

# Architects vs. Laypersons: Different Perspectives on a Community Development

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**Anđelković, Margarita**

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# Architects and laypeople: differences in the perception of building design

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Margareta Anđelković

Mentor: Prof. Vanda Bazdan, PhD

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Abstract

The purpose of this research is to see whether architects, architecture students, laypeople and non-architects whose work requires familiarity with architecture differ in rating of the building designs. Questionnaire was administered to 85 participants out of which 22,1% architects, 32,5% architecture students, 23,4% laypeople and 22,1% non-architects whose work requires familiarity with architecture. The results showed that architects and laypeople differ significantly. In addition, architecture students are mostly agreeable with laypeople while non-architects whose work requires familiarity with architecture are mostly agreeable with architects. It is detected that professional experience of architects leads them to rate the designs more objectively than other with no or minor connection to architecture.

Architects    Laypeople    Building design    Perception    Comparison

## Introduction

### *Work and occupational subculture*

Subcultures were first introduced as a term by anthropologists and defined as subgroups of local cultures (Turner, 2006). Subcultures refer to specific group of people, distinguished from the mainstream culture in that they have own set of values that influences the behavior and the perception on what is good and bad in certain situation. There are many subcultures that differentiate mostly by the values, preferences, ideals and behavior.

People, who work together for a longer period of time, tend to develop a similar way of acting, thinking and feeling (Rothman, 1997; Jung, Nam, Lee & Kim, 2016). The outcome of working together is usually a specific type of language, artifacts, beliefs, values and norms to distinguish 'members' from 'non-members'. This tends to be referred to as work subculture. Work subcultures, in a way, present adaptation to social and physical conditions of work.

The most famous account of work subculture is presented in the Hawthorne studies (Roethlisberger & Dixon, 1934). By observing Hawthorne workers it was concluded that they share quota restrictions, informal norm setting, and a specific upper and lower setting on output of the products coming off assembly line. They also shared their own rituals and job rotation. Every new worker had to master the subculture to be integrated in the group.

In terms of work related subculture, in addition to those subcultures associated with a specific work environment, there are also subcultures associated with occupations and professions (Rothman, 1997). Occupational subculture encompasses people of a work environment that have a sense of identity that goes beyond the place they work. For example, the occupation of a police officer surpasses the job. If a police officer not currently on the job spots a person in distress, where majority of people would not react or even notice, a police officer's instincts will not let him walk away and not try to help the said person. It is like the

Architects and laypeople

occupation is embedded in the personality. Also, there is a mutual respect and a sense of togetherness among people of shared occupation.

### *Language of subcultures*

Every occupation has its own type of language (Rothman, 1997; Payne & Cooper, 2001). There is a simple need for words and phrases to describe certain tools, machinery, workers or types of assignments that are unique for a certain job. All of these words and phrases sufficiently and successfully translate complex ideas, processes or names unique for every job (Rothman, 1997). For example, lawyers might refer to their colleagues as 'rainmakers' because they are exceptionally good at attracting new business to the law firm. Airplane pilots might use the term 'slam dunk' when they refer to abrupt, steep dive through air traffic. Some occupational languages are more than just a way to describe technical terms; it is a means of communication among co-workers. Therefore, a shared language creates a bond and strengthens the relationship. It provides with a sense of identification, group solidarity and attests to the history of the group. The value of a specific occupational language is evident in a manner of usage in inter- and intra-group interactions. It has been recognized that in the company of an outsider, people of prestige occupations intentionally use their work jargon, to feel more valued and superior to a said outsider who does not understand them.

### *Artifacts of subcultures*

Artifacts can be tangible and intangible (Keyton, 2010). In work related subcultures, an artifact can be logo, tools, machines or even memories and feelings. Each subculture defines the use and importance of an artifact (Rothman, 1997). Some have higher meaning of importance than just the symbolism. For example, police officer badges. Even though they are symbolic and easily recognizable and connected with specific work culture, these artifacts invoke certain feelings like safety and security for people. On the other hand, surgeon's and mechanic's tools might not have such high symbolic nature, but they are of great importance

Architects and laypeople

to people who conduct work with the help of these tools. Thus, proper use of artifacts is important to understand the nature of work, effectiveness and relationships among coworkers.

