Testing the Transmission of Design Principles from Designers to Recievers: An Assesment Model in the Field of Environmental Aesthetics

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ABSTRACT

Architectural works cannot be judged independent from their design principles. Although affirmations of architects explicate these principles, the actual success of a building highly depends on its power of manifesting these principles through presence. In this context, the study proposes an assessment model that tests the communication between an architect and architecture students. Two retail centers, by Turkish architect Merih Karaaslan (1949-2002), were the environmental stimuli. Having been based on similar design principles, program content and size characteristics facilities differ in form and configuration. As a preliminary study, a group of graduate students (n=10) studied the texts, drawings and buildings of the architect, reviewed his general approach to architecture and defined the design principles that generated the two buildings. Then an empirical research was conducted. Having been bused to the facilities and accomplished a walk-through in each, the undergraduate students on site (n=41) were given the questionnaires testing form, configuration and spatial impact variables. Results revealed significant differences for the spatial impact and form meaning that participants failed to diagnose majority of the observable principles. Participants were also asked to evaluate the success of the architect relating to the two buildings. Being different from the hypothesized, divergent levels of success were diagnosed. In addition, after completing the on-site evaluations in each building, participants studied a set of 12 images of architectural works and were asked to guess whether each design could be a work of the architect of the two retail centers. For the 8 building images that actually belonged to the architect, the percentages of right guesses were low. All these findings indicated failures in transmission. The study highlighted the discord between a designer and receivers. Through exemplifying the inconsistency within the profession, the research revealed architect-architect variances in judgments parallel to the architect-layperson differences that have been profoundly studied.

Keywords: Environmental aesthetics, affective appraisals, building properties, cognitive properties, building evaluation, pre-architects

1. INTRODUCTION

An architect expresses his/her design approach via words or/and works. Implementation of verbal statements in practice is a difficult subject to assess because neither appropriate norms nor methods are present. In addition, ambiguity of the vocabulary that architects use and the involvement of other actors in design and construction phases have been considered as the main obstacles of the subject matter [1]. Therefore, what the architect says about his/her works is left to the interest of historians, critics and theoreticians but surely not to empirical researchers. Furthermore, most studies pay little attention to the relations between the two fields, i.e. (i) what an architect intended to do in a specific building, in other words, his/her professional challenges and genuine design principles and (ii) the features of actual buildings that exhibit the fulfillment of these challenges, e.g. formal and observable issues. The current study proposes a methodology that integrates these two.

The original design intentions of architects are named as design principles in this study. These principles are the pre-design ideas in a designer's mind that shape the design process, the schema (or the design concept) and the traits of the end-product. In a sense, it is the Architectural worldview and surely shaped under the effect of the general worldview of the person who holds it.

Verbal statements regarding these worldviews and buildings require third-kind elements to be related to each other. In this study, formal aspects of architecture, as have been suggested by Lang [2], are considered as the mediator. A normative analysis regarding the architect's world view and an empirical search based on participant assessments are successively performed in this study.

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1.1. Previous Research

Physical features of architectural works have been judged differently. Empirical researches have proved that objective building cues (e.g. articulation of spaces, color, ornaments, roof shape and size) and cognitive/conceptual properties (e.g. complexity, clarity, friendliness, originality, meaningfulness and ruggedness) have been assessed differently by architects, pre-architects and non-architects [3, 4], even by the architects and planners who have been considered as natural allies [5]. Architects have been reported to be more concerned with individual buildings, public appeal and distinctiveness of a work whereas planners and users have shown more conformity in their judgments. Thus, different concerns cause different aesthetic conclusions.

On the other hand, agreements between architects and non-architects on the global impressions of buildings indicated presence of common denominators between these two groups. Taking similar levels of pleasure from overall building images or/and choosing the same buildings that are emotionally arousing have been the examples [6]. These denominators have been the general assessment issues whereas the assessments related with building cues have been reported to show significant differences. For example, use of arches, railings, metal, triangles and round shapes have been diagnosed to be the pleasure and arousal resources of architects as reflectivity, glass, fenestration, stories, and color uniformity have been the arousal resources of non-architects. Fanciness has been found to be the only common issue favored by both groups. These indicate the matter of distinctions in judging physical cues. Heterogeneous ratings of non-architects, i.e. the effects of personality, gender and environmental experience, have been proved to be the determiners of this judgment diversity [6].

In a research that have been conducted with planning students, geography students, residents and planning officers, Hubbard has focused on the *"positionality of individuals"*, which meant the relations between the social structure and the individual who is inserted in it. According to Hubbard, interpretation of architectural stimuli varies as the social group's impact on the individual changes [7]. Thus, as an alternative to cognitive competency, the present knowledge structures of groups within which individuals grow their positionality, have been pointed out to be the reasons of variety. Correspondingly, Wilson [8] has reported school-specific influences among students of architecture in diagnosing the stylistic trends (i.e. Modernism, Post-Modernism, High-Tech and Neo-Vernacular) and making personal judgments. Obviously, professional and educational differences generate judgment discrepancies.

