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Post-Construction Analysis of Scale and Proportion: A Case Study of the Woodbury Towers, USA, in Reflecting Cogent Design Principles

Worasak Luangsuwan
School of Architecture, Art and Design, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand
Corresponding author e-mail: worasak.lu@kmitl.ac.th
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Abstract

Critically assessing your own design work after it has been constructed for several years is an exciting question of self-peer review that has to set aside the initial design amplitude while letting the theories perform in order to discover some unexpected results with respect to the original design. This paradoxical mechanism between practicing and teaching when career switching from a professional practitioner to a university instructor can harmoniously integrate theory and praxis to illuminate future paths and amplify innovation. Here, I use the Woodbury Towers in the Woodbury Irvine Community as a case study to explore planning design practice in context of the Southern California landscape as the subject of the self-peer review process. Creating community is building a place for people to live and share their experience. Community basically refers to sets of people who may identify themselves with a place in terms of notions of commonality, shared values or solidarity in particular contexts. Landscape architecture can contribute to a sense of community by contributing theories, experiences and design vision in the development process. In this paper, the synchronization of design scale and proportion considered essential, has been explored to reflect theoretical functions and aesthetic characteristics of good design since the Classical Era. The principle of The Golden Section ratio simulated with a digital superimposition technique is the main tool for this research method which led to discovery of the subconscious ideas in the post-construction phase.

Keywords

Scale; Proportion; Classical Era; Good design; Woodbury Irvine; The Golden Section

1. Introduction

An architect (including a landscape architect) must have knowledge of drawing so that they can readily make sketches to show the appearance of the work which they propose (Pollio & Morgan, 1960).. In doing that, all principles of the architectural academy are applied to integrate design criteria for both aesthetic and function. Nature has its own form when humans observer the cycle of nature, these natural forms often inspire human or biomimetic design that may include geometric theory to optimize function. As noted by Albert Einstein "Look deep into nature and then you will understand everything better".

Woodbury is an approximately one square mile (2.59 square kilometer) planned non gated community located in the City of Irvine, California, U.S.A. The Woodbury project was design between 1999 and 2003 by SWA Group for the Irvine Company and went into construction between 2004 to 2007. In the conceptual planning stage of the landscape community framework, the idea of having some identity feature at the major intersections that expressed the symbolic grounding of the project was considered. Sketches of two-dimensional simple straight lines to form squares within a square geometry were the very first design perception responses to the relatively flat site within the one square mile perimeter. The three-dimensional Woodbury Tower sketch subsequently was initiated after vehicular and pedestrian circulation patterns were envisioned thereby creating a systematic structure anchoring the entire master plan (Figure 1).

Synthesizing the process of thought with the solid idea in mind involves a search for referencing inspiration. In this stage of the design concept, intellectual brain storming with others can help to focus the vision. Sketches of lines curves and forms began to take place and were paralleled by image tracking. Rich in history and pleasant climate, the “Mediterranean template” seemed to be a favorable metaphor for the Southern California landscape. A vertical solid element with a rough dimension placed into the planned location eventually formed the criteria of a functional design for the desired landmark. Function, scale and proportion were the architectural and landscape architectural principles that were employed to characterize the certain harmony of form as an aesthetic edifice.

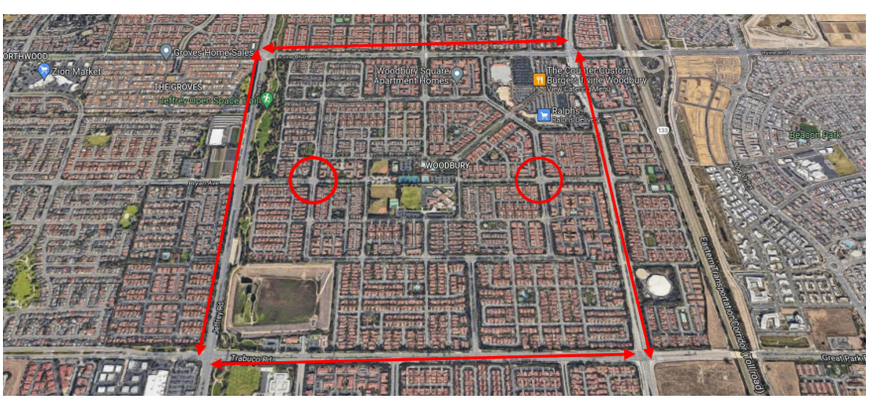

Figure 1 Woodbury Community Site is a relatively flat area located in the City of Irvine, Ca. Red arrows are community boundaries which are approximately one mile (1.6 km) on each side. Red circles are the Woodbury Tower locations within the site. (Modified from Google Map (n.d.)).