### *Beliefs of subcultures*

For subcultures, beliefs are a way to perceive experience and organize the world (Rothman, 1997). Beliefs are a part of the knowledge base of work subcultures, for the reason that knowledge of this sort includes assumptions about work process and the nature of work. Miners are knowledgeable about certain threats in the caves. An example of this knowledge would be an understanding that rock falls can be prevented by using wooden props. One way by which knowledge is preserved in subcultures is through myths; stories of legendary exploits about people who used to work in the field. For example, miners have myths about people who used to work in the caves, who had such extraordinary strength, that they could prevent collapse of the cave. Therefore, beliefs do not have to be questioned or confirmed. They are there for people to share, learn and justify. Integrating beliefs allows certain behavior that is defined to be out of the ordinary, to be justified. It removes the feeling of guilt.

### *Values and norms of subcultures*

Values for subcultures are set of ideals about what is good, bad, desirable and undesirable. Values also influence on people's behavior and serve as guidelines on how to act in all situations (Rothman, 1997). In the army, the core values such as discipline, obedience and team work are embedded into the soldiers' minds (Keyton, 2010). In the battlefield it is clear that the ultimate goal is completing a mission successfully and that team needs must surpass individual's needs. Norms display correctness of behavior, thus allowing people in the organization to harmonize their actions. Norms dictate behavior in an organization (Stamper, Liu, Hafkamp&Ades, 2000). When a certain work related condition must be met, it will influence the behavior of all in the organization. Usually, norms are divided among technical

Architects and laypeople

and social. Technical norms interpret the 'how to' behind the job and social explain other forms of behavior.

### *Architectural subculture*

Present study explores differences in the evaluation of building design between architects and non-architects. Commonly, studies of this kind identified significant differences between architects and laypeople (Hershberger, 1969) which seem to indicate a strong influence of work subculture.

In terms of values of this distinct work subculture, some of the core values of architects are creativity, resourcefulness, leadership and integrity ("Core values of," 2013). Good architect will always use imagination in designing. The study of arts might enhance architect's creativity, adding to the vastness of the solutions, making an architect more resourceful when designing, to model designs after nature's laws. Throughout the project, architect will lead and guide the group, fully understanding at any given time what has been done and what needs to be done. Architects that hold to the values will possess the ability to sustain building traditions and principles, without copying other colleagues and styles.

Architectural beliefs include evaluation of aesthetic properties in the built environment (Fisher, 2016). To be able to evaluate the property, architects need to be familiar with two basic kinds of knowledge: theoretical and practical. Theoretical includes grasp of basic design elements, their styles, the relationship and combinations between them as well as the history of architecture. Practical knowledge demands awareness of engineering and technical details about constructing a building; making it livable, guaranteeing functionality and ensuring stability and durability (Hannerz, 1995).

When describing or evaluating the building design, architects tend to use language that is not comprehensive to a layperson (O'Gorman, 1998). They might use adjectives that have

Architects and laypeople

different meanings to different audiences. If an architect says that a building design looks spacious, it does not necessarily have the same meaning to a layperson.

Architects tend to use metaphors when evaluating the building design of their peers (Caballero, 2006). Architectural dialogue is greatly figurative, so this type of characteristic is essential. In the evaluations, buildings and materials are not necessarily described with words common to architecture, but by borrowing the language from other fields like textile industry and anatomy which allows them to make more accurate observations. To clarify, architects often tend to acquire words describing movements and objects from others to discuss their work. Some of the examples that might further clarify the necessity of metaphors in architects' language:

The quality of the materials, its surface structure and line patterns can only be appreciated at close range. Such intricate examination (of masonry walls) reveals pores, veins, folds and minute hairs, just like the human skin... The structure of the masonry is as close to my skin as the weave of my vest (Krier, 1988).

A building protects itself from water by wearing three garments. A vapor barrier lining creates a rain-coat around all extremities and appendages of the space, a rubber like membrane provides a boot around the foot of the structure, and a variety of materials are stitched together to make an umbrella of protection around the top (Centouri, 1992).

### *Differences in building design perceptions*

Montanana, Llinares and Navarro (2012) conducted a study where they looked at the differences in architects' and non-architects' evaluation of the building design based on real estate brochures. Brochures used in the study were evaluated from two different perspectives: as a potential future home and as a potential investment. The study has discovered that when choosing a property a person would live in, there are some differences but they are not that



Architects and laypeople

significant; both architects and non-architects based their decisions mostly on design and functionality.

