CONCEPT DESIGN DEVELOPMENT

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1 CONCEPTUAL REALISATION

During studio discourses it is often seen how abstract thoughts evolve into tangible realities, however a sense of inquisitiveness prevails regarding the methodology adopted during the whole activity. This is subjective to the rational interpretation of the design process adopted to achieve the desired result. Being a teacher of design education certain queries have always aroused my curiosity. How to make Architecture? How and why it is made so? and what do we learn through designing?

Architects tend to generalize the approach towards realisation of built form in architecture as the spatial imprinting of human behaviour in a way that persist as a form while allowing for further and more developed interactions. This statement to an extend could create a broad view but divergent approaches by various architects have only lead to creating a state of complexity in terms of conveying a general way of approach when it comes to design in studios at schools.

In order to prepare students to co relate with complex scenarios in their future professional interface, the teacher should have varied exposure to various pedagogical environments. The need of the time is in understanding and evolving appropriate approaches by considering the shift from conventional modes of transmission and transaction to refined modes. Conceptualization of the performative dimensions of architecture, while taking into account the linkages between theory and practice is quite a complex situation. Critical understanding of the importance of pedagogy and its integration within the design studio, leading to a comprehensive whole is a significant aspect to be properly evolved and nourished in the studio.

From Gaudi's suspended constructions to Le Corbusier five points of the new architecture, architects have sought to formulate new models that encapsulate and consolidate into one bold statement aspects of construction, occupation and context in

> the broadest sense –always with a view to immediate implementation. It is much harder for academics to come up with new models, just as it is difficult for an educational institute to be a laboratory for cultural experiments in the way that Andy Warhol's Factory was. Research and experimentation have to be based on real needs, a real drive, and real questions.
>
> Yet, the academization of architecture has become relentless, with more students prolonging their studies, more universities offering more and higher degree courses, and more practicing architects supplementing their income and status by teaching design. The next important question therefore is: how to teach? (1).

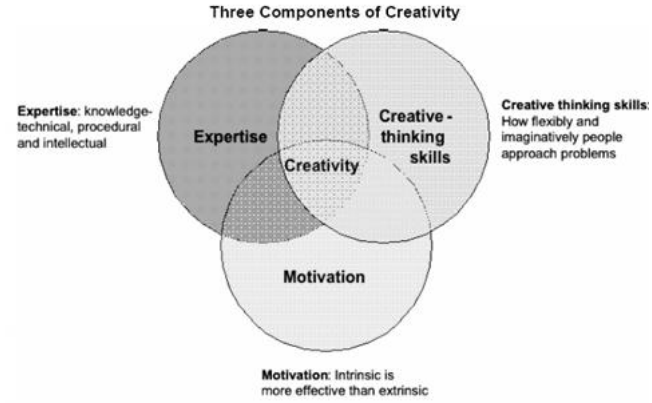
Teachers and students obviously have various anchoring notions while comprehending the realms of design development. However it is relevant at this point to be more conscious about what formulates the basis of their Habitat Design pursuits.

> Their experiences in the classroom, in the studio, interactions with fellow students and chance meeting with practicing architects begin to set an agenda. They begin to hear stories of architects; they see architects' houses and they walk into interesting studios. Slowly they take upon themselves the images seen through the mirrors of others. Some have heroes, some are silent and some are the heroes of their own lives. Gradually these students start drawing realistic pictures of themselves and embark on the journey of meaningful self discovery. This should be the most beautiful times of their lives (2 p. 65).

Intellectual Activity linked to creativity in design conceptual realisation which forms the basis of any design visualisation and later on physical realisation could be depicted as the confluence of the following three components.

- Knowledge: all the relevant understanding an individual brings to bear on a creative effort.
- Creative Thinking: relates to how people approach problems and depends on personality and thinking/working style.
- Motivation: is generally accepted as key to enhance intellectual; activity

Fig. 1 The Confluence of Intellectual Components



Source: Prof. Teresa Amabile, HBS

Its most often considered that the best profile for intellectual activity is the T - Shaped Mind, with a breadth of understanding across multiple disciplines and one or two areas of in-depth experience.

