2015
volume 12 | issue 1

an open access journal for architectural research
ENQUIRY
The ARCC Journal

Understanding Extraordinary Architectural Experiences through Content Analysis of Written Narratives

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ABSTRACT

This study a) identifies how people describe, characterize, and communicate in written form Extraordinary Architectural Experiences (EAE), and b) expands the traditional qualitative approach to architectural phenomenology by demonstrating a quantitative method to analyze written narratives. Specifically, this study reports on the content analysis of 718 personal accounts of EAEs. Using a deductive, 'theory-driven' approach, these narratives were read, coded, and statistically analyzed to identify storyline structure, convincing power, and the relationship between subjective and objective experiential qualities used in the story-telling process. Statistical intercoder agreement tests were conducted to verify the reliability of the interpretations to approach the hard problem of "extraordinary aesthetics" in architecture empirically. The results of this study confirm the aesthetic nature of EAE narratives (and of told experiences) by showing their higher dependence on external objective content (e.g., a building's features and location) rather than its internal subjective counterpart (e.g., emotions and sensations), which makes them more outwardly focused. The strong interrelationships and intercoder agreement between the thematic realms provide a unique aesthetic construct revealing EAE narratives as memorable, embodied, emotional events mapped by the externally focused content of place, social setting, time, and building features. A majority of EAE narratives were found to possess plot-structure along with significant relationships to objective-subjective content that further grounded their storylines. This study concludes that content analysis provides not only a valid method to understand written narratives about extraordinary architectural experiences quantitatively, but also a view as to how to map the unique nature of aesthetic phenomenology empirically.

How to cite:
Ro, Brandon and Julio Bermudez. 2015. "Understanding Extraordinary Architectural Experiences through Content Analysis of Written Narratives ." Enquiry 12 (1): 17-34.
http://dx.doi.org/10.17831/enq:arcc.v12i1.390

Keywords: aesthetics; architectural experience; phenomenology; research methodology; content analysis; intercoder agreement.

1. Introduction

Advancing an empirical understanding of aesthetics has been difficult whenever the architectural discipline has moved from the objective anchors of buildings to the elusive milieu of human experience. While a natural bias toward production over reception could be traced to a profession in charge of making, studying, and maintaining the built world, we must acknowledge that engaging subjective, embodied, and psychological responses has been a major deterrent. Their intangible, ephemeral, private, and emotional nature makes them problematic to gauge either internally (by self-awareness) or externally (by observation or instruments). Two other conditions make the challenge more difficult. First is that although architectural researchers have produced useful knowledge modeling our responses to place by means of environmental/cognitive psychology, phenomenology, ethnographic/sociological studies, and semiotics (Hillier, 1990; Hiss, 1990; Krampen, 1979; Norberg-Schulz, 1985; Rapoport, 1982; Rasmussen, 1959; Seamon, 1993; Tuan 1977, 1990), these efforts have concentrated on the average and not the unique, the cognitive and not the affective, the behavioral and not the psychological. As a result, the gained insights fail to recognize and grasp the unique nature of aesthetic phenomenology. Second, there is very little research and published information describing, or even acknowledging, the highest aesthetic reception of architecture. Simply put, anything that could be related to beauty, emotion, or spirituality is perceived controversial, 'unscientific,' or 'subjective,' and is thus avoided by professionals and researchers (Barragan, 1980; Benedikt, 2008; Bermudez, 2009b, 2015; Crosbie, forthcoming; Elkins, 2001; Harries,

2007; Hejduk and Williamson, 2011; Perez-Gomez, 1985). Yet it is undeniable that the architectural discipline is under increasing pressure to validate any claim about its impact or relevancy empirically, aesthetics included. The growing use of evidence-based design to establish links between the built environment and human health and wellbeing is a case in point.[1] Unfortunately, as said, very little scientific effort has gone to study the aesthetic effects of buildings.

This article presents findings of the final phase of a research program started in 2007 and designed to address this undeveloped area of architectural knowledge. By enlisting a judicious use of science to investigate the aesthetic phenomenology of architecture, this inquiry intends to bring experimental rigor and validation to first-person accounts, without undermining their unique qualitative nature. This has translated in the development, deployment, and analysis of a survey seeking to 'map' the phenomenological territory of "Extraordinary Architectural Experiences" (or EAEs). An EAE is defined as "an encounter with a building or place that *fundamentally alters one's normal state of being*. By 'fundamental alteration' it is meant a powerful and lasting shift in one's physical, perceptual, emotional, intellectual, and/or spiritual appreciation of architecture. In contrast, an ordinary experience of architecture, however interesting or engaging, does not cause a significant impact in one's life" (Bermudez, 2008). EAEs were selected because they (a) amplify the phenomenological effects on people, making them easier to study, (b) guarantee recall accuracy and thus facilitate data gathering and reliability, (c) have been reported to have lasting consequences in the lives of the public and professionals (Hiss, 1990; Ivy, 2006; Jones, 2000; Perez-Gomez, 2006; Riley, 1993), and (d) are usually tied to well-known places that simplify their later correlation to objective features.

The yearlong online survey was intended as a pilot study that, if successful, could then be applied more widely to the population.[2] The survey collected 1,890 individual testimonies gauged through a 27 multiple-choice questionnaire designed to chart EAE's phenomenological structure, process, and features. Additionally, one open-ended question, which is the focus of the present article, invited participants to share their EAE in their own voices as a written narrative. In other words, the survey was interested in the experience itself, not in the place/building that elicited it. The survey instrument used can be examined online at http://faculty.cua.edu/bermudez/alive/extraordinary-architectural-experience_english-survey.pdf

After completing the analysis of the responses to the multiple-choice questions, we turned our attention to the study of 718 written narratives entered by survey participants (totaling approximately 82,500 words). It was clear from the start that the sheer size and complexity of this dataset made it very hard to approach its analysis using interpretive methods. Accordingly, the research approach adopted a 'content analysis' method, as a systematic coding and analysis of text supported in computational statistics made the most methodological and practical sense (Ryan and Bernard, 2000). In fact, there is evidence that such a quantitative approach might yield as good (if not better) insights as interpretive methods when dealing with large datasets (Namey, et al, 2008). From the onset, it was understood that epistemologically speaking, this '*naturalization*' of phenomenology (an idea advanced by phenomenologist Maurice Merleau-Ponty and a topic of great currency)[3] would find resistance from two fronts. The conservative phenomenologist would reject the use of scientific methods to approach something so qualitative as the most profound experience of architecture, not to mention what they would see as an implicit project of subordinating phenomenology to empiricism. On the other hand, the cautious scientist would likely disqualify anything that cannot be quantitatively measured or directly observed and repeated. However, forcing a choice between phenomenology and science or the subordination of one to the other are false options, as we have recently argued at some length (Bermudez, 2014). Other researchers have also advocated a more inclusive or 'hybrid' research approach based on critical (Denzin and Lincoln, 2000) and pragmatist (Ryan and Bernard, 2000) viewpoints. The current research coming out of experimental philosophy and neurophenomenology are good examples of what can be accomplished when we transcend old dualisms (Knobe, 2008; Amoroso, 2010; Wright, 2008).