Nasar [9] has focused on *"emotional response"* in individual level. According to Nasar's claim, aesthetic responses are given *independent from* cognition and even *before cognition*. Thus, cognition is not necessarily a rational calculation. Consequently, formal variables (e.g. enclosure, complexity and order) and symbolic variables (e.g. naturalness, upkeep, intensity of use and style) act together in an aesthetic judgment without following a process order. The only principle that has been claimed to be present was that individuals judge environments by comparing them with their own experiential background.

The cognitive/conceptual properties of previous researches have been developed for assessing large sets of buildings or for anonymous works like the infill developments. In addition, each study has used its own set of *unique cognitive properties*.

As Brown & Gifford have suggested [4], the causal relations between formal and conceptual properties should have been defined in relation to participant groups. By this way, architects may accomplish a better understanding about the value system of non-architects and accordingly improve their design grammar. This reality encourages the employment of idiosyncratic investigations on the cognitive properties of individual architects in relation to their unique buildings. The methodology that has been introduced here carries the potential for being varied according to the chosen architect(s) and work(s).

Previous researches generally have used two dimensional images of building facades as the stimuli. Participant ratings have been compared with each other in order to diagnose the significant differences between groups. In addition, there have been researches that developed a scenario for creating a realistic atmosphere, i.e. making participants judge two court buildings as if they were involved with a hypothetical trial [10]. In fact, cognition of spaces is a three, and even, a four dimensional act. In a search for effective qualities attributed to molar environments, actual presence of each subject in one indoor or outdoor environment has been preferred. [11] In other words, affective quality has been considered highly dependent to actual relation with the environment rather than representative ones.

This study tested the transmission, which was expected to be present between an architect and architecture students, via the student judgments regarding two actual buildings. It was one step beyond the researches which have focused on architect-layperson differences. Knowing the diversifying effect of the heterogeneity of layperson groups on judgments, a single group of judges (i.e. students of architecture) was chosen in the present study. In addition, ambiguities of verbal expressions were transposed to clear empirical research statements by a special team of graduate students, i.e. *the normative team*.

The rationale behind focusing on architect-architectural student transmission was that almost all empirical researches have been neglecting such relations due to the limits of scientific approach that avoids linking the subjective statements of designer(s) with the objective measurements of the receivers. The present study

proposed and employed an integrative model within the field of environmental aesthetics. The main assumption was that the differences of judgments about buildings were not only present between architect and laypeople groups but they might also be observed within the professional group too. As known, a society of architects embody varying approaches shaped according to the status of each individual, e.g. being a practicing architect, academician or architecture student. The present study focused on students of architecture as the receiver group. The model has potential to be applied to other status groups of architects and verify the variances within the main group/society.

2. METHODOLOGY

2.1. Research design

Present study was conducted in three phases:

1. *Preliminary study:* A group of graduate students (n=10), the normative team, studied the texts about the focused architect and his architecture. The team was the 2004-05 Winter Term students of the Graduate Course, "M534 Design and Evaluation Problems in Architecture" of the Architecture Department, Institute of Science and Technology, Gazi University. The architect, Merih Karaaslan (1949-2002), had already collected all his designs and built works in a book [13]. Also there were several national architectural journals that profiled Karaaslan's works and design approach. Thus, Karaaslan was chosen due to the large volume of statements made by himself and about him. Through individual studies and group discussions, the normative team re-arranged architect's design principles in form of clear statements. The group visited some of his buildings and decided on the two retail centers due to their representative values in terms of having the building properties that correspond to the original design principles. The group revisited the two buildings in order to check whether the last set of statements of design principles was appropriate for further empirical research. The final version of the statements formed the issues and thus the questions of the following empirical phase.

2. *Empirical study:* Voluntary 3rd year undergraduate students of architecture (n=41) were bused to buildings. After exploring the first facility (ERC, in this case) they gathered in the courtyard and judged the building properties on a 13-item questionnaire. In addition, they judged the success of the architect on a 7-item questionnaire. The same procedure was repeated for the other building (ARC, in this case). On their return bus, the questionnaire forms about their personal information were delivered. As they returned from the site-visit, the last section of the questionnaire was delivered at school. 12 images of buildings were presented and participants were asked to decide if each could be another design of the same architect of the two buildings that they had just visited. All questionnaire forms were collected back at school. The researcher presented her full-hearted thanks to all participants and delivered pens as a remembrance of the day.

3. *Analysis:* Personal information was analyzed to see the characteristics of the participant group. Secondly, the comparisons between the judgments about the two buildings and the architect's success regarding the two buildings were analyzed through the Paired Samples t-Test. Mean and standard deviation values helped interpretation. Thirdly, *"identification"* was tested through comparing the percentages of the right answers given to the last section of the questionnaire.

Instead of browsing and picking items from previous sets of cognitive properties and objective components, the study used issues specific to the architect and his two buildings. Consequently, three variables were determined by the normative team: (i) form, (ii) configuration and (iii) impression. These three variables were chosen due to their nature more akin to the building properties that have been used in previous researches. In fact, the set was a mixture of issues that have been used in previous researches and that of the ones generated by the normative team of the present study. Enrichment effect of building masses, for example, is an issue that does not take place in previous lists. Being a design intention, the issue was a specific one defined by the architect. Like other issues of the research, the present study assumed this issue to be observable in both buildings of the architect. On the other hand, complexity is a common issue that has been studied in several researches. With such a mixture of issues, the present study serves to the enrichment of the field of environmental aesthetics as it gains an idiosyncratic character.