Conceptual development and its refinement in progressive stages of design development play a very crucial role in architectural design discourses. “A concept mirrors the designer’s understanding and interpretation of the design situation” (3 p. 24). In conceptual design level the architect’s genuine level of maturity in addressing spatial issues and cognition of auxiliary factors is put to task. The architect amalgamates his overall observations and provides an explorative yet rational intervention to resolve the spatial issue at a given point of time, capable of addressing the functional and formal aspirations of the project.

2 DESIGN CONCEPT FUNDAMENTALS

A good solution is often based on a good design concept. The role and relevance of having a concept which forms the basis of conceptual design in addressing a spatial issue is quite important. At this stage it is crucial to have proper cognition of concepts significance and meaning. This would definitely help appraise the main objectivity of a concept that is: do they provide effective approach outline in resolving the issue at hand and can the approach be rationally correlated contextually.

Within the wide-ranging body of literature of design process, having a design concept is commonly related to as ideation, creative synthesis, contextual realisation, initial perception and so on, something conceived by the individual that may aid in creative logical resolution of a spatial issue.

The act of perceiving a design concept could often be analysed on the basis of logical reasoning of the form of action involved behind the tangible outcome. It could be based on either an opaque approach with lot of room for spontaneous advances. This type of approach commits to the fact that judgment and reason are less significant facts in pursuit of the outcome. Such type of approach is termed as opaque approach. This approach often opens up several realms that fail to validate the authenticity of the particular design proposition. Meanwhile on the other side we have the transparent approach, which brings about reason and logic in pursuit of conceptual realisations. This approach emphasis the need to validate and rationalise all activities or stages involved as part of design evolution.

The built spatial realm which goes by the name of architecture is often based on thoughtful interventions by creative minds. The basis of all this is however related to conceptual development in the entry level of the whole process. The conception process involves multidisciplinary inputs addressing a contextual spatial issue, leading to a rational tangible solution in a systematic manner. Architecture comes into being by making linkages with diverse yet mutually relevant domains like history, science, engineering, art and aesthetics, social studies, psychology and so on. The resultant design of spaces and their spatial quality affects the behaviour and well being of everyone involved.

"The architectural concept is the idea that guides spatial creation and according to which a design is elaborated, and at the same time it offers the key to adequately comprehending the work as ultimately realized" (4 p. 70). The basic source of ideation or inspiration behind a design development is always linked to integration of relevant conceptual aspects which trigger motion of design process in the right direction. It is initiated with the designers perception about the design issue, aided by experiential realisation of various factors linked with such a scenario. This provides convergence of resources to a certain direction of quest. Awareness of precedents in a particular typology of habitat design development along with cognition of regional factors brings about a certain sense of totality to the designers pursuits. The designer may apply deductive or inductive means of approach for achieving the objective depending on personal level preferences and inclinations.

> The architectural design process is as diverse as the people who practise it. The variety and richness of approaches to the subject can be seen in the radical differences between architects' work. In any architectural competition, no two entries will be the same. What inspired the architect? Why is there no one 'correct' answer to a given architectural problem/ talk to any architect or study their work and you will begin to notice that there is both method and inspiration behind their approach (5 p. 6).

"Every architect must have a language, and in fact I believe each region enshrines an architectural language or its own dialect" (2 p. 81). The architectural vocabulary owing a perceptual sense of contextualism with accountability for continuum could often be treated as the basic indicator shaping the habitable space. Appraisal of habitat design requires cognition of attributes like user groups, historic lineage, progressive development dynamics, sustainability and built environment, science and technology, human behaviour and ecology and so on. Understanding the existing sphere of influence and relating it to a theory would enhance habitat design conceptualisation.

For an individual to produce meaningful architecture it is essential that the person has a good awareness of evolutionary progression of a region and mature understanding of the habitat realm, which is not limited to superficial level. This has to be based on in depth awareness of various activities happening within a society and proper cognition of diverse origins of various communities that make up the social fabric. Along with proper application of latest technological and material know how aiming at creating rational, sustainable and contextual architecture with regional traits.

Considering this notion of approach, the characteristics factors which influence and catalyse the overall activity could be classified as intrinsic and extrinsic factors. Intrinsic factors are personified by an individual's deep rooted regionalist linkages superficial as well as internalised, anchoring various sociological as well as contextual attributes. Meanwhile extrinsic factors might be related to quest for innovation, globalisation and progress that exist in an individual pursuit for achieving unique and iconic results in pursuit of habitat design. The resultant notion of spatial disposition is reinforced by aspects of time and place which provides the divergence in general imagery of a design development.