In this context, the quantitative study of written narratives (qualitative data) was viewed as an opportunity to confront the methodological and epistemological stumbling block deterring the scientific engagement of architectural phenomenology and aesthetics. If successful, this effort would a) provide a helpful methodological precedent for analyzing and evaluating highly qualitative data, something hardly available in the architectural discipline, b) advance our understanding of how people describe, characterize, and communicate their profound aesthetic encounters with architecture, and in so doing, c) lift some of the bias preventing the discipline from engaging with this topic. In turn, this might allow researchers to discover the relevant dimensions, outcomes, and/or benefits of the experience, which might lead to creating tools and systems for empirical assessment.

Specifically, this study reports on the content analysis of 718 personal accounts of EAEs. These narratives were read, coded, and statistically analyzed to identify storyline structure, convincing power, and the relationship between subjective and objective experiential qualities used in the story-telling process. Statistical inter-coder agreement tests were conducted to verify the reliability of the interpretations to approach the hard problem of "extraordinary aesthetics" in architecture empirically.

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[1] For recent examples of research relating the built environment to wellbeing and health, see Eberhard (2007), Pallasmaa (2015a), Stemberg (2009), and Wells and Pavlides (2013).

[2] Technically speaking our survey gathers a convenience (non-probability) sample; it is not a true random probability sample of the greater population that can be used to make broad inferences, hence our defining it as a pilot study. On a different note, Marans (1973) provides a classic argument supporting survey-based research of architectural environments.

[3] See, for example, Petitot (1999). The explosion in neuroscience research in cognition and contemplation, among others, over the past 10 to 15 years owes much to investigating the correlations between first-person (i.e., phenomenological) experiences and third-person (i.e., objective or empirical) observations, nothing other than a naturalization of phenomenology. See also Varela (1996) and Damasio (2012).

1. 1 General Survey Results

Participants of the survey predominately a) had a college education (89.6%), b) reported architecture as their field of study (55.1%), c) were male (59.9%), and d) had ages that fell between 41 and 70 years (43.6%; Bermudez, 2008). Although this demographic profile does not represent the population, it plays in favor of this pilot study. A well-educated population whose majority understands architecture gives us a higher level of reliability when addressing experiences and issues that are hard to grasp and describe. There is also benefit from having an older group, as their longer lifespans provide them with a better context and distance from which to evaluate and depict situations. The 1,890 responses obtained support studies with statistical significance within the responding population. Extraordinary Architectural Experiences (EAEs) were characterized as "sensual/perceptual/physical" (71%), "emotional" (70.3%), "timeless" (50%), and "pleasurable" (41.2%). They were reported to be "surprising" (74.8%), "sudden" (58.5%), "spontaneous" (78.6%), "introspective/silent" (87.1%), at a "*higher level of awareness than normal*" (92.7%), "intense," "profound," and "vivid" (all over 80%), and responsible for eliciting "strong body reactions" (i.e., goose bumps, heart pounding, and shivers) and "weeping" in 56.4% and 17.9% of the participants, respectively (Bermudez, 2008). Statistical analyses of the correlations among all these variables confirmed that embodiment and emotion play a central role in the phenomenology of EAEs, whereas "analytical/intellectual" functions are of lesser importance (Bermudez, 2011a). In terms of outcomes, EAEs delivered "insight" (54.9%), "beauty" (49%), "joy"(43.7%), and "peace" (40.6%; Bermudez, 2011b). Additionally, these experiences were said to remain "strongly vivid" in memory (63.5%), have changed a subject's understanding and appreciation of architecture (81.4%), were infrequent (59.3% reported fewer than five in their entire lives), but of short duration (45% clocked them at fewer than 30 minutes), and yet they were just as or more memorable and vivid than other "very strong life experiences" (91.5%; Bermudez, 2008).

1.2 Background of the Qualitative Data: Open-Ended Question

This study analyzes the written narratives that survey participants provided in response to the following question:

"If you wish, and in less than 500 words, tell us of your extraordinary experience of architecture as close as possible to how you remember it."

This open-ended question was included in the survey for two main reasons. First, it allowed individuals to tell their story as they saw fit in their own words, thus providing fresh, loose, and nuanced details and information that might otherwise have been missed in the strict, multiple-choice survey questionnaire. Second and related, it allowed respondents the chance to add or explain things that the survey did not address since there is no perfect survey. This open-ended question was placed at the end of the survey just before the final demographic questions, based on the rationale that having gone through the previous 27 questions about the experience a respondent would be able to gain a greater recollection of their EAE. Similarly, such location might have introduced bias, influencing the participant to words, categories, and issues through the questionnaire. This does not invalidate the responses, but recognizes that the survey, like all instruments, has an implicit bias.

There were 718 survey entries to the open-ended question out of a total of 1,236 fully completed responses (58.1%). Although it would be fascinating to read or review each of the written narratives, this article has a different purpose: *to find commonalities among all of the stories to see if some pattern arises in how people describe and share their EAE*. A word must be said about the seemingly incommunicable nature of EAEs. After all, it was luminaries such as architects Le Corbusier (1948) and Louis Kahn (Twombly, 2003), or philosopher of religion Rudolf Otto (1950), who argued that such profound phenomenologies are ineffable, immeasurable, or numinous, respectively. As we showed in previous publications, however, this difficulty does not necessarily mean that nothing can be communicated about "Extraordinary Architectural Experiences" (Bermudez & Ro, 2013b).

1.3 EAE Sample Stories

Before getting into the study, it is important to understand the type and diversity of narratives that the survey has produced. Following is a sample of fifteen entries, which together, with an additional ten in Appendix 1, provides the reader with a fair sample of the texts.[4]

- *Sample 1: The Library San Lorenzo, Florence, around 1977*. About thirty years ago, as a graduate student on my first trip to Europe, I stepped into Michelangelo's Vestibule of the Library at San Lorenzo in Florence and had a sudden, unexpected, and profoundly moving experience that was clearly inspired by the architectural expression of the room itself. Neither then nor now can I specify what aspects of the architectural setting caused my reaction, but it seems that it was the totality of the room, including the articulation of the walls, the form of the central stairway, the quality of the light, the proportions of the space, the idiosyncratic character of the ornament, etc. I felt a feeling of tragic beauty, not exactly sad, but not particularly joyous, like hearing very beautiful and moving music in a minor key. The tragedy was not personal or individual, but universal, as if to say this is the way it is. I left the room feeling for the first time that architecture was as powerfully expressive as music, which previously had been my only source of such extraordinary experiences, both as listener and performer.

- *Sample 2: The Tokyo Forum, Tokyo, 1997*. I was touring with a group of architecture students in Tokyo. We visited the Forum Building as a part of the trip itinerary. I was not expecting to be so moved by the building. As we entered the building I became aware first of the roof structure. As I studied the boat-like bottom of the trusses my mind was caught up in the detailing of the connections. As I scanned down the supporting structures the detailing of the steel connections stood out in contrast against the glass curtain walls. Overall, the experience taught me the importance of paying attention to small details.