2. Objectives

The objective of this paper is to explore how an implemented design element in a new U.S. housing development matches with theoretical architecture principles based on a post-construction assessment. In addition, I will provide and understanding of the polar connection between design thinking and theories of fundamental design scale and proportion that are essential elements of architecture and landscape architecture in the context of professional practice. The research provides a novel exploration of how design principles can be connected between professional practice and teaching architecture and landscape architecture.

3. Study’s Framework and Methods

The study was sparked from the basic consideration of whether the aesthetic sense of a finished design work appears to be functioning with recognition of the design process and critiques. In other words,

the aesthetic is just a coincident of practicing or does it reflect calculation and intent that emerged from behind the scene. Theories of principles and references of design consider “The Golden Section” which involves the transformation and superimposition method in digital-design to reflect the final design outcome. The result from this research will provide a bridge between both teaching and professional practice, thereby confirming that theoretically classic design principles are applicable.

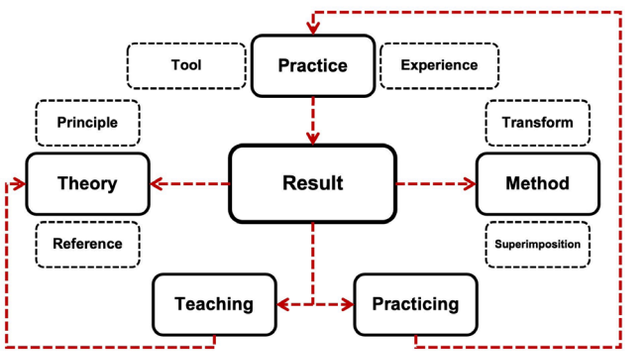

Figure 2 Research Framework Diagram.

Information and documentation were gathered from my individual design archive for the Woodbury Towers design. Scale and proportion theory were interpreted based on a literature review and case studies. These architectural theories were transformed into graphically-represented geometries in developing a topic model. The Digital Superimposition Technique was an important tool in applying and calibrating the topic model.

4. Theoretical Review of Scale and Proportion

Scale and proportion have almost infinite meaning. Their interpretation naturally depends upon the application and context of the matter at hand. This research explores the complicated meaning of these two words within the architecture/landscape architecture disciplines and how they both function to support application of satisfying tools. Several design principles have evolved from mathematical theory that may frame a design process and translates to be a beautiful result in function.

The criteria for case study selection in the design process required features of similar concept to the Woodbury Tower. More specifically, the case studies had to stand functioning over a period of time, be accepted by users and have good design critiques, especially in the sense of design beauty to be considered as a mentor idea in the designing process. The case studies also needed to include the Classical order of forms and the revival of design within the parameters of proper scale and proportion. The integration of design from different industries became a cross check to the same fundamental value in the design beauty sensation.

When designing an architecture and landscape architecture project, there is one fundamental principle all designers must track to achieve a precise final product that functions according to the project need and disciplinarity, and this is “scale”. Scale in the design profession possibly carries a diversity of definitions however, the word “sizing” seems to fit well within the meaning of scale. This principle may be used with other considerations for example; designing a fountain to fit properly within its pond is in the spatial scale mode of comparing the sizing of the designed object within the entire spatial property. In the practicing tool mode, scale is a ruler stick engraved with several dimensions of measurement units to define the drawing size so

that it fits within the limited paper space. In the representative mode, scale is identified as a ratio model in the relationship with the actual object that it is representing.

The spatial scale mode would be the most controversial issue among designers who have different backgrounds, due to their base perception and practice. On the other hand, the limitation of spatial setting seems to have a characteristic quality that requires suitable care for a design to be scaled in that position, and the common ground theory of The Human Scale may help to bridge the controversy. Humans have the ability to perceive the measurement of an engaging environment at multiple scales and multiple velocities through the eye experience. The range of motion could determine the comfortable physical navigation of space in a multiplicity of designs, as for example, the stair riser height and the handlebar height have to be designed to comply with that Human Scale (Simicth et al., 2014).

Ancient Greeks perhaps created the aesthetic theories of tradition humanism as a legacy of the Parthenon, which is reflected by the harmonious compositional architecture for which the Renaissance inventors and designers such as Leonardo De Vinci would rather appreciate the sense of sizing within a proportionate entity. These theories had been considered as essential design ingredients from Vitruvius to De Vinci and Le Corbusier in the modern era.

Le Corbusier, (1987) believed that "We must strive towards the establishment of standard in order to face the problem of perfection. The Parthenon is a product of selection applied to the standard. Architecture is a process based on standard. Standard is a process of logic, of analysis and painstaking study; they are evolved on a basic of a problem well started. In the final analysis, however, a standard is established by experimentation."