The striking difference is the importance both groups give to these buildings based on the cognitive properties (Montanana, Llinares, Navarro, 2012). Cognitive properties are what allow people to think, rationalize and conclude. For example a person might read a headline in the newspapers, think about all the facts such as whether certain newspapers are trustworthy, whether they are objective when reporting etc. and thus making a decision whether to trust said headline. People will attach different emotion to an object based on the purpose the object is for; in this case, potential future home and potential investment. That will generate subjectivity which will affect the evaluation. When evaluating a property for living purposes in terms of design both architects and non-architects agreed that the building is innovative with good functional layout. They also concluded that property is a good family home. The disagreement is in a safety aspect, where architects consider property to be peaceful and safe to live in. As a potential investment, both groups agreed that the building is innovative. The difference is that non-architects consider that a building should be family home when looking to potentially invest as opposed to architects, who did not give high importance to that aspect.

Architects and laypersons perceive physical aspects in vastly different ways (Hershberger, 1969). The experiment was carried out to learn if the architects can communicate their intentions with the buildings they design. Three groups participated; architecture students, industry professionals and laypersons. They evaluated the buildings based on the different factors that were given to them. The study concluded that architects have different opinion on the building design than the other two groups because of the professional education they have received. For example, architects evaluated the building as 'pleasant', while other two groups did not share their opinion.

## Architects and laypeople

Devlin and Nasar (1989) conducted a study to see if professionals and non-professionals differentiate in style preference. The groups were given attributes to connect with 'high' and 'popular' architectural style. The study discovered that there is a difference in the appreciation of 'high' and 'popular' style. While non-professionals incline toward 'popular' style and linked it with attributes such as coherent, pleasure and clean, professionals thought opposite and connected these attributes with 'high' style.

Another study analyzed emotional basis for the difference in assessment between these two groups (Gifford, 2002). The groups were asked to assess the series of homes based on six cognitive factors such as 'complexity, clarity, friendliness, originality, meaningfulness and ruggedness'. Results showed that there is a difference among architects and laypersons. Architects thought of the homes as 'clear and meaningful but not rugged', while lay-persons had an opposite opinion, where they thought of them as 'rugged but not clear and beautiful'. Laypersons tend to think that the more complex the building is, the more meaning it holds, which was not the case for architects.

Architects and accountants have different way of explaining and classifying buildings (Groat, 1982). In the study that was conducted both groups had to interpret and classify different buildings. The study showed that both groups had different criteria on which they categorized the building. Accountants classified and categorized them based on the 'type', while architects categorized them on the basis of 'design, style, form and historical significance'. Also, economists do not see the contrast between modern and post-modern architecture while architects do.

Architects and non-architects also differentiate in distinguishing styles of the property (Nasar, 1989). The study presented them with different styles such as: 'contemporary, Tudor, farm, colonial and saltbox'. Comparison of the responses to each style presented that

Architects and laypeople

architects appreciated contemporary style more than Tudor. They also asserted that farm and colonial styles appear as less friendly, while they graded saltbox as the most friendly.

### *Healthy housing project*

The city of Rochester, New York, is currently redeveloping their neighborhoods. Some of them are in great shape but some of them are in urgent need of development to bring density, growth and vitality to the community (Purnama, Shreve, Wu, Wylie, 2017). Therefore the leadership within the City of Rochester and organizations in Northeast neighborhood have come together to develop the program for housing that will benefit the community and revitalize it. They are collaborating with the Architecture Department of Rochester Institute of Technology, to look for possible solutions to this problem. The goal is to create a housing community with social and cultural diversity through vibrant activity and growth, with access to amenities, sustainability through efficient systems and a safe environment.

That is why they employed the Architectural Department of RIT do design and create different types of homes. The students of ARCH 789.09 course together with their professor Jules Chiavaroli have worked hard to present designs that will be accepted by the community. There was a need for different types of housing from family homes, townhouses, shared condominiums for people with different financial abilities and cultural backgrounds. Housing also needed to be sustainable and attractive. It was important for the housing to be environmentally safe, built on the most conducive areas and to add value to the neighborhood. There was a need to determine the amenities that would be needed as well as to determine what it will take to incentivize purchase to a diverse group.

## Methods

The aim of this study was to identify the differences in the perception of the building design among four groups: architects, architecture students, laypersons and non-architects whose work requires familiarity with architecture (such as project managers, designers, real estate developers, urban planners and landscape architects). The building designs that were used for evaluation were sketches and designs of architecture students of RIT. The designs were created for the purpose of the Healthy Housing project. Based on the results it will be evident if there is a difference in the perception of the design and what are the characteristics for assessing the design value.