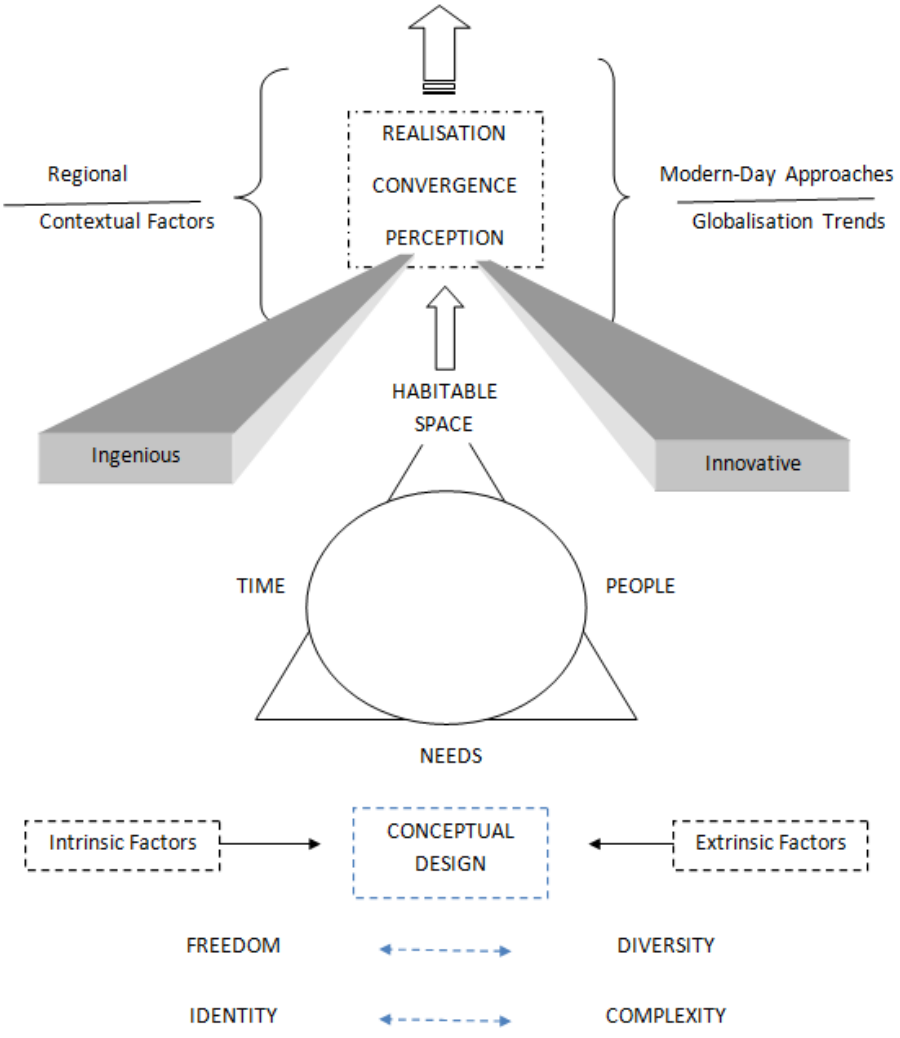
The intrinsic and extrinsic factors pave way for the need of a perception index. This would help evolve better cognition about the overall act of responsiveness involved during initiation of conceptual development. The perception index is built upon the premises that multiplicity forms the basis of our national fabric. Basic solution to a given design issue could be based on collective requirements of the users exemplified by existing habitat realm. This would contribute towards meeting the utilitarian needs of the people and for evolution of a sense of identity with respect to conceptual ideations and its tangible realisation.

Tangible realisation as part of cognition is constituted by the following acts; perception, convergence and recognition based on information received from intrinsic as well as extrinsic domains of knowledge base and its interpretation. This phenomenon over a time results in convergence or towards formation of a seasoned approach; symbolic in

distinctiveness marked by regional traits leading to formation of recognisable architectural built realms.