2.2. Buildings

Two retail centers by Architect Merih Karaaslan were focused. Both are in Batıkent, which is a satellite city of Ankara, the capital city of Turkey. Andas Retail Center (ARC) and Erdem Retail Center (ERC) are both formed around semi-enclosed courtyards though forms and configurations of the masses show variety. ARC is a collection of independent buildings gathered around the semi-enclosed courtyard. On the contrary, ERC is only one concave building block allowing passages from inside to outside and bordering semi-enclosed courtyard of same scale. (Figure 1) ERC and its courtyard are covered with a roof structure whereas a smaller size roof structure covers only the shopping street and the shops in ARC.

The ground level is divided into parts and enriched with ramps and stairs in ARC whereas it is left blank in ERC. Semi-enclosed courtyard is open in ERC whereas, in ARC, it is enclosed with a wall under the level of human eye (h=110cm). ARC houses 32 units each include programs like pharmacy, butcher, supermarket, tailor, electrician, stationery, bank and hair dresser. ERC also houses 34 units similar in character. Having an adjacent storage behind, each unit has a front door open to the semi-enclosed courtyard.

With their courtyards, both facilities are visually and physically accessible, stimulating, encourage

involvement of visitors and act as local centers by providing central focus for activities, thus were designed in line with the contemporary design principles of shopping malls. [12] To enhance this design concept, the architect used pre-historic and historic Anatolian figures in ARC, such as a *Prostilos* (to form the bank), a *Stoa* and *Doric columns* (used in original meanings) and the Islamic figures like *Sadirvan* (originally a fountain, forming the chatting square) and a *Kumbet* (originally a holy place for the holy deceased, forming the kiosk). The *Hittite ramps* were the only connotation used in ERC in this sense. Superimposition of figures enhances building's *"attraction"* in ARC whereas the continuity of the concave building mass underlines *"definability"* in ERC.

2.3. Instrument

The whole questionnaire consisted of seven pages. The first two pages were delivered right after participants walked in and around the building and were gathered in the courtyard of ARC. Before delivery, a brief explanation was given about the research stating that there was no right or wrong answer for the questions, so all they had to do was judging the buildings on the questioned issues according to their personal observations and impressions. The following two pages were delivered in the courtyard of ERC without repeating the preliminary explanation.

Respondents were asked to judge each building through a set of 13 issues; each was formed as bi-polar questions of 5 point scale. Of the 13 issues, complexity - clarity, human scale - over human scale, nice colors - dull colors and defined borders - ambiguous borders were the items defining the *form variable*. The *configuration variable* was questioned through integration / disintegration with nature, integration / disintegration with surroundings, congested / dispersed effect of masses, enriching / not enriching effect of architectural elements and enriching / not enriching effect of roof structure. And the *global impression variable* was asked via the following characteristics; inviting / excluding, cheering up / relaxing, alive / not alive and encouraging / discouraging the involvement of people. On a five point scale again, respondents judged the *success of the architect* for each building (5=very successful, 1=no success at all). Items were; architect's success in creating a nice looking building, giving people a nice place, designing an original work of architecture, creating an architecture that has eternal values, forming the building like a sculpture, creating a building of strong identity and being able to make a positive contribution to architecture on a national level. All variables and issues were determined by the normative team, who had studied all the written material by / about the architect and matched principles with the properties of the two focused buildings. The *personal information* page, which was delivered in the return bus, was designed for collecting participants'

gender and age information. Moreover, general attitude towards shopping facilities, experience regarding Batıkent area, knowledge about the two facilities and the architect were also questioned. Individuals' feelings towards being an evaluator in the study were also tested.

Last page, the *identification* section, was delivered at school. On one A4 format sheet, 12 colorful pictures of architectural works were presented to the participants. They were asked to make a guess about each building image if it could have been another work of the same architect of the two buildings that they had just visited. Despite participants' curiosity, the name of the architect was not spelled until the whole study was completed in order to avoid bias during evaluation and identification phases.

Regarding the 13 items, reliability analysis gave similar scores of Cronbach's coefficient alpha value for the two buildings, i.e. $\alpha = .57$ for ERC and $\alpha = .58$ for ARC. Despite being low, the reliability values were coherent. Previous research with single-group participants [10] gave also low but acceptable values of Cronbach's alpha (.55 and .68). It is likely that such low values stem from single-group design of researches that also cause a low level control on the group composition due to voluntary participation. On the other hand, for the success of the architect, results were again similar but surprisingly more reliable ($\alpha = .83$ for ERC and .89 for ARC). The issues and statement sentences of the two groups of questions (regarding building properties and success of the architect) were prepared by the same normative team. Therefore, the lower reliability of one group of questions (i.e. building properties) indicates that the problem stems from participant judgments rather than the questions or the questioned issues themselves.

2.4. Participants

Participants (8 male, 33 female, mean age = 21.4 years) were 3rd year architectural students of Gazi University, Department of Architecture. Majority (%78) expressed their satisfaction with their role, i.e. *building assessment experts*, thus enjoyed the assessment process. %98 of participants had never visited the two retail centers or Batıkent before (%90), therefore they were unbiased. For %80 of participants, retail centers and shopping malls were liked in general and these places were expected to be entertaining rather than being functional (%90). %69 of participants preferred the new shopping centers with atriums, towers, multi-storey shopping facilities and public places. Thus, *"leisure-oriented"* preference was dominant to "task-oriented" one. [12] From participant answers, it was easy to guess they would prefer ARC to ERC.