The era of "Mass Production" was seeded from The Industrial Revolution and, the enterprise that had been devoted to the development of a contemporary aesthetic yielded to the economic factor. During the pre-war period between 1925 and 1933, Le Corbusier drew a four-meter likeness on the wall of his studio to get the sense of true size measurement. Afterwards, he found that the metric is nothing but an abstract number governed by the decimal in a counting system which is incapable of qualifying and interval meaning in the architectural design process. He believed the metric was a laziness template for convenient measure that could be detrimental in architectural creativity. Furthermore, he felt that his concrete idea on the subject of harmonious measure to the human scale could be universally applicable to standardize the architectural discipline (Le Corbusier, 1954). This could be a theoretically principle argued in perpetuity since those days, standardization seems to have been an advanced technology which could conduct and alter aesthetic principles in association with other factors, while on the contrary, society recently is yearning for a sense of individuality which becomes the predominant approach to design.

4.1 Theoretical Interpretation of Scale

Individual elements have their own size. Dimensional units, are basic mathematic counting systems in architecture and landscape architecture practice, used when measuring the object size. The dimensions of a detailed element, an object, a site landscape or a region are always experienced within a surrounding context. Understanding and gaining proficiency in the manipulation of design scale, the specific practical and expressive relationship of proposed dimensions to a context is a crucial aspect of design in architecture and landscape architecture but it is the most imperative of those skills to grasp and use to intentional ends at the beginning

of a design career. As a student or a young designer, the echo of critiques in wrong scale, out of scale, no sense of scale, often occurs without perspicuous explanation as how to rectify this deficiency or to establish the ability of scaling design work. This research seeks to overcome this perceived pedagogical barrier by introducing practices of the historical analysis of, the observation of, and modes of design speculation about scale as an instrument of architecture and landscape architectural design.

Architectural and landscape architectural scale are utilized predominantly in relation to two principled procedures, a reduction ratio measurement unit for drawing or modeling and an implementation of design sizing based on human size within the entire context. A reduction ratio measurement unit has different numeric representations but always compare one unit to others for example; 1:10, 1:200 or 1:25000 in metric and 1/16”=1’-0”, 3/32”=1’-0” or ¼”=1’-0” in imperial (Table 1). The metric scale system, accepted as Système Internationale (SI) originated from France in the 18th Century and, works on a base of 10. On the other hand, the Imperial System has a varying base (e.g.12 for inches to 1 foot; 3 feet to 1 yard; 1,760 yards to a mile), originated from England in the19th Century and now is only used by the United States, Liberia and Myanmar. The design sizing in architecture and landscape architecture normally conform to the association of human body function called the “Human Scale”. The Human Scale is a size measurement of human behaviors. It may be applied in the design assessment of all human spaces especially when the very first design form is considered, in order to perceive the volume of mass in a usual self-questioning of “how big should this design be” (e.g. Figure 3).

Table 1. Matric and Imperial Scale comparison in Architectural and Landscape architectural practice (Watt, 2021).

Type of drawing	Level of information	Metric (mm, cm, m)	Imperial (feet and inches)
Location plan	Site outline in a larger context of a city, campus, zone or local neighbourhood	1:5000 (Pronounced one to five thousand)	
		1:1000	1”=80’0” (Pronounced three inches to a foot)
Site plan	Building outline, trees, garden edges, changes of external material	1:500	1”=40’0”
		(1:250)	1”=20’0”
		1:200	1/16”=1’-0”
Floor plans, elevations and sections	Room configuration,, walls, windows, doors, furniture outlines, edges of material finishes.	1:100	1/8”=1’-0”
Room plans, interior elevations	Material textures (eg. individual tiles), joinery elements (eg. doors, drawers), door and window panes, opening, handles etc.	1:50	1/4”=1’-0”
Wall details	Each element of walls, floors and roofs (eg. plaster, stud, insulation, window frame, pane etc.)	(1:25)	3/4”=1’-0”
		1:20	1”=1’-0”
Joinery and details	Each element of joinery and detail (eg. carcass, edge details, roof flashings, timber edgings etc.)	1:10	1 1/2”=1’-0”
		1:5	Half size
Detailed Details (uncommon)		1:2	3”=1’-0”
		1:1	Full size
		2:1	Twice the size

**Note that 1:25 and 1:250 are not common metric scales.

Figure 3 The initial design drawing always drawn designed objects right next to people for scale comparison purpose.

Within the Woobury site analysis process, the most valuable existing elements in this site are the Blue Gum Eucalyptus Windrows. Based on historical records, Blue Gum was one of several Eucalyptus species in Orange County that was imported from Australia in the 1800's and considered as a tree to cultivate for the commercial timber industry in place of local trees. However, after the experimental commercial cultivation was not successful, Eucalyptuses became fast-growing alien species which later (1920-1940) were planted in a row as a windbreak between to reduce orange grove damage from strong wind, especially the Santa Ana east-west wind occurring seasonally each year (Figure 4). In terms of landscape architectural scale, these Blue Gum Eucalyptus windrows create a natural vertical landscape feature which are approximately 70 feet (21 m) tall by 15-20 feet (4.5-6 m) wide in dimension (Figure 4 and 5) and contrast with the vast scale of the open horizon. After the orange field gave way to community development in the 1960's (Donaldson & Decker, 2009), this existing landscape feature was considered an historic windrow landmark as well as an important resource that helped to manage environmental quality. Therefore, in 1976, the City of Irvine has passed the Urban Forest Ordinance section 5-7-401 which required the preservation of Eucalyptus windrows throughout the city (Figure 6).