Comprehension of this awareness is often visible in the works of master architects. Intrinsic and extrinsic attributes play a significant part of these descriptions and provide insight into their design development. Moving forward these notions is further given tangible form in design studio through design development. Various stages and approaches form the basis behind the act of designing, conceptual development being a part of it. They communicate the stages of developments verbally, graphically and by prototyping, conveying a tangible outlook to their design interventions. The outcomes of conceptual design are generally named as design concepts.

Fig. 2 The Perception Index



Source: Author

3 APPROACH FACTOR

The established ethos of design development has always been linked to specific approaches. These approaches often guide the act of evolving a design concept as part of the overall development activity. Which in turn usually have subjective influence on the nature of solutions derived. These acts however emphasise the need of a matured constructive mind in the designer for properly choosing a course of action. The bases of these creative approaches are basically classified into two: Diachronic and Synchronic approaches.

Diachronic and Synchronic approaches can lead to divergent ideations or conclusions. In simple words a design concept that lays emphasis on diachronic approach is one that examines the progression of something over time, allowing one to assess how that something changes throughout history. Meanwhile a synchronic approach examines a particular something at a given, fixed point in time. It does not attempt to provide ideation based on progression rather consider the current state, as it is and provides means for intervention.

In concurrence conceptual realisation which forms the basis of design development can be viewed as a rational decision making approach which involves creative traits. The overall approach which constitutes the design development could be classified as design methodology adopted by the designer or the architect. “Good buildings don’t just happen. They are planned to look good and perform well, and come about when good architects and good clients join in thoughtful, cooperative effort. Programming the requirements of a proposed building is the architect’s first task, often the most important” (6 p. 107). This would mean working in a complex setting trying to bring about coherence to the user requirements and effective interpretation of the same in the design program by the architect.

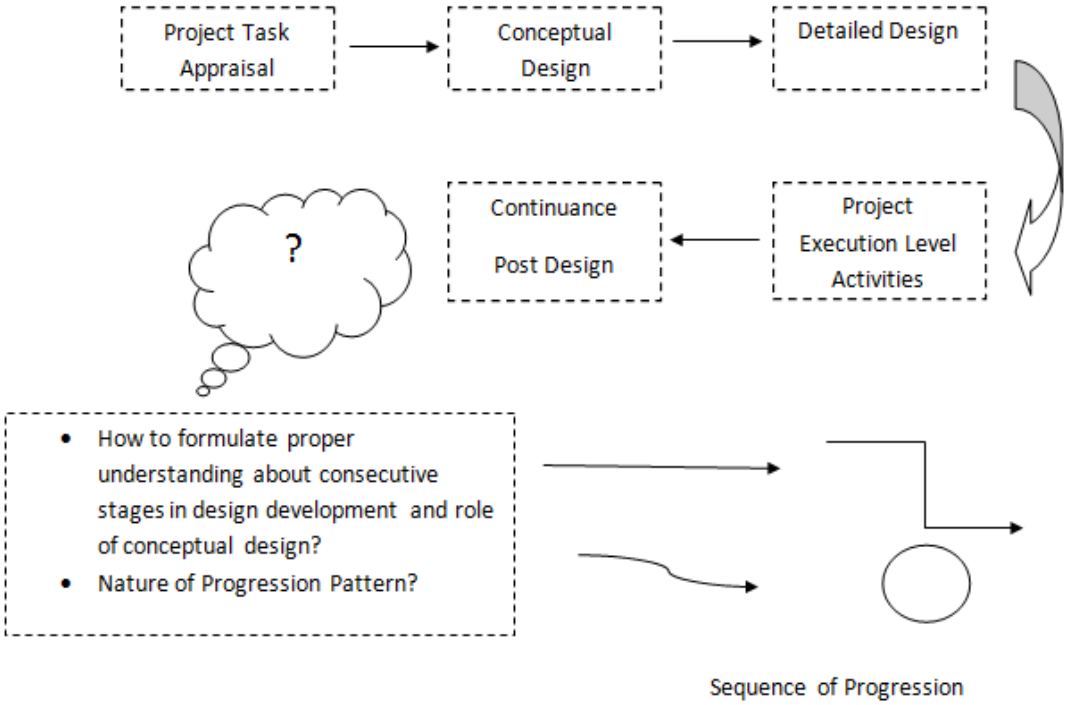
Since the basic objective of architectural design education could be thought of as educating architecture students to produce meaningful architecture. It becomes necessary to communicate the actual meaning and attributes associated with the phenomenon of Architectural Design Development. Such approaches would provide directionality in evolving identity, order and space in an appropriate manner elucidating an architectural character and language to the built environment. These approaches are however made up of several stages, the sequence of which is based on progression. In most cases it is modelled to suit the given context and issue at hand.