ERDEM RETAIL CENTER   ANDAS RETAIL CENTER

Figure 1. Erdem and Andas Retail Centers, plans and views

All subjects were voluntary participants. Due to two participants were considered sufficient for judging existing environments accurately. Each was supposed to have a basic understanding of forms and configurations. Being from one single school, participants were the point of confidence since the research team had a clear idea about the knowledge level of the group and their ability to use it. In addition, *the effects of architectural schools on individual judgments* [8] were limited by this way. Differences between schools and their effects on personal value systems were left out in this study as it was another research topic that needs an elaborate study on diverse approaches in architectural education.

As noted before, apart from undergraduates, a group of graduate students (n=10), *the normative team*, took part in the research as well. They studied the written materials [13] about the architect and his architecture. The concepts that ruled the architect were identified by the team. They visited some buildings of the architect to check the presence of the concepts that they had identified. Lastly, they developed a set of 13 items by which the two specific buildings could be judged. They also determined the 7 items measuring architect's success regarding the same buildings. The team used *consensus decision making method* rather than a numeric/objective one. All items were fixed at the end of four sessions. Each session was a three hour discussion run by the 10 people.

Diagnosing and naming designers' concepts were considered as normative research in this study. As Lang puts, architects' vocabulary is usually ambiguous [2], thus is not suitable for direct use in empirical researches. In addition, involvement of actors such as developers and investors cause serious alterations in reading an architect's original intentions from the actual buildings [2], thus further research and expert judgments become necessary to step beyond what is being observed. Briefly, the non empirical part of the research was considered as a separate preliminary section of this study for which involvement of *personal / subjective judgments of experts* was unavoidable. Using the results of these judgments as variables of the empirical part is a novelty that this research introduces.

2.5. Findings

Investigations of the normative team raised three hypotheses:

Hypothesis #1: Participants were expected to differ in their assessments regarding the issues of form and configuration. On the contrary, similar assessments were expected regarding the impression variable.

Through elaborate investigations, the normative team revealed the design principle of the architect; *designing retail facilities in such a way that spaces encourage people's involvement.* Semi-enclosed courtyards were designed to materialize this principle. Thus, the positive / stimulating building impressions of both facilities

complete and one half years experience in architectural were expected to cause identical judgment scores regarding the impression variable.

For amplifying such a positive impression in two buildings, the architect used forms and configurations differently. Complexity, ambiguity of borders, variability of colors and the perceivable human scale in ARC were assumed to create differences in scores regarding the form variable. Continuous borders and monochrome color of ERC also were assumed to cause differences of judgment

The wide roof structure in ERC was supposed to create differences in judgments regarding the enrichment effects. In addition to the enrichment effect, independent masses in ARC were supposed to enhance building's integration with nature and its surroundings. At this point, the normative team wanted to see if such enrichment was attained or, consequently, crowding effect was caused. So, the crowding effect issue stemmed directly from the observations and curiosity of the normative team.

Hypothesis #2: For the "success of the architect" issue, participants were expected to make positive and similar assessments regarding the two focused buildings.

Items that were translated by the normative team for this empirical study were reflecting architect's original intentions for a successful architecture. According to the team, the architect had used these items in both buildings successfully. Thus, in conditions of a true transmission from the architect to participants, the architect was expected to be scored as successful for both facilities. In other words, participants were expected to judge the success of the architect positively despite his use of different design principles for the realization of the same design principles. On the other hand, success scores were expected to be slightly higher in ARC due to the "leisure-oriented" preferences of participants and the vivacity attained through the collection of independent masses in the actual building.

Consequently, through the items of nice look, facilitating a nice living environment, originality, eternality, sculpture value, distinct identity and contribution to Turkish architecture, participants were expected to make parallel judgments about how far the architect succeeded in both buildings. In other words, participants were supposed to diagnose two different ways of approaching same success items. Thus, positive values and insignificant differences were considered as the indicators of true transmission.

Hypothesis #3: After seeing and judging the two buildings, participants were expected to distinguish the designs of the architect from other designs of other architects.

After seeing and judging the two facilities of the architect, participants were assumed to gain confidence for identifying the *style* (attitude / approach / language)

of the architect. Through the elaborate on-site investigation of the two different approaches of him, participants were expected to have appropriate experience to be able to identify his design vocabulary. For the 12 images, high rates of true identifications were expected.

The hypotheses above stem from the following questions: (1) *Do the two buildings convey their design principles with similar accuracy?(2) Can a consensus be obtained on architect's success regarding the two buildings?(3) Is the architect's design approach identifiable?* In conditions of accurate transmission, judgments regarding both buildings would differ for certain issues whereas be parallel for the others. Again, to diagnose accuracy in transmission, identical judgments for the architect's success were necessary. The last chain of an accurate transmission was related with participants' being able to diagnose his design approach among other approaches of other architects. Thus, the three questions of this research try to measure the transmission issue through diagnosing its accuracy in the specific sample of architect-student communication.