[4] Additional examples of EAE narratives have been published elsewhere (Bermudez, 2011c, 2009a, forthcoming).

• *Sample 3: The Greene & Greene's Gamble House, Pasadena, CA, early 1980s*. Arrived in late afternoon and observed the sun, shadows and interior light of this famous house, and in the morning experienced the play of light on the exterior and especially on the interior of the building spaces.

• *Sample 4: The Chartres Cathedral, France, 1981*. I remember walking into the nave which seemed to be in twilight. The strength of the dome and archways recalled to me the people who created it. I felt as though their hands were my own and, through history, I could sense the focus with which they had put the stone together. I also felt the faith, or strength of belief, that thousands of people had brought to this structure before me. In total, it was deeply moving and something which still brings tears to my eyes.

• *Sample 5: St. Paul's Cathedral in London, 2004*. I was coming out of the tube station and went around the corner and rising up out of a bunch of trees I saw the infamous dome of St. Paul's and that was amazing. Being inside the church was even more breathtaking and as I was walking away I viewed the church from a side void of trees and it was just so awesome, that is the image most seared into my mind.

• *Sample 6: The Vatican in Rome, 1981*. I was in awe of the scale of the architecture. Words and pictures did not capture that.

• *Sample 7: Machu Picchu, Peru (no date provided)*. In addition to what I expressed on previous questions on this survey: I can also remember and probably I can still feel the release of additional energy or the feeling of having internal knots getting untied and thus I had the feeling of inner freedom and more energy available... lightness, lack of things to worry about, contentment, being really present in the moment.

• *Sample 8: The Getty Center in Los Angeles, C, in the 1980s*. The world fell silent around me. I was present in the moment. It felt as if the space was breathing me — a surrender in the moment to a greater experience.

• *Sample 9: The Ballcourt at Chichen Itza, Mexico, 10+ year ago.* Extraordinary architecture is experienced as a body experience and particularly in the stomach, the gut.

• *Sample 10: The Ajanta Caves, Maharashtra, India (no date provided).* PRIMAL

• *Sample 11: The City of Rome (no date provided).* This experience changed my life.

• *Sample 12: The Abbey de Valmagne, South of France, 1996*. The Valmagne experience resulted in a deep understanding of space

• *Sample 13: The Taj Mahal, Indian (no date provided).* Visiting the Taj Mahal is seeing the most beautiful man-made structure. It affects everyone ... differently.

• *Sample 14: The IBM Building by Mies van der Rohe, Chicago, 2003.* This building is all about the lobby, appreciating the perfect box, and its relation to the location.

• *Sample 15: The Cave B Winery in Eastern Washington State, 2007.* It was the link of the structures to the environment. The setting and beauty combined with nature and the structure.

As seen from these fifteen samples (and those in Appendix 1), there was quite a diverse array of entries to the open-ended question. They differ in length, focus, character, insight, and literary structure.

2 METHODOLOGY

2.1 Content Analysis

To study qualitative data such as text scientifically, content analysis is often used as a method to simplify the complex nature of written accounts into quantifiable data suitable for statistical analyses (Namey, et al 2008; Ryan and Bernard, 2000). According to Krippendorff, "content analysis is a research technique for making replicable and valid inferences from texts" (2013, p. 24). Content analysis involves assigning a series of unique labels to sentences of a larger text that reference a particular thematic category of information that maps the "distinct phenomena into descriptive categories" (Krippendorff, 2013, p.275; Berg, 2001; Bernard, 1994; Bernard & Ryan, 1998; Grbich, 2007). Based on this approach and precedent studies in fields other than architecture, this method was adopted to conduct the content analysis of the collected data. As illustrated in Figure 1, this included developing a thematic coding procedure that enabled each EAE narrative to be interpreted and translated into numerical values (Carey, Morgan, & Oxtoby, 1996; Recchia, Brehl, & Wainryb, 2012).

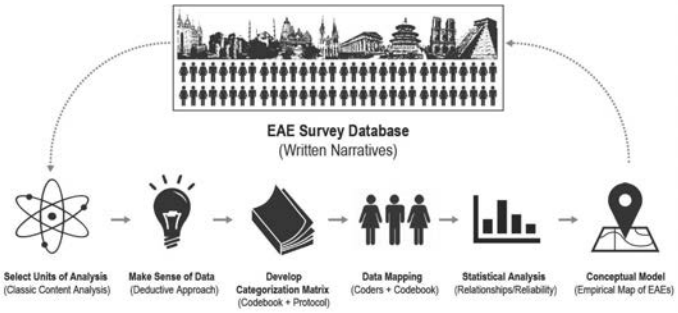

Figure 1: Graphical overview of methodology.

2.2 Codebook + Coding Protocol

The process of coding written narratives into numerical values demands either human or artificial intelligence. For this study, human intervention was deemed best suited for interpreting and translating the content of each text into thematic categories because the entries varied widely in complexity (from a single sentence to multiple paragraphs). Additionally, autonomous computational analytics would miss much subtlety due to outcomes being limited to word frequency and relational proximity. Human intelligence for this study is defined as three individuals, known as coders, who use a specific, interpretive protocol or codebook to read and translate (i.e., code) each story into a measurable format.

GENERAL	Question A	The story uses a storyline or plot structure to convey its message (e.g., I did this, then this happened which led to X) **= YES or NO**
	Question B	The story includes language to compell or influence ***me*** into believing the powerful effect of the experience. **= YES or NO**

WORD CODING	Each sentence is to be coded. The selection of the word-code will be based on the sentence's central intention. If the sentence is complex (i.e, composed of 2 clauses or more), then, if appropriate you can assign one word per clause (assuming that such clauses are of different nature)	
Realm	*CODE WORD*	*what it means*
SUBJECTIVE (INTERNAL) *the sentence describes a personal, internal or subjective condition*	**PHYSICAL**	*SENSATION* = physical impression of any of the 5 senses or the body
	EMOTIONAL	*FEELING* = feelings of any kind (joy, awe, delight, melancholy), mood, or strong body reacions IF heavly dependent on emotion (e.g., crying, throbing, goose bumps)
	INTELLECTUAL	*THINKING* = analysis, reflection, making sense of the experience
	SPIRITUAL	*INTUITION* = metaphysical, religious, or spiritual insight or intuition.
	MEMORY	*RECALLING* = about something ELSE remembered and NOT the actual experience being remembered (because, otherwise, everything will be memory). Most examples would include a recollection of some other event triggered by the experience. It could be about the place but not about the experience itself.
OBJECTIVE (EXTERNAL) *the sentence describes a factual, external, or objective condition*	**LOCATION**	*WHERE* = place, site, context, name of building or place, etc.
	TIME	*WHEN* = year, season, time of day, past/present/future.
	SOCIAL	*PEOPLE* = related to other people (even if just one person), talking is often involved. Use this even if author refers to being alone.
	FEATURES	*ABOUT* = scale, materials, light, colors, history, culture, age, style, space, composition, etc.

Table 1: Definition of tasks and terms of Content Coding Protocol provided to Coders.