### *Questionnaire design and procedure*

The questionnaire model was based on Montana, Llinares and Navarro's model in which the authors compared architects and laypeople perception of the building design based on whether the building would serve as a potential future home or a potential investment. For the purpose of this research, respondents did not have to rate them based on said cognitive properties. The questionnaire consisted out of two sets of questions for two different building designs. For each design there was one general question to rate the building design on a 10-point scale, where 1 stands for "terrible architecture" and 10 stands for "excellent architecture", and a set of seven point side-by-side matrix scale with 20 opposing adjectives, where the respondents needed to choose which of those opposing adjectives describes design better. For example, on the seven point scale between *bad* and *good*, 1 stood for 'extremely bad', 2 for 'quite bad', 3 for 'slightly bad', 4 for 'neutral or neither' 5 for 'slightly good', 6 for 'quite good' and 7 for 'extremely good'. In addition there were four demographics questions, namely gender, age, level of education completed and description of respondents' status (architect, architecture student, layperson, non-architect whose work requires familiarity with architecture).

## Architects and laypeople

The study tested general hypotheses: H1: There is a difference between architects and laypeople in the evaluation of the building design; H2: There is a difference between architects and architecture students in the evaluation of the building design; H3: There is a difference between architects and non-architects in the evaluation of the building design.

The questionnaires were administered face-to-face to laypersons – members and non-members of the CONEA community, students and professionals and non-architect whose work requires familiarity with architecture. There was a “Healthy Housing” event in December 2017, during which building designs were displayed and presented to the community members. During the event students, community members and some of the non-architects and architects completed the questionnaire. Additionally, another set of questionnaires completed by architects where they rated the same designs was collected through e-mail.

### *Participants*

The sample comprised 85 individuals out of which 17 architects (22,1%), 25 architecture students (32,5%), 20 laypeople (23,4%) and 15 non-architects whose work requires familiarity with architecture (22,1%). Out of all of the questionnaires, seven were invalid.

### Results

The results confirmed that there is a difference between architects and laypeople in the evaluation of the building design (H1). Results also confirmed that there is a difference between architects and architecture students in the evaluation of building design (H2), as well as that there is a difference between architects and non-architects in the evaluation of building design (H3).

## Architects and laypeople

Additionally, this study controlled for the effect of education in the field of architecture alone and influence of work in which people encounter with architecture on a daily basis.

### *The differences between architects and laypeople*

Significant difference was detected in the overall rating of the design between architects, and laypersons  $F(3,60)=8.12, p=.000$  (Table 1). Architects rated the design as neither terrible nor excellent ( $M=5.61, SD=1.49$ ). Laypersons rated the design as very good ( $M=7.77, SD=.68$ ). Another significant difference was measured in ratings of impressiveness between architects and laypeople  $F(3,68)=11.66, p=.000$  (Table 2). Architects rated the designs as slightly unimpressive ( $M=3.88, SD=1.14$ ). Laypeople rated the designs as slightly impressive ( $M=5.78, SD=.65$ ). There was a significant difference between architects and laypeople shown in the ranking of the character of the building  $F(3,67)=8.19, p=.000$  (Table 3.) Architects rated the building as neither characterless nor characterful ( $M=4.15, SD=1.18$ ) while laypeople rated it as slightly characterful ( $M=5.68, SD=.71$ ). Significant difference between architects and laypeople was detected in rating of interestingness of the building  $F(3,67)=12.48, p=.000$  (Table 4). Architects rated the building as slightly boring ( $M=3.93, SD=.99$ ). Laypeople rated the building as slightly interesting ( $M=5.75, SD=.71$ ). The significant difference was detected in the ranking of uniqueness of the design  $F(3,67)=4.49, p=.006$  (Table 5). Architects rated the design as neither commonplace nor unique ( $M=4.41, SD=1.15$ ). Laypeople rated the designs as slightly unique ( $M=5.62, SD=.82$ ).