Question #1: Do the two buildings convey their design principles with similar accuracy?

As reported in Table 1, the difference was significant (p < .05) between ERC and ARC in terms of conveying design principles. Scores regarding form and impression variables were found to be differing while showing similarity regarding configuration issue. Results regarding form were in line with Hypothesis #1 whereas they differed regarding configuration and impression variables. In other words, both buildings were found to be conveying their design principles through the items of form issue successfully. On the contrary, they were found to be displaying difficulties in conveying the same principles through their configurations and impressions.

In line with the first hypothesis of the research, complexity level of the two buildings and their well-defined / ambiguous borders were the issues of form

variable for which participant assessments displayed difference. Although color combinations were different, participants did not score so. Such indifference was found for the assessments regarding the scale issue as well. The normative team had agreed on a possible assessment difference for the scale issue. Despite similar sizes, ERC was thought to be assessed *over human scale* due to its 2 storey-continuous-building mass. Participant scores did not support this expectation either.

Although independent masses were supposed to enhance ARC's integration with nature and surrounding environment, participant assessments were not in line with this assumption. Compared to ERC, ARC had more number of building masses that was supposed to enrich the building. But scores did not support this assumption either. The strong roof structure was supposed to be adding ambiance to the spatial quality of ERC, but participant scores did not support such an effect. The only item of configuration which was in line with the hypothesis was the crowding effect of building masses. It was obvious for participants that independent masses of ARC had crowding effect (Mean = .02) compared to the continuous mass of ERC (Mean = 1.07).

According to analyses, ERC and ARC were assessed differently regarding their invitingness, being vivid living environments and cheering up effects. These differences were not in line with the assumptions of the normative team. On the contrary, for the issue of *encouraging involvement*, participants scored parallel to the team. Although ERC was scored less encouraging (Mean = .34) than ARC (Mean = .73) the difference was not significant.

All these results reveal the failures of a total transmission from the architect to architecture students. The building failed in conveying certain design principles. The weakest transmission occurred for impression variable whereas partially meaningful transmission occurred for form and configuration variables.

Table 1 – Differences in form, configuration and impression variables for the two buildings
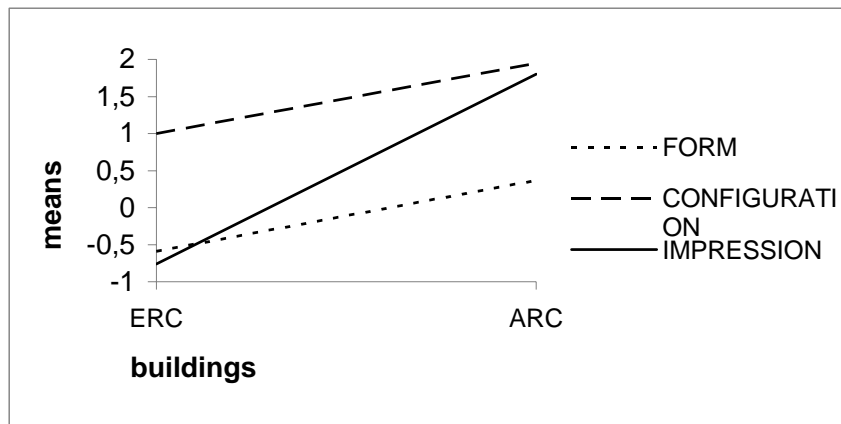
	ERC		ARC		Paired samples t-test	
	mean	SD	mean	SD	t	Sig. (2-tailed)
FORM	*-.59*	*2.04*	*.37*	*2.07*	*-2,56*	*.014*
Complexity	-.37	1.20	.83	1.00	-5.61	.000
Well-defined/ambiguous borders	.56	1.23	.15	1.20	.30	.767
Nice / dull colors	-1.20	.93	-.98	1.37	-1.00	.323
Human / over human scale	.41	1.09	.37	.97	2.48	.018
CONFIGURATION	*1.00*	*2.50*	*1.95*	*2.80*	*-1,83*	*.075*
Integration with nature	-.17	1.00	-.22	1.01	,29	.777
Integration with surroundings	.37	.89	.27	1.12	.55	.585
Crowding / not crowding effect of masses	-.02	1.06	1.07	.91	-4.81	.000
Enriching / not enriching effect of elements	.56	1.21	.90	1.09	-1.45	.155
Enriching / not enriching effect of roof structure	.22	1.31	-.07	1.40	.89	.380
IMPRESSION	*-.76*	*2.61*	*1.80*	*2.53*	*-5,06*	*.000*
Inviting / excluding	-.46	1.03	.22	.99	-3.38	.002
Cheering-up / relaxing	-.39	.77	.10	1.02	-2.50	.016
Alive / not alive	-.24	1.16	.76	.94	-4.47	.000
Encouraging / discouraging involvement	.34	1.15	.73	1.10	-1,65	.107

Note: High mean values of variables indicate positive responses.

Question #2: Can a consensus be obtained on architect's success regarding the two buildings?

As reported in Table 2, all judgments were positive. Thus, data supported the first part of Hypothesis #2.

Participants were able to diagnose architect's success in each facility regardless of the score differences regarding form and configuration issues.

