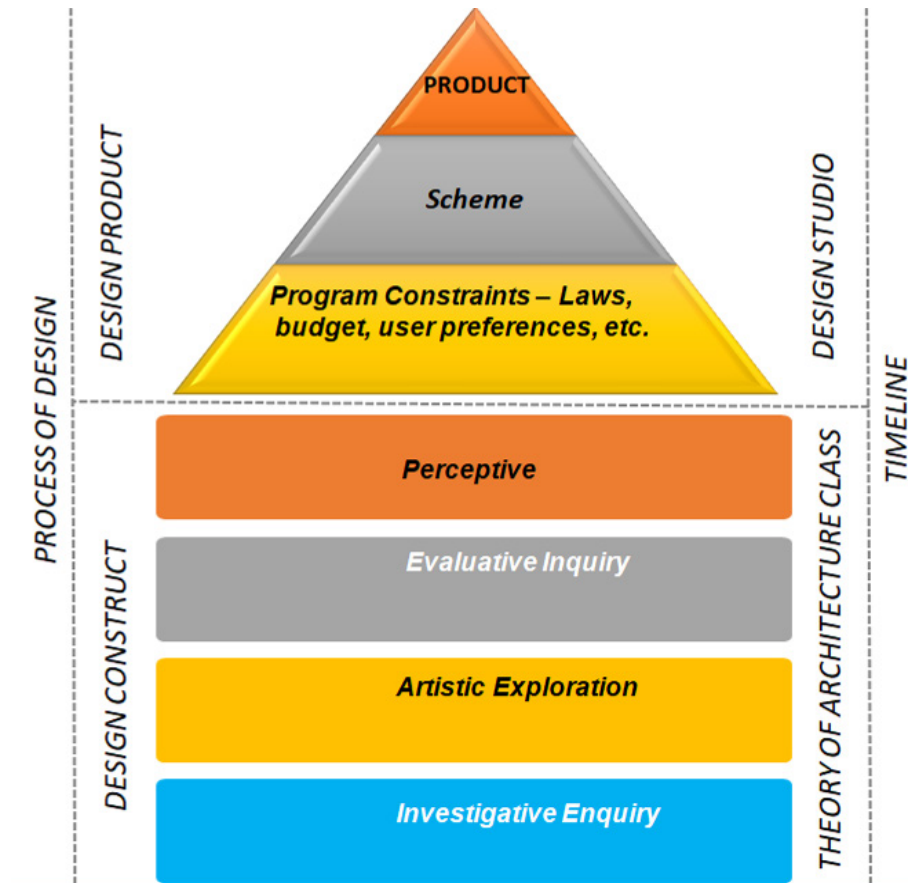


Figure 8. Illustration of seamless transition between Theory of Architecture lectures and Design Studios as proposed by the researchers

5. Conclusions

The primary purpose of architecture concerns itself with Placemaking or creating a sense of place. This is an unsaid dictum that needs to convey itself beyond the walls of the design studio. It has to be emphasized constantly in theory classes so that theory classes are able to fulfill their role as aides to the design studio by serving as exploration labs where many concepts are tried and tested. This in turn will ensure that design studios will free students to refine the concepts previously tried in theory classes and suitably respond to specific limitations of the design brief in order that their design may be deeply validated. Valuable time and resources of the design studio would be efficiently utilized if this model were adopted in taught modules. The seamless and organic spillover of architectural education with respect to the process of design from the lecture hall to the design studio has been illustrated in the diagram (Figure 8). It is noted that design is processed in streamlined phases – namely, Design Construct and Design Product. The stages of design construct have been elaborated in the text following Figure 7. This phase occurs within the course of taught modules. The brief may then be smoothly extended into the design studio where the next phase (Design Product) will carry on. At this point, the

students are already familiar with the brief and have explored ideas and concepts with ease and clarity. It is a remarkable contrast from the existing model expressed previously (Figure 1) where design studio and lecture classes are disconnected.

Besides establishing the dictum of architecture in theory classes, the manner of their delivery is vital. It is necessary to engage the learner with the application of theory [11] that they may be able to critically enquire and internalize the many tenets of architecture while creatively exploring the knowledge gained. The figure below (Figure 9) lists similarities and differences of learning outcomes [12] between the traditional lecture centric pedagogical model (characteristic outcomes for the same are listed in the figure below) and the learner centric exploratory pedagogical model through countless methods of delivery which rely on the innovation and inventiveness of the faculty concerned. Defamiliarisation through layering is the specific technique / method explored in this exercise. This process breaks the conditioned routine acceptance of a design brief and instead engages the learner with the brief in a non-conventional, non-linear manner. Additionally, it possesses the potential to serve as a beneficial model in the studios of practicing architects. Creative templates can be derived from this model to arrive at fresh and innovative solutions.

S.NO	PEDAGOGICAL STYLE LEARNING OUTCOMES	TRADITIONAL LECTURE CENTRIC STYLE	HANDS-ON CRITICAL EQUIRY / STUDENT CENTRIC STYLE
1	AESTHETIC COGNITION	*	*
2	INFORMATION GAIN	*	*
3	DEDUCTION	-	*
4	INTERNALISATION	-	*
5	SYNTHESIS OF INDUCTION AND DEDUCTION	-	*
6	ILLECTUAL AND INTUITIVE ENGAGEMENT	-	*
7	SOCIAL / ANTHROPOLOGICAL AWARENESS	-	*
8	CREATIVE EXPLORATION	*	*
9	EVALUATION & CONCEPT TESTING	-	*
10	INSTRUCTION VALIDATED BY EXPLORATION	-	*
11	IMPORTANCE ASSIGNED TO CRITICAL THINKING	-	*
12	THEORY APPLICATION IN DESIGN STUDIO	-	*
13	PEER INTERACTION ENCOURAGED	-	*

Figure 9. Comparison of learning outcomes between the traditional lecture centric pedagogy and learner centric proposed pedagogy.

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