Another set of adjectives was shown to have a significant difference. Architects and laypeople differ when it comes to rating the sophistication of the building  $F(3,65)=5.65, p=.002$  (Table 6). Architects consider the building neither sophisticated nor unsophisticated ( $M=4.00, SD=1.08$ ). Laypeople consider the building slightly sophisticated ( $M=5.35,$

## Architects and laypeople

$SD=.82$ ). There was a significant difference detected in the rating of the pleasantness of the building  $F(3,66)=8.93, p=.000$  (Table 7). Architects ranked the building neither unpleasant nor pleasant ( $M=4.44, SD=.86$ ) Laypeople rated the design as slightly pleasant ( $M=5.92, SD=.75$ ). Architects and laypeople significantly differ when it comes to rating the attractiveness of the building  $F(3,67)=9.46, p=.000$  (Table 8). Architects rated the building neither ugly nor beautiful ( $M=4.06, SD=.96$ ), while laypeople rated the building as slightly beautiful ( $M=5.56, SD=.85$ ) There is a significant difference in the rating of the lightness of the design  $F(3,67)=3.16, p=.030$  (Table 9). Architects rated the design neither dark nor light ( $M=4.79, SD=1.26$ ). Laypeople rated the design as slightly light ( $M=5.53, SD=.79$ ).

Another significant difference was detected in the rating of the dignity of the designs  $F(3,65)=4.49, p=.006$  (Table 10). Architects rated the designs as neither undignified nor dignified ( $M=4.50, SD=.98$ ). Laypeople rated the designs as slightly dignified ( $M=5.69, SD=.66$ ) There was a significant difference in the rating of the design based on the coherency of the designs  $F(3,63)=5.51, p=.002$  (Table 11). Architects rated the buildings as neither incoherent nor coherent ( $M=4.68, SD=1.06$ ) while laypeople rated the design as slightly coherent ( $M=5.62, SD=.63$ ). Another significant difference was detected in the rating of the harmony of the design  $F(3,67)=6.17, p=.001$  (Table 12). Architects rated the design neither discordant nor harmonious ( $M=4.59, SD=1.05$ ) while laypeople rated the building as slightly harmonious ( $M=5.65, SD=.75$ ) Significant difference was detected among architects and laypeople in ranking the complexity of the design  $F(3,66)=4.97, p=.004$  (Table 13).

Architects ranked the design as slightly simple ( $M=3.91, SD=1.21$ ). Laypeople ranked the designs as slightly complicated ( $M=5.38, SD=.91$ ). Significant difference was detected in the ranking of the design in terms of how welcoming it was,  $F(3,68)=4.87, p=.004$  (Table 14). Architects rated the design neither welcoming nor unwelcoming ( $M=4.76, SD=1.08$ ) while laypeople rated the design as slightly welcoming ( $M=5.81, SD=.73$ ) There is a difference in

## Architects and laypeople

the ranking of the design's formality  $F(3,65)=2.91, p=.041$  (Table 15). Architects rated the design as neither informal nor formal ( $M=4.50, SD=1.02$ ). Laypeople rated the design as slightly formal ( $M=5.36, SD=.85$ ) Another significant difference was detected in the ranking of the spaciousness of the design  $F(3,65)=3.10, p=.033$  (Table 16). Architects rated the design as neither spacious nor cramped ( $M=4.78, SD=1.17$ ) while laypeople rated the design as slightly spacious ( $M=5.76, SD=.85$ ) Another significant difference was detected in the ranking of how fashionable a design is,  $F(3,67)=8.38, p=.000$  (Table 17). Architects rated the building neither fashionable nor unfashionable ( $M=4.09, SD=1.38$ ) Laypeople rated the building as slightly fashionable ( $M=5.74, SD=.71$ ). Significant difference was detected between architects and laypeople in boldness of the design  $F(3,67)=5.18, p=.003$  (Table 18). Architect rated the design neither timid nor bold ( $M=4.29, SD=1.38$ ), while laypeople rated the design as slightly bold ( $M=5.79, SD=.81$ ).

Significant difference was not detected between architects and laypeople in ranking of the design in terms how expected it was  $F(3,63)=2.46, p=.071$  (Table 19). Also, there was no significant difference detected between architects and laypeople in terms of how neighborly the design was  $F(3,63)=2.60, p=.060$  (Table 20).

Architecture students predominantly agreed with laypeople in terms of rating of the design. They displayed the same result which shows that professional eye of an architect differs in opinion with those who have no or minor connection with architecture.

### *Other demographic differences*

Significant difference was detected in the ranking of fashionability between people of 23-34 years of age and 65 years and older,  $F(4,67)=2.61, p=.043$  (Table 21). People aged 23-34 rated designs and neither fashionable nor unfashionable ( $M=4.74, SD=.95$ ), while people aged 65 and older rated the designs as quite fashionable ( $M=6.50, SD=.50$ ).