Table 2 – Differences in assessments regarding success of the architect in two buildings
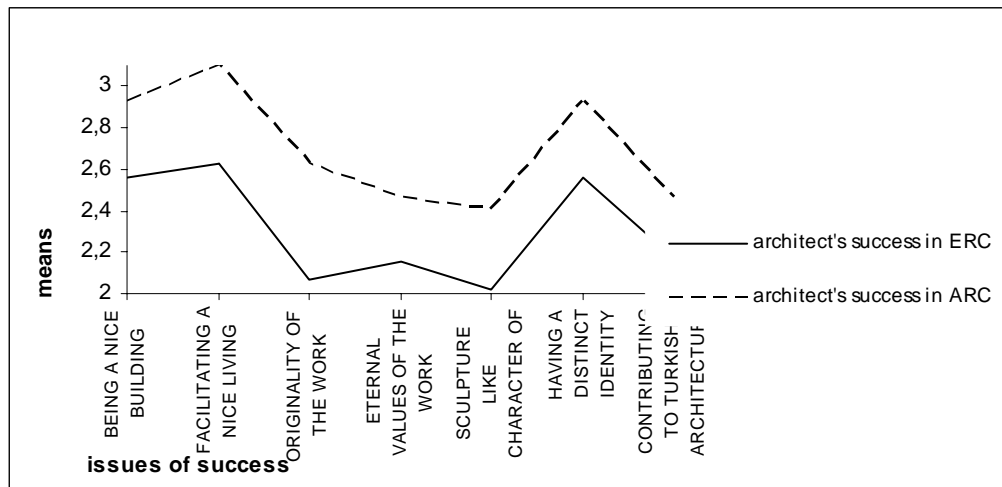
	ERC		ARC		Paired samples t-test	
	Mean	SD	mean	SD	t	Sig. (2-tailed)
ARCHITECT'S SUCCESS IN ERC AND ARC	16.17	4.43	18.93	5.69	-3,47	.001
Creating a nice building	2.56	.98	2.93	1.01	-2.15	.038
Facilitating a nice living	2.63	.97	3.10	1.07	-2.89	.006
Originality of the work	2.07	.93	2.63	1.11	-3.03	.004
Eternal values of the work	2.15	.82	2.46	.95	-2.69	.011
Sculpture-like character of the work	2.02	.79	2.41	1.00	-2.34	.025
Having a distinct identity	2.56	.95	2.93	1.13	-2.25	.030
Contribution to Turkish architecture	2.17	.86	2.46	1.00	-1.96	.057

Note: High mean values of variables indicate positive responses.

As can be observed from illustration in Table 2, architect's success in ERC goes parallel with his success in ARC despite the presence of significant difference. Contrary to Hypothesis #2, ARC had significantly higher scores for the architect's success.

Further success analyses revealed that no significant difference was present regarding the buildings' contribution to Turkish architecture. By looking at the positive mean values; it is possible to claim that both buildings are noteworthy contributions to the Turkish architecture. For the other issues of success, participants scored differently. Briefly, ARC's meaningfully higher mean scores are not in line with the second part of Hypothesis #2.

Positive scores and significant differences between the assessments indicate that participants were able to evaluate architect's success *to a certain extent*. Briefly, participants were more accurate in judging the success of the architect compared to their judgments regarding form, configuration and impression variables.

Normative team had consensus about the success of the architect for both buildings. The matter here was testing these successes in terms of their suitability for being evaluated fairly by the participants. The answer was "no". Participants were not able to judge architect's success in his two actual buildings despite the fact that both buildings were considered as successful works in terms of conveying architect's challenges.

Question #3: Was the architect's design approach identifiable?

Table 3 displays the set of 12 pictures that were presented to architecture students. According to the valid percentages of right answers, participants were very successful in diagnosing the buildings that did not belong to the architect. The high percentages regarding Ataturk Cultural Center (Pictures 4), Sekerbank Headquarters Building (Picture 6) and Dogan Media Center (Picture 8) indicateed so. For Iber Hotel (Picture 9), participants displayed less success. Variability of

forms and the concave building concept seems to have misleading effect on participants.

On the other hand, participants were not very successful in identifying the original works of the architect. Picture 1, 5 and 10 were the works that majority failed to identify (below %30). Identification level regarding Peri Tower Hotel (Picture 1), which has similar form and configuration with ARC, was weaker than the expected.

Aksa Flats and Batıkent Housing (Picture 5 and Picture 10) were more like ERC due to their *massive and compact forms*. These aspects did not guide participants either. On the other hand, Kaysu General Management Building (Picture 7) and Ostim Trade Center (Picture11) were the two works of the architect that were identified more satisfactorily than other works of him. With their dynamic masses and inviting front facades, both resemble ARC.