Figure 4 Fast growing eucalyptus trees protected the newly set out groves from strong winds.
Farmers planted between the rows to take advantage of the irrigation until the trees cut out the sunlight. (irvinehistory.org).

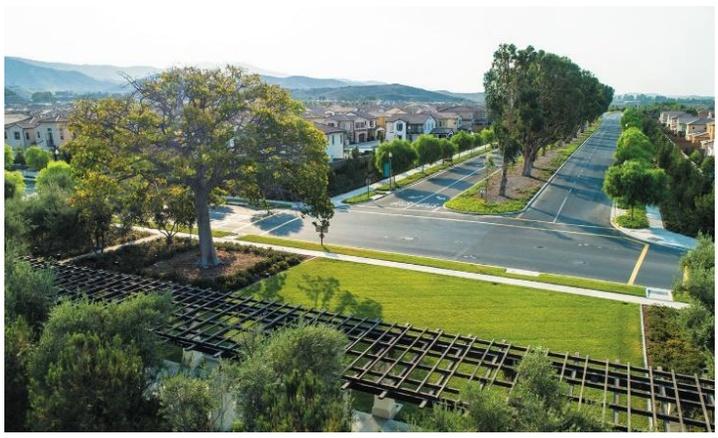

Figure 5 Scale of existing Eucalyptus windrow from the early 1900s left standing in the roadway median after community development was finished (Berg, 2019).

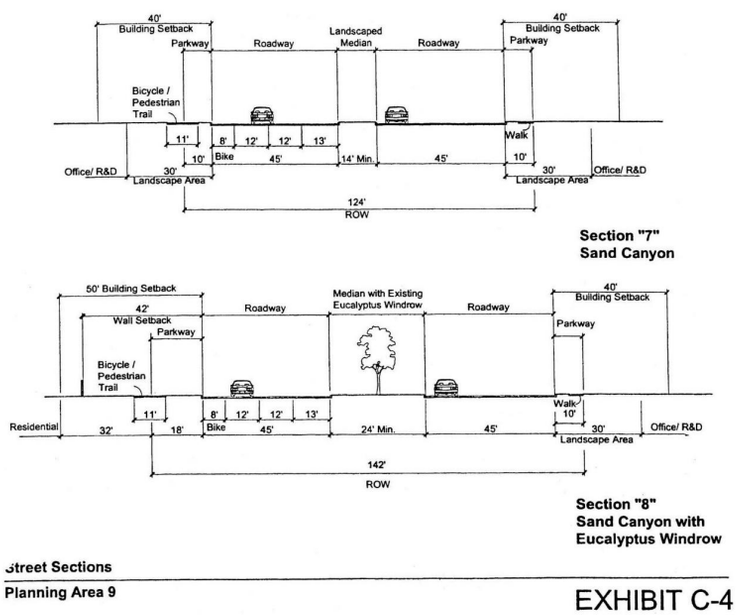

Figure 6 The City of Irvine Ordinance of Chapter 9-9, Section 9-9-7 Special Development Requirements in comparison between scale of existing Eucalyptus Windrow setback with no tree condition (Municode, 2018)

The unique existing element for the Woodbury community was the east-west Blue Gum Eucalyptus windrow located in the middle of the site (Figures 7 and 8). This windrow was kept as a natural accent framework landscape element and when the roadway circulation plan was aligned the windrow, a kind of tall vertical element in landscape architecture as a designed landmark was needed on the sketch plan demarking the Woodbury tower locations in order to balance the tallness of the Eucalyptus (Figures 7 and 8). Landmarks in landscape design function as the project identity. Identity image typically is recognized as a separate entity which requires distinctive implementation from the surrounding area without the sense of equality to anything else, but only standing with individuality and oneness (Figure 9). The city principles are composed of the Five Elements, Paths, Edges, Nodes, Districts and Landmarks (Figure 10). Landmarks could very well be a kind of external reference point where the observer may or may not interact with them. They are basically a defined element such as signage, store, building or mountain (Lynch, 1960). Landscape architectural framework planning principles theoretically have common ground for these five-element interrelations. Paths are basically vector

elements that have direction. In the city, paths are circulations of living and non-living city members. Edges are area or space to define the off-center boundary. Nodes are points, areas or spaces where paths come together. Districts are areas for some particular function. Landmarks are distinctive elements in the city (Figures 10-12). Districts are formed with nodes, defined by edges, connected by paths and sprinkled with landmarks. These elements are the raw materials of environmental image at the city scale. They must be composited in a pattern together that provides a satisfying form which enhances and resonates with people (Can, 2019).