## Architects and laypeople

There is a significant difference detected in ratings of complexity of the design between people with high school degree and graduate or professional degree  $F(3,67)=3.81$ ,  $p=.014$  (Table 22). People with high school degree rated the designs as slightly complicated ( $M=5.79$ ,  $SD=.81$ ) while people with graduate or professional degree rated the designs as neither simple nor complicated ( $M=4.29$ ,  $SD=.88$ ). There is a significant difference detected in the ratings of formality of the design between people with associate degree and people with graduate or professional degree  $F(3,66)=3.09$ ,  $p=.033$  (Table 23). People with associate degree rated the designs as slightly formal ( $M=5.36$ ,  $SD=1.11$ ) while people with graduate or professional degree rated the designs as neither informal nor formal ( $M=4.64$ ,  $SD=.90$ ). There is a significant difference detected in the rating of the fashionability of the design between people with high school degree and people with bachelor degree  $F(3,68)=4.18$ ,  $p=.009$  (Table 24). People with associate degree rated the design as slightly fashionable ( $M=5.83$ ,  $SD=.88$ ) while people with bachelor degree rated the design as neither fashionable nor fashionable ( $M=4.66$ ,  $SD=1.15$ ) There is a significant difference detected in the rating of the boldness of the design between people with associate degree and people with bachelor degree  $F(3,68)=3.73$ ,  $p=.015$  (Table 25). People with high school degree rated the designs as quite bold ( $M=6.00$ ,  $SD=.89$ ) while people with bachelor degree rated the designs as neither timid nor bold ( $M=4.68$ ,  $SD=1.14$ ).

From the demographics results it is evident that people with higher completed education tend to be more realistic when it comes to choosing some of the adjectives to rank the designs opposed to people with lesser completed education.

There is no significant difference recorded for gender in any of the opposing adjectives, which means that gender plays no role in evaluation of building design.

## Discussion

This study confirmed previous research done in this field that architects and laypeople differ in opinions about building design. By taking students' designs and presenting them to four groups it was possible to draw conclusions about different perceptions based on the results of the research.

Architects were mostly indifferent or neutral, meaning that they were not necessarily impressed with the designs that they rated. On the other hand, out of opposing adjectives laypeople ranked the designs with mostly positive ones. The biggest differences were seen in several adjectives. When it comes to overall rating of the design, while architects were mostly indifferent and rated the design as neither terrible nor excellent, laypeople found the designs to be very good. The reason for that could be the professional education paired up with the experience that architects possess. Laypeople do not have much knowledge or experience when it comes to rating building designs. Architects rate buildings objectively and from the professional standpoint while laypersons might judge the designs more subjectively based on their own style preferences.

In terms of impressiveness of the designs, architects rated them as slightly unimpressive; laypeople differed and rated the designs as slightly impressive. Additionally, the rating of the designs' interestingness and simplicity, in both ratings architects saw them as slightly boring and simple, while laypeople agreed that designs were slightly interesting and complicated. This could be due to architectural subculture and core values that architects share. As mentioned, some of the core values are creativity and resourcefulness; architects must use their imagination when creating and designing. Because designs were created by students it is possible to conclude - since the designs were rated as slightly boring and simple, that students were not as creative and resourceful and did not impress their experienced colleagues.

## Architects and laypeople

Furthermore, laypeople had the most positive reaction towards the designs (if we exclude the overall factor), when it comes to the pleasantness factor. Laypeople agreed that the designs are pleasant. The conclusion that rises from it is that laypeople mostly look at the aesthetics of the building and due to lack of knowledge, do not think about it more in depth.

Architects create buildings for the community and mostly for laypeople, therefore when it comes to designing a building this study could be used for future references for architects and designers to understand how do laypeople perceive the design and use that to their advantage. It is noticeable that there are many differences between architects and laypeople regarding understanding of the designs.

Since architecture students were mostly agreeable with laypeople it is visible that they still are not integrated in the architectural subculture. It takes education paired up with experience to become the true professional in the field. Non-architects whose work requires familiarity with architecture do not have the same capabilities to notice the same things about the designs as trained eye of an architect, but they were still more critical and similar in the ranking of designs with architects than laypeople and architecture students. The reason for that could be that non-architects during their work have gained some experience and familiarity within the field of architecture and therefore could rate the designs more objectively and accurately.