Table 3 – 12 building images presented to participants and percentages of right answers regarding identification

Frequencies and valid percent values of right answers			
M. Karaaslan – Peri Tower Hotel	(N=10) %24	(N=16) %39	M. Karaaslan – Ornek Hotel
M. Karaaslan – Kayseri Trade Chamber	(N=16) %39	(N=39) %95	C. Erkal – Ataturk Cultural Center
M. Karaaslan – Batıkent Housings	(N=12) %29	(N=26) %63	O. Vural – Sekerbank Headquarters
M. Karaaslan – Kaysu Management	(N=30) %73	(N=33) %81	H. Tabanlıoglu – Dogan Media Center
T. Cavdar – Iber Hotel	(N=23) %56	(N=9) %22	M. Karaaslan – Aksa Flats
M. Karaaslan – Ostim Trade Center	(23) %56	(N=17) %42	M. Karaaslan – Gul Village

Thus, it is possible to claim that *dynamic collection of independent forms* made the architect's other works to be associated with ARC. Participant's failure for Iber Hotel (Picture 9), by Tuncay Cavdar, stems from sustaining such a judgment criteria. Thus, participants were successful in reading a design principle but were not so successful in identifying the distinguished forms of the architect. Although they identified the principle that keeps forms together they could not differentiate individual forms. Their judgments were superficial rather than being a profound consideration of formal aspects. Participants did not focus on the details of building masses. Rather, they preferred to judge according to the features of general impression. This situation highlights a missing dimension in transmission. Although the buildings and images are present with their details and are able to convey a lot to receivers, participants just use general impressions for judgment. Low level of success in thorough reading and judging in this part of the research is in line with the findings of Question 1.

Although students were taken to actual buildings and gained an aesthetic experience from these facilities, the test on the designer's form language was run through printed material. These two phases seem contradicting at a glance. In fact, here in this research, students learned architect's language from reality (the actual presence of the two buildings) and were tested on that specific language in the field of representation. Of course tests could have been conducted through other methodologies such as carrying students to different buildings again or presenting 3D renders of buildings or using films etc. Obviously, each test has its own advantages and disadvantages. Building images (photographs) are the most valid and common research tools of Environmental Aesthetics field. Furthermore, testing students through another presentation technique supports findings since it also covers the comprehension levels of students. Students, in such a test, are expected to transfer what they have learned from actual buildings to the world of photographs. Thus, internalization in learning is also tested by this way.

3. DISCUSSION

Present study investigated if a true transmission was present between an architect and architecture students. Focusing on two retail facilities of one architect in specific, 10 graduate students performed an elaborate preliminary study on written materials. This group diagnosed the general design principles of the architect and visited the two retail centers in order to check whether the design principle statements were in line with the existing building features or not. In the end, they put a set of 13 + 7 issues through which an empirical study could be conducted.

The main part of the research was performed with the participant group of 40 architecture students who were expected to give accurate judgments on (i) the two

actual buildings, (ii) the ultimate success of the architect regarding these buildings and (iii) a collection of building images which was a mix of works of other architects and of the subjected architect. Participant group was taken to the actual buildings. They answered questionnaires as they were in the semi-enclosed courtyards of each related building. After judging each building in respect of from, configuration and impression variables, they were asked to judge the success of the architect regarding each building. The last part of the research was an identification study. Participants guessed about 12 images, tried to decide whether each image could be a work of the architect of the two actual buildings or not.

Results revealed failures in transmission. Participants failed in judging the issues regarding impression, whereas showed better -but still not satisfying- success in assessing the issues of form, configuration and success. This indicates the presence of two possible realities that might be considered as the two sides of the same coin:

(i) The two works under scrutiny failed in conveying their design principles and / or,

(ii) Architecture students failed in judging buildings

There is no other research that gives place to design principles of a specific architect or to the specific design principles that are valid for the focused environmental stimuli. All researches treated buildings -or mostly- their images as if they are anonymous works that are independent from the unique generator ideas of their designers. For example, Wilson has used a set of buildings that represent architectural styles, i.e. Modern, Post-Modern, Neo-Vernacular and High Tech [8] as Nasar has used a set of house facades that represented various styles i.e. Tudor, Farm, Mediterranean, Saltbox, Contemporary and Colonial [14]. In some other studies, a set of modern office buildings [6], large urban structures [4] or large contemporary commercial buildings [3] have been used as environmental stimuli as if each building did not have its own unique design principles but all had similar cues. Another recent trend in such research is using façade drawings in order to measure responses regarding a specific issue of environmental aesthetics, e.g. complexity issue in Modern and Traditional residences [15]. In the present research, which focused on two contemporary buildings, Modern or Contemporary designs were considered to be unique works that could not be clustered as a group to be compared with the other groups. They were considered to be highly dependent to the principles which acted as generators. For the "conveyance" issue, presence of such generator principles was thought to be proceeding. Thus, the two works were treated specially.

Research design, which was novel in terms of the presence of a special team who carried out the

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normative section, reduces the effects that might have been stemming from the two actual buildings. The role of this team was assuring the presence of the attributed design principles in actual buildings. The set of 13 + 7 issues, which were attributed to the facilities, were generated from the direct statements of the architect and the statements that were spelled about the architect. For the unclear statements, the team re-wrote the sentences. All these processes reassured research team about the presence of properties that facilitate conveyance of specific design principles. Of course, more objective methods of design principle attribution could have been applied. Presumably, as methods become more objective, alienation from normative sources would occur as a consequence.