4 ARCHITECTURAL DESIGN DEVELOPMENT AND CONCEPT FORMATION

Preliminary level architectural design process is constituted by the following stages: spatial design issue or project task appraisal, conceptual design and detailed design. These stages are

followed up by project execution level activities and continuance post design; maintenance stage. In view of changing requirements worldwide and in order to maintain an international equivalence in services offered the Royal Institute of British Architects formulated the stages of design and development which came to be known as RIBA Plan of Work. A definitive model for building design and construction process as early as 1963. "The latest updated plan of work is constituted by the following stages: Strategic Definition, Preparation and Brief, Concept Design, Developed Design, Technical Design, Construction, Handover and Close Out, and In Use" (7).

Fig. 3 Design Development Sequence



Source: Author

This whole process has been under review by researchers so as to figure out the rational framework embedded in the act of designing, since institutionalization of formal architectural education in the society. In this context research can be broadly defined as rigorous, reflective and explorative enquiry aimed at developing better cognition about architectural design development and execution.

Appraisal of built environment clearly establishes the fact that for a particular typology of project under review, architects definitely have divergent solutions based on their individual conceptual thoughts and approaches. This is evident in the diverse portfolio of built commissions in any part of the world with respect to habitat design. In this context let's review the basic module of habitat design, the house.

> The term “house,” for instance, has a constant meaning, while houses may be given different forms. That the meaning “house” is present in the beginning and the end of the design process is one discourse. The form of the house meanwhile is transformed, disturbed, combined, done and undone. This process, which is typical of architecture, is second discourse. (8 p. 119).

Review of available literature with respect to the process of architectural design development enlightens the need for having divergent approaches; stage wise to solve a spatial issue. The creative act generally focuses on envisioning divergent notions to a given issue in focus, paving way for short listing the feasible notion to initiate further action for developing appropriate solutions. The basis is to formulate a conclusive approach based on merit, novel and suitable to deal with the spatial issue. By choosing the most relevant and ideal approach from the numerous initial abstractions of thought and action.

This phase involves:

- abstracting to find the essential problems;
- establishing function structures;
- searching for working principles;
- combining working principles into working structures;
- selecting a suitable working structure and firming up into a principle solution (concept) (9 p. 139)

Conceiving, developing, refining and externalizing propositions based on merit and rationale. By this means overruling selection of approaches and resultant solution based on incidental and random selection.