In terms of the codebook (Table 1), we took a theory-driven or deductive approach with the intention of addressing two distinct sets of research questions. The first part consisted of two questions assessing the structural and persuasive nature of the narrative as a whole. Coders had to identify whether the text a) possessed plot structure (i.e., storyline) to convey its message and b) included language to compel or influence them into believing the powerful effect of the experience. This was important for testing communicational and philosophical premises often voiced in the literature covering linguistic narratives and aesthetics (e.g., Abbot, 2008; Chatman, 1980; Nehamas, 2007). The second part of the codebook was grounded in current understanding in neuroscience and cognitive psychology that there are two global neural networks processing human experiences: *intrinsic* (i.e., self-processing and internally oriented) and *extrinsic* (i.e., task-positive, and external-reality oriented) (Golland, et al, 2007; Josipovic, 2013). This translated into the utilization of two thematic coding realms: a) *subjective, internal, inwardly focused, or intracerebral-bodily realm* (i.e., first-person) and b) *objective, external, outwardly focused, extracerebral-bodily realm* (i.e., third-person). Although inter-subjectivity (i.e., socio-cultural beliefs, costumes, relationships, and language—second-person) profoundly shapes both realms/networks, it still operates within their confine.

Subcategories were developed to capture the variety of intentions communicated in these two general coding categories. This meant to reconcile a variety of ways in which the global experiential realm has either been probed and/or described by a variety of sources. For the internal realm, the study resorted to cognitive, psychoanalytical, neuroscience, and philosophical functions/categories proposed by Piaget (1977), Jung (1971), D'Aquili & Newberg (2000), Dewey (1934), and von Eckartsberg (1998), respectively. These were summarized as five functions: sensing, feeling, thinking, intuiting, and remembering. The study verified that these subcategories were congruent with the different dimensions in which places/buildings might engage people according to architectural scholarship in phenomenology, semiotics, design, etc. (Bachelard, 1964; Bloomer & Moore, 1977; Lawlor, 1994; Norberg-Shulz, 1985; Perez-Gomez, 2006; Rapoport, 1982; Rasmussen, 1959). For the external realm, the study referred to essential empirical descriptions of places advanced in environmental psychology and human geography (e.g., Gifford, 2007; Manzo & Devine-Wright, 2014; Tuan, 1977, 1990), and architecture (e.g., Arnheim, 1966, 1977; Cullen, 1961; Amedeo, Golledge & Stimson, 2009; Pallasmaa, 2005; Rapoport, 1982; Seamon 1993, 2000) to define *location* (i.e., where), *time* (i.e., when), *social* (i.e., relation to other-human/s), and *features* (i.e., relation to other-object) as the coding subcategories. This second portion of the protocol was where coders spent the majority of their time because of the detailed process of thematic categorization. The coders were instructed to reread the story and label each sentence or main clause by first identifying the general thematic category/realm and then deciding what best subcategory matched the intention of the text (Table 1).

[5] These two networks find parallels in the two directionalities of human cognition: stimulus-independent addressing metal/intrapersonal events, and stimulus-oriented engaging perceptual/extrapersonal targets (Burgess, et al, 2007; Corbetta and Shulman, 2002; Nobre, et al, 2004).

2.3 About the EAE Coders

Using the content analysis codebook and protocol discussed above, each of the 718 EAE narratives were read and translated by three individuals, known as coders, who worked independently to produce three interpretations for each story. For content analysis to ensure replicability and reliability, researchers must select coders based on three qualifications: coders should a) possess the cognitive ability to understand the rules of the codebook and apply the protocol consistently across the analysis, b) have some familiarity with the phenomena being studied and share similar backgrounds such as discipline, education, and profession, and c) be sufficiently available (as a population) so that future scholars can replicate the study (Krippendorff, 2013). The decision to utilize 62 coders is based on these three rules. If the study had chosen to have only three coders produce the three interpretations for all 718 narratives, this would have required an extraordinary cognitive ability by the coders, not to mention a high level of competency, to be consistent throughout the analysis. Such a strategy would have lowered the level of replicability and consequently its reliability. As a result, the coders in this study interpreted on average 20 to 25 stories to maintain a level of consistency. Regarding their background, the 62 coders were all affiliated with the discipline of architecture to guarantee some familiarity with the phenomena being studied. This qualification, however, did not require them to necessarily be "experts, exceptionally acute observers, or individuals who have long histories of involvement with the subject of the research," as is often mistakenly assumed by content analysts (Krippendorff, 2013, p.274). In fact, only two of our coders were design professionals (i.e., experts with long histories with architecture), with the remaining 60 being either undergraduate or graduate design students. Using a large number of individuals as coders was another means of verifying the reliability potential of the study since scholars would be able to see that there is a sufficient population of potential coders for future studies.

2.4 Sampling + Unitizing the Data for Analysis

The observed lack of disciplinary consideration of this topic, the little available information about it, and the uncommon characteristics of these experiences (i.e., they are infrequent, extraordinary, and life changing, not banal) required the study to take a non-probability purposive sampling, often characterized as total population sampling, of the textual data to avoid neglecting or diminishing the impact of any one. This would enable better analytical generalizations about the rare data at hand and thus gain better insights.

In the process of reviewing all entries to the open-ended question, eight stories were omitted because there was either no narrative content to be coded or the response was in another language other than English. Additionally, one multipart text was consolidated into one story entry. This resulted in a total sample of 718 written narratives of EAEs.

This dataset was analyzed primarily with descriptive statistics and tests appropriate for categorical variables once its reliability was established (discussed below). The data collected from the first two questions (Part 1) of the coding protocol was categorical, nominal, or non-metric (i.e., a response of "yes" or "no"). The original data received from the thematic word-coding (Part 2 of the codebook), however, was continuous and metric in nature, such that it could include an infinite range of values for one category for each particular story (e.g., zero to 99). To make the entire dataset compatible, the continuous (metric) variables were converted into a categorical (non-metric) format. The process of simplifying the data meant that the word-coding of each category changed from counting how many times a code-word appeared in a narrative to whether it was present in that story generally. By comparing results obtained by formatting the data into metric and non-metric types, it was concluded that this analytical path would not adversely affect the overall empirical mapping of the phenomenology of EAEs from the original written narratives.[6]

2.5 Reliability: Intercoder Agreement/Reconciling Disagreement

Reliability in scientific research means that the same results can be repeated or replicated. For this study, the use of human coders demands establishing what is called "*intercoder reliability* or the amount of agreement or correspondence among two [or more] coders" (Neuendorf, 2002, p. 141). Although very few studies report intercoder agreement, it is a critical component of establishing reliability (Lombard, Snyder-Duch, & Bracken, 2002). As Kimberly Neuendorf notes, "Given that a goal of content analysis is to identify and record relatively objective (or at least intersubjective) characteristics of messages, reliability is paramount. Without the establishment of reliability, content analysis measures are useless" (Neuendorf, 2002, p. 141).