### *Limitations and future research*

One of the limitations of this study was that it used a relative small sample of people. Also, all of the respondents were Americans which made it a study of limited scope. For future, a study done on e.g. Europeans could provide different results based on the cultural differences and different style preferences. Another limitation was that the designs used for ranking were not the designs made by professional architects, but architecture students. It is

Architects and laypeople

possible that professionally designed buildings could provoke different set of results. Also, it is debatable whether laypeople understand all of the concepts and adjectives used for rating of the building and whether they look at them from the right perspective.

Further studies should look for a greater sample of people, from another cultural background to rate the professionally designed buildings.

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## Appendices

Dear Participant,

In the following questionnaire you will need to rate specific building designs. Please note that your ratings will not affect students' grades nor will your ratings be used to assess students' work in any way. The purpose of this questionnaire is to compare the opinions of architects and non-architects in terms of their perception of property design generally speaking, and not in terms of individual's work. The ratings for specific designs will not be published, nor analysed. The questionnaire is anonymous and will require approximately 4-5 minutes to complete. In order to ensure that all information will remain confidential, please do not include your name. If you choose to participate in this project, please answer all questions as honestly as possible and return the completed questionnaires to the person who handed you this form. If you require additional information or have questions about the research process and the results obtained, please ask the person who provided you with this form for the copy of the cover letter which contains contact information for the authors of this study.

Thank you for taking the time to fill out this questionnaire.

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Please rate the building design on poster number \_\_\_ on a 10-point scale in which 1 stands for "terrible architecture" and 10 stands for "excellent architecture".

terrible architecture	1	2	3	4	5	6	7	8	9	10	excellent architecture
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Please assess the same design using the following seven-point scales between opposing concepts. Assess which of the concepts describes the design better (for example on the seven point-scale between *bad* and *good*, 1 stands for 'extremely bad', 2 for 'quite bad', 3 for 'slightly bad', 4 for 'equally good and bad or neither', 5 for 'slightly good, 6 for 'quite good', and 7 for 'extremely good').

bad	1	2	3	4	5	6	7	good
unimpressive	1	2	3	4	5	6	7	impressive
characterless	1	2	3	4	5	6	7	characterful
boring	1	2	3	4	5	6	7	interesting
commonplace	1	2	3	4	5	6	7	unique
unsophisticated	1	2	3	4	5	6	7	sophisticated
unpleasant	1	2	3	4	5	6	7	pleasant
unexpected	1	2	3	4	5	6	7	expected
ugly	1	2	3	4	5	6	7	beautiful
dark	1	2	3	4	5	6	7	light
undignified	1	2	3	4	5	6	7	dignified
incoherent	1	2	3	4	5	6	7	coherent
discordant	1	2	3	4	5	6	7	harmonious
simple	1	2	3	4	5	6	7	complicated
unwelcoming	1	2	3	4	5	6	7	welcoming
unneighborly	1	2	3	4	5	6	7	neighborly
informal	1	2	3	4	5	6	7	formal
cramped	1	2	3	4	5	6	7	spacious
unfashionable	1	2	3	4	5	6	7	fashionable
timid	1	2	3	4	5	6	7	bold

## Architects and laypeople

Please rate the building design on poster number \_\_\_\_ on a 10-point scale in which 1 stands for “terrible architecture” and 10 stands for “excellent architecture”.

terrible architecture	1	2	3	4	5	6	7	8	9	10	excellent architecture
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Please assess the same design using the following seven-point scales between opposing concepts. Assess which of the concepts describes the design better (for example on the seven point-scale between *bad* and *good*, 1 stands for ‘extremely bad’, 2 for ‘quite bad’, 3 for ‘slightly bad’, 4 for ‘equally good and bad or neither’, 5 for ‘slightly good’, 6 for ‘quite good’, and 7 for ‘extremely good’).

bad	1	2	3	4	5	6	7	good
unimpressive	1	2	3	4	5	6	7	impressive
characterless	1	2	3	4	5	6	7	characterful
boring	1	2	3	4	5	6	7	interesting
commonplace	1	2	3	4	5	6	7	unique
unsophisticated	1	2	3	4	5	6	7	sophisticated
unpleasant	1	2	3	4	5	6	7	pleasant
unexpected	1	2	3	4	5	6	7	expected
ugly	1	2	3	4	5	6	7	beautiful
dark	1	2	3	4	5	6	7	light
undignified	1	2	3	4	5	6	7	dignified
incoherent	1	2	3	4	5	6	7	coherent
discordant	1	2	3	4	5	6	7	harmonious
simple	1	2	3	4	5	6	7	complicated
unwelcoming	1	2	3	4	5	6	7	welcoming
unneighborly	1	2	3	4	5	6	7	neighborly
informal	1	2	3	4	5	6	7	formal
cramped	1	2	3	4	5	6	7	spacious
unfashionable	1	2	3	4	5	6	7	fashionable
timid	1	2	3	4	5	6	7	bold