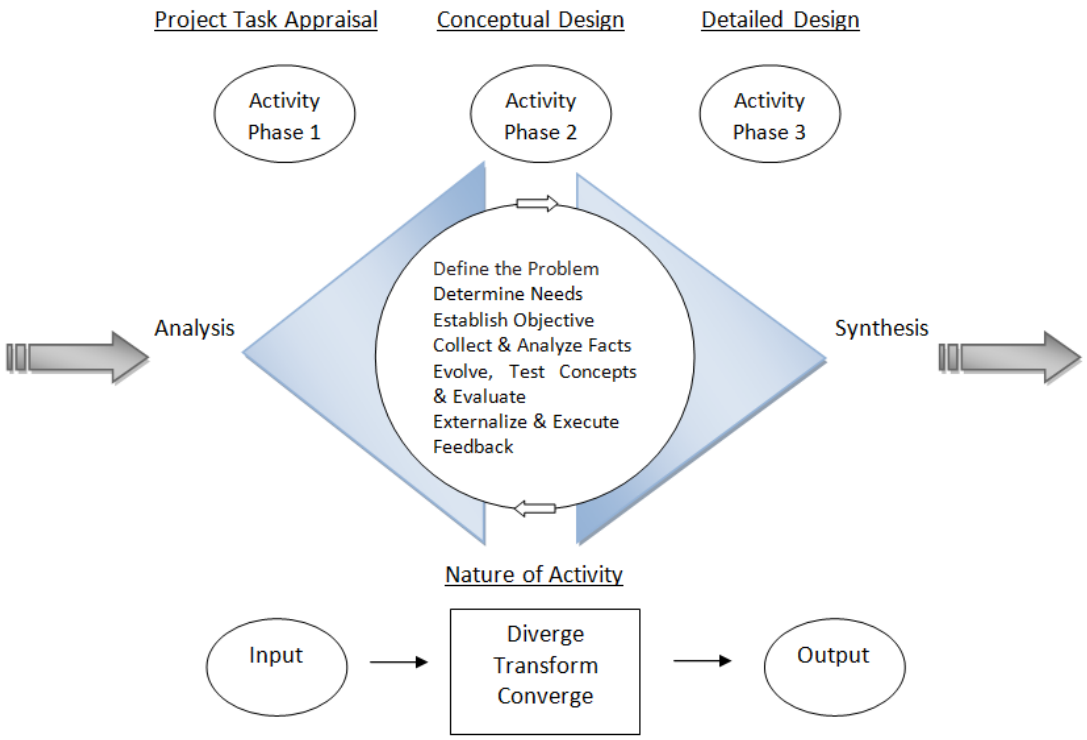
> Often designers describe themselves as creating many options (diverging) and then narrowing down their options (converging). Alexander (1962) and other designers have described analysis as a process of breaking a problem into pieces—of “decomposing” it. Synthesis follows as re-ordering the pieces based on dependencies, solving each sub-piece, and finally knitting all the pieces back together—“recombining” the pieces. This decomposition-recombination process also diverges and then converges (10).

Concept development as part of design development process is envisioned as a basic cognitive process; an interpretative of the designers’ cognition, a matured response by an architect while trying to resolve a spatial issue.

Geoffrey Broadbent theorized that the design process was more properly modeled as a "Y" or a three – pointed star in which the most important sources of ideas in the SYNTHESIS stage came from outside sources, and not from intellectual analysis of the program itself. He posed four such ideas for designers: the Pragmatic or trial-and-error source; the Iconic source wherein the designer followed past precedents; the Canonic source in which rules and principles govern the design process; and the fourth and most profound, the Metaphoric or Analogic source, wherein ideas were drawn from different entities altogether for application to the concept of an architectural design. (11 p. 69)

The overall activity could be appraised as consisting of the following stages: Project Task Appraisal, Conceptual Design, and Detailed Design as illustrated.

Fig. 4 Design Development Process: Stages of Activity



Source: Author

At this stage we could further iterate on the conceptual development phase as an activity associated with exploration, creativity, evaluation and prioritisation.

How should concepts be developed?

Concept Design includes four main phases:

Explore: Determine 'what are the needs?'

Create: Generate ideas to address 'How can the needs be met?'

Evaluate: Judge and test the design concepts to determine ‘Howe well are the needs met?’

Manage: Review the evidence to decide ‘What should we do next?’

The diagram shows how these phases fit together. Successive cycles of the Explore, Create and Evaluate phases are used to generate a clearer understanding of the needs, better solutions to meet these needs and stronger evidence that the needs are met.

It is also important to test the ideas early and often. Perform quick tests with rough prototypes, early enough in the process that meaningful changes is still possible.

Fig. 5 Conceptual Development Process: Stages of Activity

Source: (12)

At this point it becomes essential to relate - integrate available information on design development process to architectural professional practice. So that an effective system of appraisal of works of master architects and their methodological approach can be assimilated into the theoretical discourse in the architectural design studios in institutions. This integrative approach would bring about more clarity with respect to relevance of conceptual design in the overall act of architecture design development and execution. The correlation of this entire appraisal guides us to better understanding of the experience of having a design concept; which could be rightly termed as concept design and development.