Efforts to establish reliability in this study included considering several indices of intercoder reliability, ranging from a liberal reading of percent agreement (Ryan and Bernard, 2000) to more conservative ones such as Fleiss' kappa and Krippendorff's alpha to ensure that agreement expected by chance is accounted for (Davies & Fleiss, 1982; Krippendorff, 2013). Due to the complex nature of the coding system (e.g., using three independent interpretations of each narrative and 62 coders), it was decided that performing intercoder reliability for only a random sample of the dataset would be insufficient. Therefore, intercoder reliability was calculated for the entire dataset of 718 narratives and their three interpretations by the coders. In light of this approach, however, it was necessary to set lower minimum acceptable levels of reliability as recommended in other studies (Lacy & Riffe, 1996). For the more conservative indices such as Fleiss' kappa, the minimum level of agreement considered anything that obtained a "fair" or greater rating to be acceptable.[7]

When the Fleiss' kappa and Krippendorff's alpha tests were performed, intercoder reliability was not as high compared to percent agreement as expected from a conservative index. Based on the standards for strength of agreement by Landis and Koch, however, 9 of the 11 variables met the minimum "fair" agreement level (Table 2). This signified that further statistical analyses of 9 variables were feasible, but that the "persuasive ability" and "intellectual" variables had to be eliminated since they did not meet the minimum threshold. This article briefly discusses what these two 'negative' findings might mean in the coming sections.

[6] Appendix 2 compares the results of the word-coding ranking against the two types of data. It can be seen that 5 of 9 word-coding rankings are identical for both variable types, and the other 4 are off by only one position.

Coding variable	Percent agreement	Krippendorff's alpha[8]	Fleiss' kappa[9]	Landis & Koch's strength of kappa agreement2
Plot/Storyline	73.9	0.47	0.47	Moderate
Persuasive Ability	58.9	0.13	0.13	Slight
Physical	70.8	0.37	0.37	Fair
Emotional	4.1	0.27	0.27	Fair
Intellectual	61.3	0.18	0.18	Slight
Spiritual	76.7	0.39	0.39	Fair
Memory	74.8	0.21	0.21	Fair
Location	70.9	0.41	0.41	Moderate
Time	73.9	0.39	0.39	Fair
Social	77.2	0.44	0.44	Moderate
Features	72.7	0.44	0.44	Moderate

Table 2: Results of intercoder reliability tests for the 11 coding variables among the three interpretations.

Although some researchers might seek to improve their intercoder reliability statistics through interdisciplinary, team-based approaches that seek to refine their codebook until the level of agreement between coders reaches a certain threshold (Guest & MacQueen, 2008), there are limitations with such an approach. "Sometimes content analysts accept as data only those units of analysis on which observers achieve perfect agreement and discard those on which agreement could not be observed," explains Krippendorff. "This is a particularly problematic practice," he continues, "because it gives researchers the illusion of perfect reliability without affording them the possibility of separating agreement due to chance from agreement based on the sameness of reading or observation" (2013, p. 274). The current study avoided such practice. Instead, the study adopted a procedure outlined by Krippendorff whereby content analysts "can achieve both data whose reliability is measurable and an improvement in their confidence in the data beyond the measured reliability" (2013, p. 275).

Krippendorff's procedure of establishing reliability, which was used in this study, can be summarized as follows. First, 62 coders "working independently" read and translated the 718 EAE narratives to produce three interpretations. Intercoder agreement tests were then run to verify the reliability between the three interpretations, which are presented in Table 2 above. Reporting intercoder agreement coefficients at this point of the process is essential since "the only publishable reliability is the one measured before the reconciliation of disagreements." The last step of the procedure turned its attention to reconciling discrepancies in the data by "relying on a formal decision rule" of two-thirds majority to reconcile disagreements among the three coder interpretations (Krippendorff, 2013, p. 275). From this point, the reconciled and consolidated data can be further analyzed using descriptive statistics appropriate for non-metric data.

2.6 Descriptive Statistical Methods for Non-metric Data

As discussed in section 2.4, the data we are dealing with are binary, categorical, nominal, and non-metric. As such, there are several statistical methods appropriate for describing, summarizing, explaining, and analyzing the data. These include depicting the dataset using frequencies (i.e., counts), percentages, and cross-tabulations or contingency tables. It is also appropriate to test the relationships between variables through chi-square tests of association and then measuring their directionality through the odds-ratio statistic (Singh, 2007; Agresti, 1997). Thus, Pearson's chi-square tests of association were performed between variables to consider how likely a relationship was due to chance. A *probability* or *p-value* of 0.05 or lower (i.e., ≥ 95% confidence level) was necessary to confirm the existence of a statistically significant relationship.[11] Once such a relationship was established, an odds-ratio (OR) test was conducted to determine its directionality and strength. If OR=1, then the variable does not affect the odds of an outcome. If OR>1, then the variable is associated with higher odds of an outcome, whereas OR<1 implies that the variable is associated with lower odds of an outcome (McHugh, 2009; Rudas, 1998). The results of all chi-square statistics and OR tests are provided in Appendix 3.

[8] Percent agreement, Krippendorff's alpha, and Fleiss' kappa were all calculated through a tool developed by a University of Cambridge researcher (Geertzen, 2012).

[9] These values are based on the strength of agreement benchmarks for kappa statistics as outlined by Landis and Koch (1977, p. 165)

[10] Instead of the typical two coders used during this first step of content analysis, Krippendorff recommends that "three or more observers" be employed. Such a result produces a minimum of three interpretations whereby disagreements can be reconciled later (Krippendorff, 2013, p.275).

[11] For more on Chi-Square tests of association/independence, see Agresti & Finlay (1997, pp. 223-228).

STORYLINE	Coder 1	Coder 2	Coder 3	Reconciled Total
Yes	382 (53.2%)	355 (49.4%)	471 (65.6%)	406 (56.5%)
No	336 (46.8%)	363 (50.6%)	247 (34.4%)	312 (43.5%)
Total	718 (100%)	718 (100%)	718 (100%)	718 (100%)

Table 3: The presence of storyline or plot structure in the 718 survey narratives.

3 RESULTS + DISCUSSION

3.1 Plot Structure + Storyline of EAE Narratives

Coders were instructed to read the story in its entirety and then answer whether the narrative utilized "a storyline or plot structure to convey its message (e.g., I did this, then this happened which led to X)." Table 3 illustrates the results of this first inquiry. Based on the formal decision rule of a two-thirds majority to reconcile discrepancies between the coders' decisions, the consolidated interpretations of the data tell us that more than half (56.5%) of all EAE narratives used a storyline or plot structure to convey its message. As we move into the results and discussion, it should be noted that all descriptive statistics hereafter referring to the multiple-choice portion of the survey are based on the total number of responses (*n*=718) to the open-ended question sample (i.e., EAE narrative) instead of the full survey (*N*=1,890). This enables us to have a better understanding of the overall demographic responses for those who provided a written narrative.