- What is your age?  
A. 22 or less    B. 23-34    C. 35-44    D. 45-54    E. 55-64    F. 65 or more
- What is your gender?  
A. Male    B. Female    C. Other
- Which of these descriptions best describes you?  
A. Architect  
B. Architecture student  
C. Non-architect (layperson)  
D. Non-architect, but my work/area of expertise/job title requires/implies familiarity with architecture (Please state your job title or area of expertise:\_\_\_\_\_.)
- What is the highest degree or level of education you have completed?  
A. Less than high school    B. High school    C. Associate's degree  
D. Bachelor's degree    E. Graduate or professional degree    F. Ph.D.



Architects and laypeople

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	df	F	Sig.
Between Groups	3	8,12	0,000
Within Groups	60		
Total	63		

---

Table 1

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	df	F	Sig.
Between Groups	3	1,66	0,000
Within Groups	68		
Total	71		

---

Table 2

---

	df	F	Sig.
Between Groups	3	8,190	0,000
Within Groups	67		
Total	70		

---

Table 3

---

	df	F	Sig.
Between Groups	3	12,477	0,000
Within Groups	67		
Total	70		

---

Table 4

Architects and laypeople

---

	df	F	Sig.
Between Groups	3	4,49	0,000
Within Groups	67		
Total	70		

---

Table 5

---

	df	F	Sig.
Between Groups	3	5,65	0,002
Within Groups	65		
Total	68		

---

Table 6

---

	df	F	Sig.
Between Groups	3	8,93	0,000
Within Groups	66		
Total	69		

---

Table 7

---

	df	F	Sig.
Between Groups	3	9,46	0,000
Within Groups	67		
Total	70		

---

Table 8

Architects and laypeople

---

	df	F	Sig.
Between Groups	3	3,16	0,030
Within Groups	67		
Total	70		

---

Table 9

---

	df	F	Sig.
Between Groups	3	4,49	0,006
Within Groups	65		
Total	68		

---

Table 10

---

	df	F	Sig.
Between Groups	3	5,51	0,002
Within Groups	63		
Total	66		

---

Table 11

---

	df	F	Sig.
Between Groups	3	6,17	0,001
Within Groups	67		
Total	70		

---

Table 12

Architects and laypeople

---

	df	F	Sig.
Between Groups	3	4,97	0,004
Within Groups	66		
Total	69		

---

Table 13

---

	df	F	Sig.
Between Groups	3	4,87	0,004
Within Groups	68		
Total	71		

---

Table 14

---

	df	F	Sig.
Between Groups	3	2,91	0,041
Within Groups	65		
Total	68		

---

Table 15

---

	df	F	Sig.
Between Groups	3	3,10	0,033
Within Groups	65		
Total	68		

---

Table 16

Architects and laypeople

---

	df	F	Sig.
Between Groups	3	8,38	0,000
Within Groups	67		
Total	70		

---

Table 17

---

	df	F	Sig.
Between Groups	3	5,18	0,003
Within Groups	67		
Total	70		

---

Table 18

---

	df	F	Sig.
Between Groups	3	2,46	0,071
Within Groups	63		
Total	66		

---

Table 19

---

	df	F	Sig.
Between Groups	3	2,60	0,060
Within Groups	67		
Total	70		

---

Table 20

Architects and laypeople

---

	df	F	Sig.
Between Groups	4	2,61	0,043
Within Groups	67		
Total	71		

---

Table 21

---

	df	F	Sig.
Between Groups	3	3,81	0,014
Within Groups	67		
Total	70		

---

Table 22

---

	df	F	Sig.
Between Groups	3	3,09	0,033
Within Groups	66		
Total	69		

---

Table 23

---

	df	F	Sig.
Between Groups	3	4,18	0,009
Within Groups	68		
Total	71		

---

Table 24

Architects and laypeople

---

	df	F	Sig.
Between Groups	3	3,73	0,015
Within Groups	68		
Total	71		

---

Table 25