Figure 7 Woodbury Landscape Monument family in 1/8"=1'-0" scale as a study model.

Figure 8 Construction phase of the Woodbury Tower which was designed as compensatory balancing scale of the Blue Gum Eucalyptus.

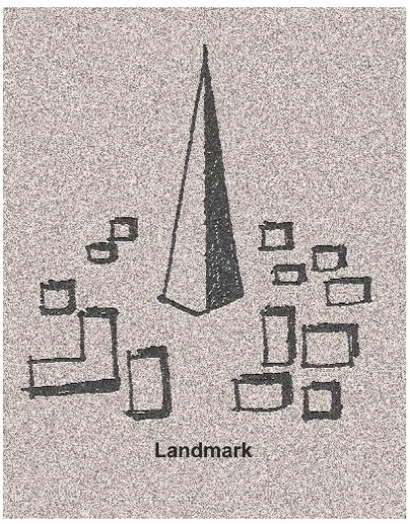

Figure 9 Landmark expression.

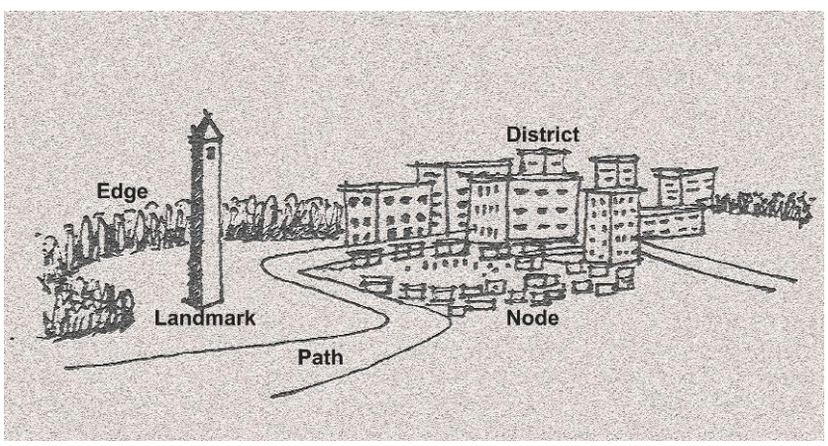

Figure 10 Reflecting idea of the Five Elements Theory of K. Lynch.

Figure 11 The Woodbury Tower when the project was first open.

Figure 12 The recent 60-foot-tall Woodbury Tower set in place among the Eucalyptus Windrow offset to the left and the vertical Italian Cypress as a backdrop scene. (Google Maps (n.d.)).

4.2 Theoretical Interpretation of Proportion

Since the answer to the analytical design process that is suitable as a landmark in the Woodbury community leads to the Renaissance Revival Architecture style, it was necessary to create a solid concept of a vertical landscape element within the ingredient of harmony, balance, beauty, unity and longevity. When the ideology was fused into the concept, the question has been opened. The basic design instinct recalled the most mentioned proportion principle of architecture, "The Golden Section" in a fashion that arguably was a combination of intention and coincident or science and art. Theorists agree in defining that the impression of beauty depends fundamentally on unity of form. In other words, the plurality of elements that make up a building must be related and form a "Unified Composition" (Curtis, 2011). The unity may be secured by having all parts of the composition in the same scale, same character and properly proportioned to one another within the requirement of human needs. Proportion is a correspondence among the measures of the members of an entire work, and of the whole to a certain extent, selected as standard (Pollio & Morgan, 1960). The ideas of proportion and scale are most closely identified as principles that integrate into the conception of unity.

The impression of unity in the architectural character of monuments is considered without any effort of the intellect. This kind of building is typically symmetrical with a dominating central portion. The silhouette mass of the architecture would be the first impression seen from the distance through the haze with eyes resting on the central accent motif. The design detail qualities such as the horizontal strip of cornices, the array of window frames on the façade, carved ornaments, molding string-courses with minor decorative and harmony of scale are subsequently impressions of governed unity (Curtis, 2011).

Theoretically, this regularity could be inferred to produce a symmetrical balance in composition that would result in a valuable design quality. Extending the unified composition of scale and proportion concept in this literature to the pragmatic scene seems to be reasonable when considering, for example, the Partal Palace in the Alhambra in Granada, Spain and the Congregational Church of Sierra Madre in California.