		Linguistics		Subjective					Objective			
		Plot Structure	Persuasive Ability	Physical	Emotional	Intellectual	Spiritual	Memory	Location	Time	Social	Features
Pantheon (Story 22)	Coder A	1	1	1	1	1	1	1	1	0	0	1
	Coder B	1	1	1	1	1	0	0	1	1	0	1
	Coder C	1	0	1	0	0	0	1	1	1	1	1
Ajanta Caves (Story 10)	Coder A	0	0	0	1	0	0	0	0	0	0	0
	Coder B	0	0	0	0	1	0	0	0	0	0	0
	Coder C	0	0	0	1	0	0	0	0	0	0	0

Table 4: Comparison of word-coding for two distinct narratives. The coding designation 1 indicates 'yes/present' for the linguistic characteristic or subjective/objective theme, while zero signifies 'no/absent.'

Surprisingly, there was a less than anticipated presence of plot structure, an expectation based on cited philosophical and linguistic scholarship, and on survey participants following the directions provided in the survey question (i.e., to share their EAE as close as possible to how they remembered it). How can this result be understood? One possible answer could be that most of the authors were not writers (53.9% architecture; 25.7% other—education, business & management, medicine, etc.; 6.0% art and design; 4.6% engineering and science; with only 9.8% humanities). Another and related reason could be a lack of time for writing or editing the text since the survey was filled out quickly over the Internet. In fact, some respondents said that they would send a story when they had more time. Yet another cause for finding a weaker than expected plot structure in the narratives might have to do with gender. Of the 718 authors, 60% were males. In an earlier study, women demonstrated a higher level of sensibility, openness, and lack of inhibition at the time of feeling, embodying, remembering, or expressing their EAE than men (Bermudez & Ro, 2013a). Mnemonic deficiency was also not a factor; 71.3% of the writers reported "strong/fresh/vivid recollection of their EAE" (with only 1.8% who selected 'vague'), and 92.7% judged their EAE as equally or more "vivid and memorable than other very strong life experiences" (both in the multiple-choice portion of the survey). A Pearson's chi-square analysis that was conducted in an earlier study tested the correlations among all the phenomenological dimensions of EAEs related to memory (also gathered from the multiple-choice questionnaire) confirmed robust statistical interdependency for 11 of the 16 cases (Bermudez & Ro, 2013b).

From these observations, it is supposed that survey respondents might have contributed their text for other reasons than just documenting what they had experienced. For example, it might have helped them to:

(a) make more sense out of something that changed their appreciation/understanding of architecture and still affects them (e.g., sample stories #1 and 4);[12]

(b) enjoy their EAE again in their own way (e.g., stories #8 and 10);

(c) address, add, or emphasize something not properly covered in the survey (e.g., sample stories #7 and 9);

(d) validate their EAE, an important consideration given the lack of attention and silence from the architectural discipline regarding the topic (e.g., stories #6, 12, and 15).

Notice that none of these intentions are necessarily addressed by telling the event literally or chronologically (i.e., following a storyline).

At the same time, there were 406 of the narratives (56.5%) that did use plot structure. Appendix 1 includes ten stories that a minimum of 2 out of the 3 coders agreed as possessing a storyline. One distinguishing feature of this most prevalent type of narrative is that they were notably longer than those without a storyline. For example, story #10's one-word description of "primal" for the Ajanta Caves experience is much shorter than, say, story #22, in which the respondent takes over 200 words to describe his/her EAE at the Roman Pantheon. The latter written narrative brings the reader along for the ride, in which the EAE is recounted in chronological order. Further grounding the plot, this particular experience at the Pantheon is drenched with objective and subjective content. Discussion about the time and location, along with the respondent's recollection of experience, sets the story in motion. The experience then turns to the emotional excitement and influence of first finding the building, and then the physical bodily reactions to features of

[12] Human beings need to come to terms with what they have experienced, especially and precisely because EAEs overwhelm and transcend us. Faced with such intense moments, we try to articulate what and how we feel. Doing so helps us to process and assimilate the event in our lives (Bermudez, 2011c).

the building such as the oculus and shaft of light. Only thereafter did the intellectual or analytical component kick in, where the author mentions the monumental scale of the building and the construction methods that must have been needed to construct such a space. What is evident in comparing the two example narratives is obviously the difference in length, but also the depth and richness that plot structure gives the reader. Table 4 illustrates the coders' interpretations for each of these two stories.

As seen in the next few sections, there are significant, statistical relationships between plot structure and all thematic narrative coding categories ranging across both subjective and objective realms. In fact, texts possessing plot structure are much more likely to be drenched with both internally driven subjective qualities and externally focused objective content than those without such linguistic structure (Table 7).

PERSUASION	Coder 1	Coder 2	Coder 3	Reconciled Total
Yes	487 (67.8%)	445 (62.0%)	383 (53.3%)	478 (66.6%)
No	231 (32.2%)	273 (38.0%)	335 (46.7%)	240 (33.4%)
Total	718 (100%)	718 (100%)	718 (100%)	718 (100%)

Table 5: The persuasive ability and compelling power coding for 718 EAE narratives.

Based on aesthetic philosophy and linguistic studies, EAE narratives were expected to exhibit persuasive language and be correlated with plot structure. From Plato to Kant to today (Nehamas, 2007), philosophers have argued that it is not enough to have a private experience of beauty, but that we need to share it and convince others of its reality and value. There are clear indications of this attitude in the responses to the survey: a) 1,890 individuals voluntarily participated without receiving any compensation, most likely to share their experience, b) 58.7% of all these participants decided to invest even more time to share their EAEs in writing, and c) 87.4% of this last group reported to have previously shared their experience with others. Scholarship in linguistic discourse/narrative also shows that plot structure and persuasive language produce a more communicable and compelling story (Abbot, 2008; Chatman, 1980). The fact that a majority of the collected narratives used plot structure both supports and is supported by such scholarship. For these reasons, not attaining intercoder statistical agreement in the "persuasiveness" of the texts is disconcerting, particularly when considering that the three coders separately judged the majority (66.6%) of the narratives to possess compelling language (Table 5). Possible explanations for a lack of intercoder agreement include some of the same reasons affecting plot structure. Another reason could be that participants were arriving to this last survey question tired and without much patience to write a compelling story. A more likely motive might have to do with the other 'negative' finding of this study—the "intellectual" variable. The fact that the category most coded was "intellectual" (Table 6) is very relevant. After all, the reflective, analytical, or logical parts of the text (i.e., the sentences/clauses deemed "intellectual" per the codebook definition) carry a large responsibility in persuading the reader, especially if they constitute the majority of the text, but if coders cannot agree in their interpretation, then it can be seen why this fallout extends to influence the persuasive power of the narratives. Naturally, more study would be necessary to verify these speculations.

3.2 Thematic Narrative Codings: Subjective/Objective Dimensions of EAEs

The next phase of the coding procedure translated all 718 narratives into subjective internally driven (i.e., intellectual, emotional, physical, spiritual, or memory) and objective externally focused (i.e., time, people, location, or features) code words. Coders were instructed to reread the story and carefully interpret each sentence by labeling it with a categorical word based on the sentence's central intention. As noted earlier, the 'intellectual' subcategory was removed from statistical consideration since it did not clear the minimum threshold of intercoder reliability. However, the general counting was still included to illuminate its overall presence in the textual data. As before, discrepancies between the coders' decisions were reconciled using the two-thirds majority rule, and are summarized in Table 6.