5 ARCHITECTURAL DESIGN FRAMEWORK

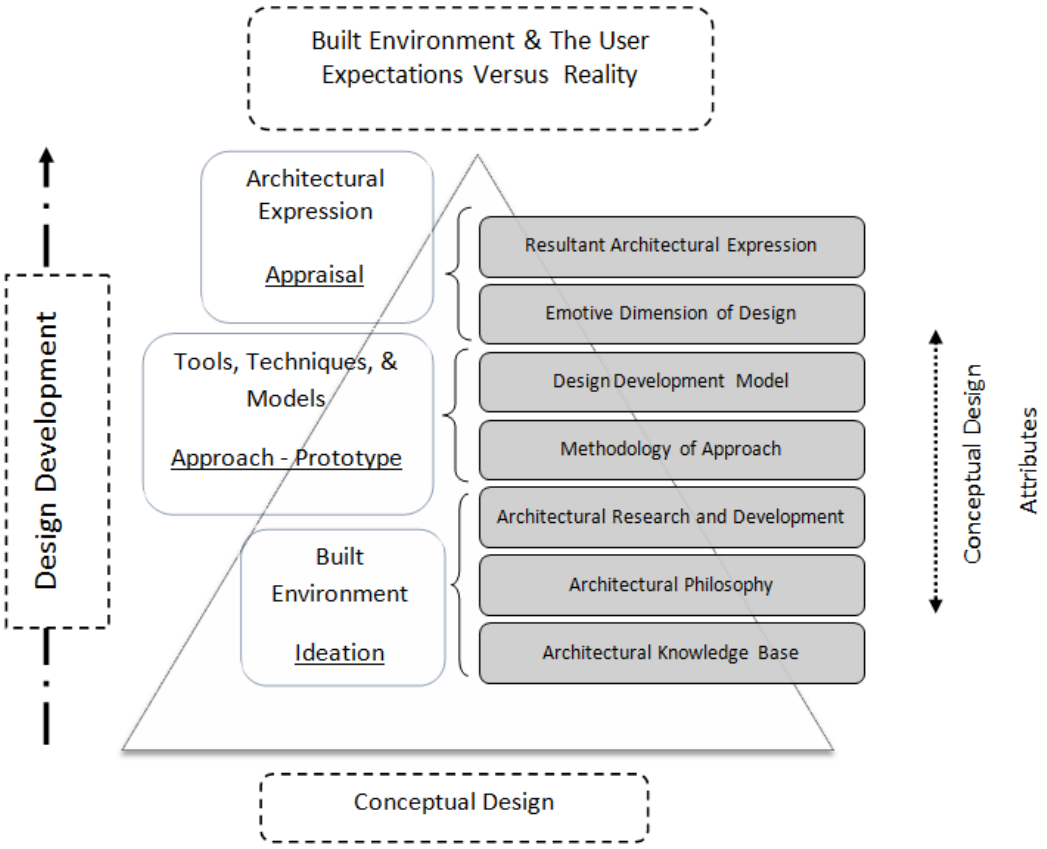
An architect explores design concepts and improves them until the most suitable are identified for further review and realisation. The basic observable fact of envisioning a design concept and rationally able to validate the same into the design development process is a

relevant factor. This creative pursuit is further probed in detail by understanding the Concept Design & Development Stages: Architectural Design Framework as illustrated and relating it to architectural professional practice.

Appraisal on the basis of individual buildings commissioned by master architects makes it possible to comprehensively review how a particular architect approaches his design. This is achieved with the help of exploration of three knowledge domains:

1. Built Environment Fundamentals: Ideation Catalyst
2. Tools, Techniques, & Models: Approach - Prototype
3. Resultant Architectural Expression : Impact & Review

Fig. 6 Concept Design & Development Stages: Architectural Design Framework



Source: Author

This ideation introduces a logical approach for systematic probe and cognition with regard to approaches initiated, processed and applied by the master architects in their quest for habitat design realisations. This activity would provide for better cognition of works of various renowned architects under a well defined framework paving way for better transmission during studio discourses.

5.1 BUILT ENVIRONMENT FUNDAMENTALS

An architect has reasonable grounding in various disciplines, knowledge attained through formal education as well through experience in professional practice, travel and so on. The architects' ability to relate to given spatial issue, acclimatise with the given context, capacity to understand and perceive the user requirement and develop logical solutions is grounded on an effective architectural knowledge base. The cognitive structure of the individual aided by psychomotor responses induce action in the appropriate direction is characterised by affective influences of philosophical settings also.

The explicit and tacit domains of knowledge embedded in the individual are further channelised to produce meaningful architecture, by conscious and effective application of research methodology. This helps to bring proper clarity and logic to design development process being applied to provide changes in the physical world to meet the human needs and aspirations.