The original Renaissance of the 14th century concocted, with Moorish design vocabulary, the Partal Palace (Figures 13 and 14) and the 19th century Renaissance Revival the Congregational Church (Figures 15 and 16). These two monuments were designated at a public scale architecture which is one category larger than the private scale created for ordinary family use. These two example architectures were the major influence in designing the Woodbury Tower in consideration of composition unity such as scale, proportion, form, style

to materials and colors of the entities. The analogy between these two edifices is made evident comparing the similarity of proportion in the prominent features. The Partal Palace tower (Figure 13 and 14) has a complete width to height ratio of 1:1.618 while the Congregational Church bell tower has a similar proportion that is twice in height but also includes alteration at the center facade for a slim opening.

Figure 13 The Alhambra Palace and Fortress Complex in Granada, Spain, the 14th Century Renaissance with Moorish touched architecture. (Wikipedia, 2022).

Figure 14 The Partal Palace in The Alhambra Complex, the inspired idea of proportioned aesthetic (viator.com).

Figure 15 The Congregational Church of the Old North Church in Sierra Madre, California, the 20th century Renaissance Revival Architecture. (ebay.com).

Figure 16 The Congregational Church in the old day showing scale comparison of people and cars to get the sense of architectural dimension. (Ellis, 2014).

Among those design principles, proportion arguably has been the key factor for aesthetics since the discovery of the Golden Section by the ancient Greeks. The Golden Section is a ratio of 1:1.618 observed in a diversity of natural features, from flower petals to seed heads; from shells, to human faces; from hurricane spirals to spiral galaxies (Figures 17-19). When human eyes have been trained to perceive beauty in the process of becoming a designer, most of the aesthetic proportions of work will be around 1:1.618 ratio, for example, where 1 unit of width is paired with a 1.618 unit of length. This 1:1.618 ratio plays an essential role when analyzing designs. The Parthenon building of the Acropolis in ancient Greeks, and the Mona Lisa painting in the Louvre are excellent examples of the Golden Section Ratio used in design and art. Superimposing the Golden Section Ratio on a finished design feature unveils the secret code beneath the designer's subconsciousness (Figure 20).

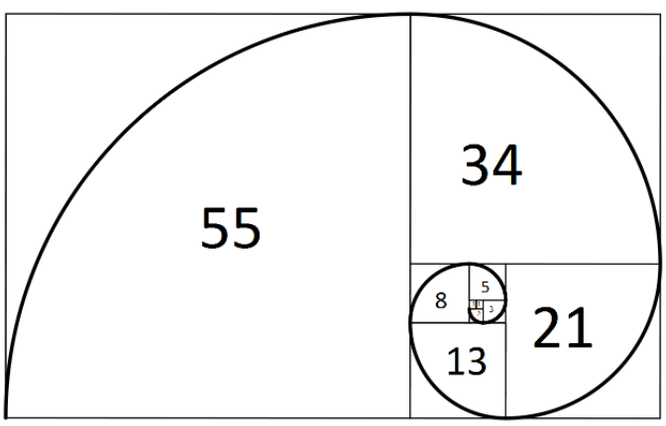

Figure 17 The Golden Section; Ratio of 1: 1.618 (Admin Kæo, 2018).

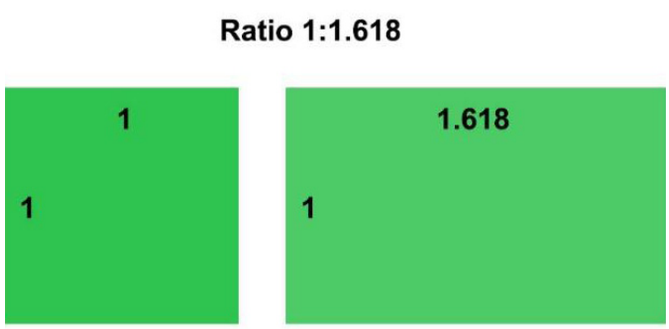

Figure 18 The comparison of 1 to 1.618 proportion template.

Figure 19 A rose of nature conforms to the Golden Section when searching for natural beauty. (Esposito, 2018).

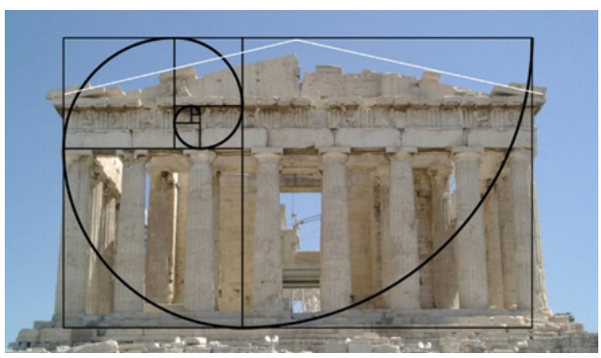

Figure 20 Parthenon the classical temple of the ancient Greeks considered to be a proportionate architecture prototype when applying the Golden Section theory. (misfitsarchitecture.com, 2018).