SUBJECTIVE	Coder A	Coder B	Coder C	Reconciled Total	Ranking
Physical	275 (38.3%)	267 (37.2%)	235 (32.7%)	242 (33.7%)	3
Emotional	442 (61.6%)	415 (57.8%)	365 (50.8%)	429 (59.7%)	1
Intellectual	462 (64.3%)	532 (74.1%)	328 (45.7%)	463 (64.5%)	N/A
Spiritual	164 (22.8%)	187 (26.0%)	204 (28.4%)	164 (22.8%)	6
Memory	138 (19.2%)	140 (19.5%)	149 (20.8%)	114 (15.9%)	7
OBJECTIVE					
Location	424 (59.1%)	409 (57.0%)	347 (48.3%)	405 (56.4%)	2
Time	220 (30.6%)	222 (30.9%)	232 (32.3%)	219 (30.5%)	4
Social	199 (27.7%)	193 (26.9%)	224 (31.2%)	190 (26.5%)	5
Features	445 (62.0%)	416 (57.9%)	382 (53.2%)	429 (59.7%)	1

Table 6: The word-coding summary of inward and outward focus ratings for all 718 narratives

		Plot Structure			
		Chi-square[14]	Odds ratio	Probability proportion (%)	Ranking
Subjective	Physical	< 0.001	3.52	183/242 (76%)	5
	Emotional	< 0.001	2.49	281/429 (66%)	8
	Spiritual	< 0.001	2.87	123/164 (75%)	6
	Memory	< 0.001	4.12	93/114 (82%)	4
Objective	Location	< 0.001	6.23	304/405 (75%)	2
	Time	< 0.001	4.97	177/219 (81%)	3
	Social	< 0.001	7.45	164/190 (86%)	1
	Features	< 0.001	2.82	286/429 (67%)	7

Table 7: Chi-square, odds ratio, and ranking results of inward/outward thematic coding relationships to plot structure.

The most common thematic descriptors for narrative content tied for first place were building "features" (59.7%) and "emotions" (59.7%).[13] The next category at second place was a building's "location" (56.4%). This was followed by a significant distance by "physical sensations" (33.7%) and "time" related content (30.5%). The remaining dimensions were "social" (26.5%) and "spiritual" (22.8%), with "memory" (15.9%) at the farthest end.

The higher overall ranking of the four objective categories compared to the four subjective dimensions makes sense. Addressing the factual or external elements of the experience such as building "features" and "location" enhances the story-telling process by grounding the narrative and its plot (e.g., by contextualizing and explaining subjective aesthetic responses). Additional proof of the relevancy of objective content in EAE narratives comes from the Pearson's chi-square tests of association (Table 9) between each of the four objective categories. This analysis revealed that all 6 (100%) of the possible correlations have statistically significant relationships (5 at the 99.9% confidence level), thus affirming their interdependence in the stories. Furthermore, all the objective categories were found to be associated with plot structure at the remarkably high confidence level of 99.9% (see Table 7). The strength and directionality of the relationships between plot structure and the four objective categories are also important to note (Table 7). The OR for every relationship was greater than one, and means that narratives with plot structure are many times more likely to possess objective content dealing with "location" (i.e., where), "time" (i.e., when), "social" conditions (i.e., who), and building "features" (i.e., what). The strength of the results for three of these relationships (i.e., location, time, and social) are ranked at the top (e.g., all probability proportions are significantly high above 70%, with OR greater than 4.9; Table 7) even when subjective dimensions are considered. The fact that narrative content covering objective conditions is so central to telling the EAE story indicates a likelihood that EAEs are outward-driven experiences in the extracerebral-bodily realm.

Regarding the inwardly driven, subjective content of the narratives, finding "emotional" as a fundamental component of the texts (59.7%; Table 6) is consistent with 69.9% of the 718 writers ranking "emotional" as the second most important characteristic of EAEs (when answering the multiple-choice portion of the survey). This result relates to another essential subjective category present in the stories: "physical" sensations (33.7%; Table 6). As a whole, "emotional" responses (i.e., feelings, moods, and strong body reactions due to emotion) and "physical" experiences (i.e., sensations and impressions) are present in a large majority of the written narratives. Unsurprising, a chi-square test revealed a statistically significant association between stories with "emotional" content and those with "physical" sensations (Table 9). This outcome is consistent with previous findings for the general survey in which both emotion and embodiment were found to play a fundamental, co-defining role in EAEs (Bermudez, 2011a). The high presence of physical sensations in the texts also squares well with a) the nearly three-fourths (74%) of the authors reporting sensual/perceptual/physical qualities as the most important characteristic of EAEs, and b) the essential role that objective dimensions play in both sharing and undergoing an EAE (thus indicating the outward directionality of the experience).

Similar to objective content, all subjective dimensions were found to have significant statistical associations with a narrative's plot structure. The odds of encountering texts with content addressing physical sensations, emotions, spiritual awakenings, and memory recall were much more likely when plot structure was present (Table 7).

There was not much discrepancy between the level of content coded as "spiritual" within the 718 narratives (22.8%; Table 6) and how these same respondents described the experience in the multiple-choice questionnaire; 31% (170 of 548) of the words they entered in the open-ended "other" category for *experiential character* involved some spiritual quality, whereas 23.3% (67 of 288) of the words they offered in the open-ended "other" category for *experiential outcome* described some spiritual effect.[15] Related to spirituality, the 718 respondents reported in the multiple-choice assessment that their EAE resulted in *insight* (55.7%), *beauty* (47.0%), *joy* (43.2%), *peace* (40.7%), *and knowledge* (31.9%), arguably all components of a spiritual experience of architecture that transforms human understanding (Jones, 2000, pp. 1: 94-103). One example from the survey illustrating this change in human understanding can be seen in 81% of the respondents recognizing a fundamental shift in their appreciation of architecture.

The very low level (15.9%; Table 6) of narrative content devoted to the subjective condition of memory makes sense since EAEs were reported as neither dependent nor focused on the past (i.e., memory) but on the present (e.g., they were described as spontaneous, sudden, and surprising; Section 1.1). This is consistent with 92.4% of the authors recognizing to have reached a higher level of awareness than normal during their EAE. A good example of this phenomenon takes place in sample story #8. Nonetheless, memory was still an important component used to ground the storyline; it was the highest ranked subjective category with a significant relationship to plot structure. In fact, memory was 4.12 times more likely to be present in narratives possessing a storyline than those without (Table 7).

[14] All data corresponding to chi-square statistics can be found in Appendix 3.

[15] Two survey questions specifically inquired about the character (#7) and outcome (#21) of the EAE. Both allowed participants to enter their own words if they wished. Refer to survey instrument link in Section 1.