Being sensitive to specific issues regarding form (i.e. complexity and scale), architecture students of this study were found to be showing affinity with the laypeople participants of previous researches. According to the findings of Gifford et. al., for example, architects and laypersons have been found to be basing their aesthetic judgments on different sets of physical cues whilst displaying a considerably more agreement on buildings in terms of judging them as emotionally arousing [6]. Having been based on these findings, the present study did not use building cues (such as size, number of sides, columns, fenestration, etc.), but rather emotional responses. The study was based on generally excepted cognitive properties, e.g. complexity, and the specific properties that were stemming from the design principles of the architect, e.g. encouraging involvement of people. The issues that measured success of the architect, e.g. facilitating a nice living or contributing to Turkish architecture, were also such building properties for which participants were expected to make coherent judgments. According to the results, participants were found to be less successful in judging cognitive properties than judging success issues. This result supports the claim that architecture students do judge buildings superficially, without considering the variability of principles situated underneath.

In this study, 3rd year students were expected to be able to accomplish thorough readings of the two works in terms of diagnosing form and articulation variables accurately, thus go beyond the judgments of laypeople. But it did not happen so. Despite the presence of a comparatively more homogeneity regarding educational level of the participant group, in this study, results echoed the findings of previous researches that focused on laypeople participants which were reported to be heterogeneous in terms of sex, educational level and mood. One can easily imagine the position of a group of laypeople showing variety in judging the issues of form and configuration. However, previous research had proven architecture students to be instilled with the judgment systems specific to the profession. Architecture students were proven to be judging under the effect of time they spent in the same institution and liking what they were thought to like [8]. Depending on these results, positive performance was expected from the participants of this study. But, it did not happen so

either. Of course, there isn't any standard regarding students' achievement in judging. The ultimate success level, in this study, was determined by the normative team who decided about the statements and put the hypotheses accordingly.

Architecture students, in this study, seem to be under the effect of dynamic expression of ARC (the figurative composition) as they were judging the 12 pictures of different works. They were successful in identifying the buildings echoing the figures of ARC whereas they were less successful with the ones resembling ERC (the abstract composition). Equal success levels would make participants highly successful in the identification study. But it did not happen so. For the architecture students who failed in judging the form and configuration properties of actual buildings, it was inevitable to be under the effect of dynamic and figurative expressions of architecture when identifying other works.

Briefly, the findings of the present research illuminate the difference between an architect and architecture students in judging building properties. In other words, architecture students were not able to judge the two actual buildings accurately. Their experience, gained through special education, did not help. What an architect spelled was not understood properly. The presence of the normative team verifies that the reason of the fact does not stem from buildings. The two buildings were especially chosen by the team due to their representation quality regarding the design principles. The principles that were expressed in 13 + 7 questions were factual in terms of corresponding to related building properties in the two actual works. Such an assurance was the novelty of the present study eliminating one effective variable. As a consequence, architecture students' perception was found to be the reason for the failures in transmission.

4. IMPLICATIONS

Implications, from the most specific to the most general, are as the following:

(i)   In previous researches, architecture students were found to be judging buildings according to their professional education. The more time they spent in their institution, the more they showed dependence to what they were thought [8]. Present study, in a way, questioned the validity of such a situation and found that it was justifiable up to a certain extent. Although students of architecture from one-single institution were good at judging general properties of actual works (i.e. the success of the architect), their achievement in diagnosing form and configuration variables were comparably weaker. This may be stemming from the chosen grade of student participants. 4th year students (the ones who are just about to complete their graduate degree program) would probably define a more consistent group that could judge more

accurately. Therefore, choosing the appropriate level students is a task that has to be considered carefully in future researches. Even, carrying a preliminary test can be considered. The test may give opportunity to researchers to see if the chosen participants are aware of the building properties that are subject to the actual research.

(ii)   Present research showed that normative statements can be included in empirical research by the help of a special group of people who perform the necessary translations. That is one way of overcoming the ambiguity of the normative field. Developing new methodological approaches is necessary. By this way, normative statements may gain a status, in which they can be explained clearly, paired with building properties, be shared by all the actors taking role in a building's life cycle and be subject for scientific research.

(iii)   The conventional difference between objective components and affective appraisals of the Environmental Aesthetics field were not used in this study. Instead, all components and appraisals were taken as one, and named as "building properties". The name was borrowed from Gifford [3,6]. Such differences may facilitate researches that compare tastes and judgments of architects with that of laypeople [3,6]. In a research that focuses on the transmission of design principles that generated two specific works, it was considered unnecessary to use an objective component list on which all participants would likely agree due to their single / homogenous professional education. Thus, it is possible to recommend future researches, which will study Architecture rather than building images and facades, to focus on impressive variables instead of individual objective components. Impressions are the responses that combine the design principles of architects with the feelings of receivers.

(iv)   The present failure in transmission raises a new question: What happens between architects and architects? Do buildings convey their design principles to other architects? Obviously, participant groups judge according to their interests. It is important to know who is interested in which part of a work so judges according to what motive. Educational and attitudinal differences between architects can be a good start for discussions especially for the architects who judge each other's work for various reasons. Juries of architectural competitions, for example, are such

environments in which tastes and judgments clash.

Discussing Architecture and making it a part of scientific research seems only possible through testing the relations between the observable properties of Architectural works and the observers / receivers. That is why, the transmission between actors, which occur through design principles and building properties, is important. The current study presented positive and negative aspects of a measured transmission. Varieties of such case studies have potential to illuminate this important subject profoundly. The arguments in the present study should be considered as a first step for future investigations.

ACKNOWLEDGMENTS

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