The basic element volumes are comprised of strong proportion aspects, to define the core of the design. In automobile design studios for example, small silhouette illustrations will be created with the launch of the car to establish how its special character could be expressed in just a few lines as a way of demonstrating this fundamental element of the design. “Good car design makes you stop, makes your jaw drop. It has to create an opinion,” says Marek Reichmann, chief creative officer, Aston Martin. “I don’t like ‘milquetoast’ design, and even at the lower end of the market it’s possible to achieve this. But a great stance, great proportions and – finally – beauty are all necessary ingredients” (Hull, 2018). Like arcitecture, automobile design is a Bauhaus cultivated profession under the umbrella of mass production using the principles of modernism in addressing individual aesthetic vision that conforms with everyday function. Due to the similarity, using car design as a cerebral practice in elegant proportion learning seems appropriate. The automobile image reflects what we call the beauty of car architecture. This idea leads to the question of what the influence behind this entity of strong proportion and how we could elucidate the principle to understand this master piece subject. Furthermore, we might ask how we could extend the theory to other pragmatic design spectrums.

The 1939 French Delage D8 180 automobile (Figure 21) is an example of an elegant design that reflects the Golden Section Theory of Beauty. Early in the automobile era, auto makers produced engines on bare chassis with necessary movable functions. The car would then be sent to the coach builder, as selected by the owner, in order to have the body shell with interior designed and assembled to be a complete automobile. The coach builder rotisserie became a car architecture design studio with all design principle and expertise. In the case of the Delage D8, Letourneur et Marchand Rotisserie in Paris was the company that undertook this kind architecture on wheels.

One of the most difficult principles to evaluate the architecture of car design is “proportion” and of course, understanding of good proportion mostly comes from natural practice and a feeling for what “looks right”. Only design experimentation can answer the consideration of whether a design is successful or unsuccessful, which is specifically reflected if people respond correctly to the purpose of its form. Failing to understand the essentials of good proportions can produce an unattractive design. (Stevens, 2017) Dr Dieter Zetsche, CEO of Daimler AG and Head of Mercedes-Benz Cars said in the Mercedes Benz Group AG (2017): “ The vehicle body design with sweeping surfaces at angles to each other to surface contour with light and shadow and to emphasize the proportions makes the essence of a body visible and communicates it in a credible way. Good design is about much more than simply creating beautiful products: It combines functionality with fascination and gives brand values a distinctive form because the excellent global sales of our vehicles is ultimately also due to their outstanding design”.

When superimposing the digital Golden Section geometry as an examination tool, the result reveals a total height ratio of 1 to the total length ratio of 2x(1.1618). The entire glasshouse of the car elevation shows a complete Golden Section ratio proportion of 1:1.1618 between height and width (Figure 21). Moreover, the door beltline also complies with the complete Golden Section ratio. This evidence supports the pleasing sensory perception of a long sleek elegant form of beauty that humankind can create and imprint as another proportion principle chapter.

Figure 21 1939 Delage D8 180 the French prestige automobile brand with body design by Letourneur et Marchand expressing the Golden Section Theory of Beauty (Modified from Manson, 2013).

“Nothing develops a sense of proportion like practice in drawing” says Curtis (2011). As the designer of the Woodbury Landscape Planning, the Woodbury Tower was one design feature among others in the project that originated from a conventional process of hand sketch with an inspiration from the Pictorial Encyclopedia of Historic Architectural Plans, Details and Elements by Haneman (1984),, an essential key for Classical Architecture. Furthermore, searching for design references is also an eyed-training investigation skill for design inspiration. The Alhambra Palace image in Granada (Figure 22) is a signature of the Mediterranean Classic that frequently is found in any media however, a local reference reflecting the Southern California living standard was a hidden gem. After miles of weekend wandering, the disclosure of a superlative example of the Golden

Ratio was seen at the Congregational Church of Sierra Madre in California (Figure 23). The Congregational Church established in 1925 is an example of Renaissance Revival Architecture which has most of the featured elements for which the designer was searching.

Figure 22 The Partal Palace in Alhambra, Granada, Spain expressing some relationship of The Golden Ratio in the design form. (Modified from viator.com)

Figure 23 The Congregational Church Tower of Sierra Madre, California expressing a clear design with The Golden Ratio implementation. (Modified from Wikipedia, 2022)

The constructed dimensions of the Woodbury Towers are twelve feet in width by forty feet in height to under the tower's eave. The virtual superimposition method reveals that the Woodbury Tower proportion complied with the Golden Section in the ratio of 1:1.618 between width and height, thereby expressing the harmonious design of the Renaissance Revival Architecture (Figure 24). Not only in the form of the tower,

but when zooming into the detail elements of the tower can also notice that most of the divined lines, borders, ledges, voids and arches on the façade reflect the Golden Section as well. The opening arch at the ground level has a height ratio (B1) of 1.1618 compared to the 1 ratio of the tower's half width (B), while the entire tower's width (A) has a ratio of 1 compared 1.1618 for the tower's half height (A1) of the total façade. The three opening arches under the tower's eave are engraved to the final ledge frame (D) within the relationship of 1 ratio width to 1.1618 ratio height under the arch (D1). Furthermore, the height of the square opening (F) could be transferred into ratio of 1 proportioned to 1.1618 for the two width's square openings (F1). The slope angle of the hip roof top (C) has a 1 ratio height to a 1.1618 ratio for the half width of the façade (C1). The ratio of 1:1.618 could be applied to nearly any designed segment in the tower, thereby articulating aesthetic theories in architecture employed since Vitruvius's time.