5.2 TOOLS, TECHNIQUES, & MODELS

The process involved in envisioning a habitat design and rationally able to validate the same into the design development process is a relevant factor. Specific tool, techniques and methods are used consequently to bring about the desired outcome and validate the activity.

> According to Zeisel (1981) and Baghdadi (1984), design tool means a physical or conceptual instrument that is used in designing. Design technique means the way in which a design objective is accomplished. Thus, techniques are ways of using design tools. Whereas the techniques used by a designer are the result of his/her own decision, the ways these decisions are made are the result of his decision model. In this concern, Ackoff (1962) argues that methods are rules of choice and techniques are the choices themselves (13 p. 77).

Designing involves stages and procedural application of know-how to resolve a spatial issue. Design Decision Models with descriptive rationale are often used to express and explain the overall act of creativity resulting in tangible built realisations. At this point it becomes imperative to be aware of certain primary classification of models and their theoretical grounding.

> In the past design models that arose from various philosophical viewpoints have tended to belong to two main classes, namely prescriptive and descriptive models. The prescriptive models are associated with syntactic school of thought and tend to look at the design process from a global perspective, covering the procedural steps (that is suggesting the best way something should be done). The descriptive models,

> on the other hand, are concerned with designers' actions and activities during the design process (that is what is involved in designing and/or how it is done). More recently, another group of models know here as computational models have started to emanate. These computational models place emphasis on the use of numerical and qualitative computational techniques, artificial intelligence techniques, combined with modern computing technologies (14 p. 305).

These specific typological approaches associated with design development can be analysed so as to bring about effective synthesis regarding the constituent nature, generic components, design thinking and related activity generators that makes up a Design Decision Model. We can summarise the overall activity to a well defined procedural process in which relevant and specific activities are arranged to help evolve, implement and review resultant – required habitat design.

5.3 RESULTANT ARCHITECTURAL EXPRESSION

The architectural expression that manifest in the form of a building is the outcome of intentional and unambiguous choices made on the part of the architect, usually on behalf of a client. The building is realised as part of a complex design development process and tries to establish a connect with the contextual setting.

The architect envisions a master piece by comprehending a particular desired response from the part of the individuals who would come in contact with the building. However in reality how a person comprehend, recognise and experience spaces and relate it to function and quality is totally a subjective phenomenon. Evaluation and Judgment values formed would also depend on the individual's educational, social background, exposure, awareness, experience and so on.

Activities are generated by the presence of a new building in a given settings. The physical entity realised through construction technology having an embodied architectural philosophy of the designer starts acting as an intermediary between the architect, user and the public. The resultant experience is always open to appraisal and value judgment.

Interaction between Spaces and Users; architecture and its surroundings are important aspects which make architecture appropriate for its Place, Time and People. The basic mannerism of experiencing Architecture often elucidates the significance of totality, the integration of building with the streetscape – street scenery and street life. This perspective of appraisal of built form is relatively dynamic than static in a given context. This sense of identity and association with a place contributes to the cognition of imageability and functionality associated with the particular spatial typology of built environment.

6 INFERENCE

Acceptance of the reality that knowledge cognition is a continuous activity unfolds numerous opportunities for effective assimilation of facts. This approach is very much applicable to the quest associated with better realisation of the design development process in architecture.

Preliminary level architectural design process is constituted by the following stages: spatial design issue or project task appraisal, conceptual design and detailed design. These stages are followed up by project execution level activities and continuance post design; maintenance stage.

Conceptual realisation which forms the basis of design development can be viewed as a rational decision making approach which involves creative traits and provides directionality to the spatial realisation. The conception process involves multidisciplinary inputs addressing a contextual spatial issue, leading to a rational tangible solution. Architecture comes into being by making linkages with diverse yet mutually relevant domains like history, science, engineering, art and aesthetics, social studies, psychology and so on.

An architect explores design concepts and improves them until the most suitable are identified for further review and realisation. The basic observable fact of envisioning a design concept and rationally able to validate the same into the design development process is a relevant factor. This creative pursuit is further probed in detail by understanding the Concept Design & Development Stages: Architectural Design Framework as illustrated and relating it to architectural professional practice.

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