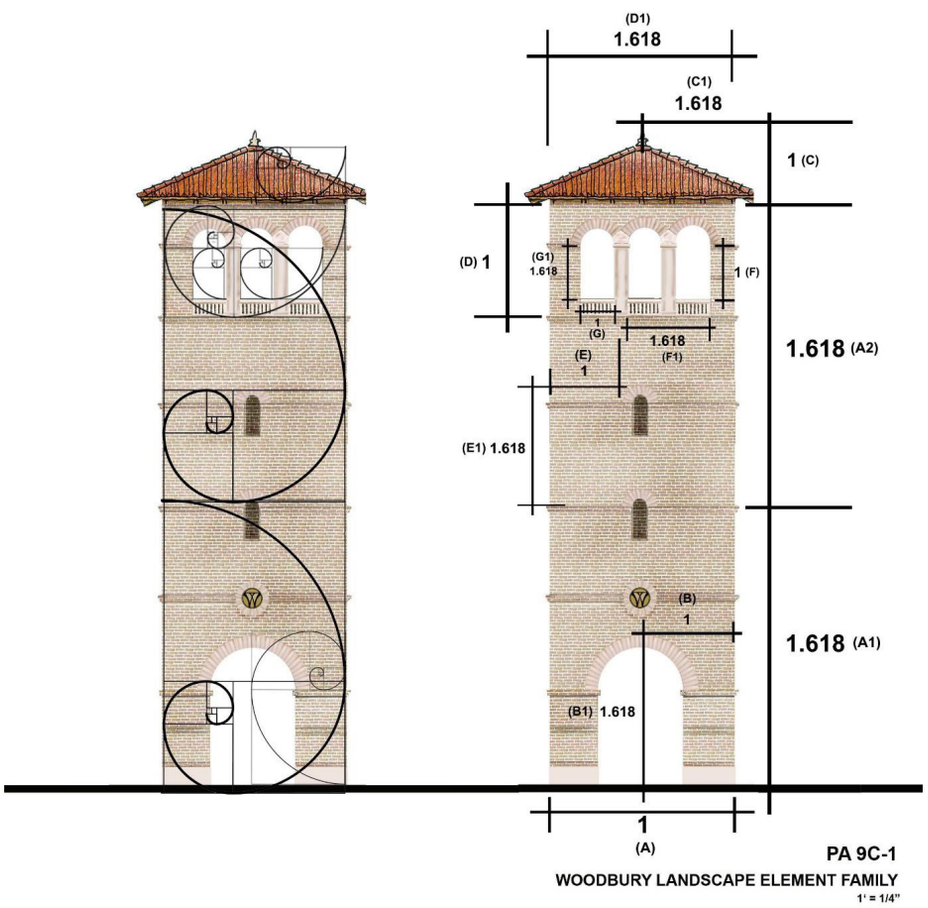

Figure 24 Superimposition analysis of the Golden Section on the Woodbury Tower Design. Left; The Golden Section overlayed on the finished design of the Woodbury Tower, Right; The Golden Section from the left image was transferred to the proportion ratio.

5. Conclusion

Architecture and landscape architecture represent physical design expertise that may need an essential period of one's time for training, practicing and experiencing sensory perceptions in order to originate the precious design piece. Post-construction cross examination between theory and practice once in a while may rejuvenate the career ambition as well as providing worthy case studies for a teaching career. This paper essentially identifies and reviews key architectural and design theories that could successfully be superimposed

on a practical design feature as an approach to unlocking issues reflecting the truth in good design. The word "good design" has been an intellectual discussion topic among designers for generations and is so subjective that one could argue endlessly. Without theoretical support, the discussion could very well be just empty air floating around the table rather than a validated idea. Therefore, the result of this research reflects design quality but also answer to questions related to principles of good design such as scale and proportion. The Golden Section is applicable for "good design with aesthetic proportion" demonstrated here for both architectural/ landscape architectural and automobile design. This result is applicable not just for an academic career but is also a pure connectivity to professional practice.

Curtis (2011) stated in his book The Secret of Architectural Composition; "a good design for building is one whose elements are combined in such a way as to preserve good proportion throughout and all of whose parts are in scale. The architect must above everything be a master of proportion".

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