Regarding the interrelationships among subjective categories (Table 9), 5 of the 6 possibilities were found to have statistically significant associations, with one relationship at the 97.8% confidence level and the rest at the 99.2% or better. Although "memory" was ranked last in terms of its presence in the narratives, it has significant relationships with all subjective categories for narrative content. Content addressing "physical" sensations was likewise significantly correlated to all the inwardly focused subjective dimensions (i.e., spiritual, emotional, and memory). These findings mean that when physical sensations (or memory) appear in a narrative, more subjective content associated with the intracerebral-bodily realm is likely to follow due to their interrelationships.

Finally, the failure to achieve intercoder agreement with the "intellectual" variable needs to be addressed. Stated earlier, the "intellectual" category was the most frequently coded label in absolute numbers, and therefore the most used to convey EAEs (Table 6). "*Thinking, analysis, reflection, and making sense of the experience*" (Codebook definition of "intellectual"; Table 1) are natural ways to take the psychological distance needed to write about a meaningful event that happened in the past. It should also be recognized that written language, given its

		EAE dimension		
		Objective	Subjective	Total
Word-coding content	Present	**1243** (A)	949 (B)	2192
	Absent	1629 (C)	**1923** (D)	3552
	Total	2872	2872	5744

Table 8: The cross-tabulation matrix of objective and subjective EAE content.

syntax and communication-seeking nature, tends to favor intellectual constructs. The fact that most authors (91%) were college educated or higher might have also contributed to this elevated presence of the 'intellectual' variable in the text. Despite all this, the parts of the stories estimated as "intellectual" failed to find enough statistical agreement among the coders, which suggests that such narrative content was ambiguous, confusing, or mismatching. Perhaps this indicates that using verbal language to describe extraordinary aesthetics poses a large challenge, particularly when survey participants ranked the "*intellectual/ analytical*" dimension of EAEs in fifth place when describing its essential nature (in the multiple-choice part of the survey; see Section 1.1). In other words, the failure of the "intellectual" dimension of the narratives to find intercoder agreement suggests that the nature of these experiences makes it very hard to communicate them using analytical, logical, reflective, and such mental constructs. This of course reminds us of the 'ineffable' claim made by Le Corbusier and many others before and after him.

3.3 Relationships between Subjective and Objective EAE Dimensions

There are important relationships between the subjective and objective dimensions of EAE narratives. When one looks only at the thematic word-coding present in the 718 narratives, he/she learns that 56.7% of the content is dominated by "objective" categories that are external and outwardly focused (Table 8). As such, the odds of encountering an EAE narrative with "objective" content compared to its "subjective" counterpart is 1.6 times more likely to occur. Simply put, these narratives depend on establishing a relationship with objective reality,

		Subjective				Objective			
	EAE Narrative Characteristics	Physical	Emotional	Spiritual	Memory	Location	Time	Social	Features
Subjective	Physical	1.000							
	Emotional	0.002	1.000						
	Spiritual	< 0.001	0.146	1.000					
	Memory	0.022	0.002	0.008	1.000				
Objective	Location	0.067	< 0.001	0.025	0.009	1.000			
	Time	< 0.001	0.237	0.703	0.007	< 0.001	1.000		
	Social	< 0.001	0.013	0.033	0.012	< 0.001	< 0.001	1.000	
	Features	0.005	0.133	0.204	0.152	< 0.001	< 0.001	0.004	1.000

Table 9: The cross-tabulation matrix of statistical relationships between word-coding categories. Note that any cell in black represents a p-value>0.05, and constitutes a result that is below the 95% confidence level and is rejected as a valid result. [16]

the extracerebral-bodily realm. Hence, one should expect to find a high presence of architectural features (e.g., scale, materials, light, colors, age, style, space, composition, etc.) and location (e.g., place, site, context, name of building or place, etc.) in the text. This outward focus of attention (on objective content) is consistent with what was found and discussed in the previous section.

By testing the interactions between subjective and objective variables, it was learned that 10 of the 16 (62.5%) possible correlations had statistically significant associations (Table 9). Remarkably, building "features" was found to have *no* relationship to subjective categories, except for "physical" sensations (with a high 99.5% confidence level). Looking closer at the data, the probability proportion reveals that 67% of the narratives with "physical" sensations also possess descriptions of building "features," making the odds of encountering a story with "physical" sensations 1.59 times more likely when discussion of building features occurs (Table 10). This finding accounts for the fundamental way in which architecture relates to human beings, that is, through sense perception. This is particularly true with aesthetic conditions, and consistent with how the 718 respondents ranked "sensual/perceptual/ physical" as the most important characteristic of EAEs and "beauty" as its second most important outcome. Related to the importance of such embodied dimensions of EAE are reports of "strong body reactions" by a majority of narrative authors (61.8%). Providing additional support and insight to the aesthetic nature of EAE narratives is the discovery that the highest ranked relationship found (according to the OR test and backed

[16] All data corresponding to chi-square statistics can be found in Appendix 3.

Variables tested	Odds ratio	Probability proportion (%)	OR tanking
Time ↔ Physical*	1.89	96/219 (44%)	3
Social ↔ Physical*	1.91	85/190 (45%)	2
Physical ↔ Features	1.49	162/242 (67%)	9
Location ↔ Emotional*	1.98	271/405 (67%)	1
Social ↔ Emotional*	1.56	128/190 (67%)	7
Spiritual ↔ Location	1.51	105/164 (64%)	8
Spiritual ↔ Social	1.51	54/164 (33%)	8
Memory ↔ Location	1.75	77/114 (68%)	5
Memory ↔ Time	1.76	47/114 (41%)	4
Memory ↔ Social	1.72	41/114 (36%)	6

Table 10: The odds Ratio results for statistically significant relationships between objective and subjective categories.

by a 99.9% confidence level from the chi-square statistic) was between "emotions" and "location." This is very significant because it reaffirms the power that place has with inducing strong emotional responses. EAE narratives describing "location" were 1.98 times more likely to also describe "emotional" states (i.e., 67% of narratives containing "location" also possessed "emotional" content; Table 10). This is in harmony with the results and discussion on "emotional" content, and the fundamental role that objective conditions play in EAE narratives and events, both covered in this and the last sections.

Beyond building "features," "physical" sensations were found to be affected by the objective factors of "time" and "social" content, but not as much (i.e., borderline statistical condition) by the "location" of the EAE. Ranked at second and third place in strength, the ORs between "physical" and "time" (1.89), and between "physical" and "social" (1.91), indicate that they are associated with higher odds of an outcome for written narratives. This signifies that when reporting "physical" sensations, it will often be grounded in externally focused, objective content related to "time," building "features," and "social" conditions.

Closely related, the "social" condition, "location," and "time" of an EAE were found significantly connected to one's "memory" or recollection (p-value≤0.01). In addition, 41% of the written narratives possessing "memory" related content also possessed qualities about "time" (Table 10). In fact, respondents writing about "memory" were 1.76 times more likely to include details about "time."

Lastly, the "social" component had significant relationships with all inwardly driven, subjective categories, underscoring the relevance of this dimension when communicating the narrative. Of these four relationships, the higher ranked OR for "social" content was found with "physical" sensations. The probability proportion also reveals that 45% of narratives with a "social" component also possessed "physical" sensations. As expressed in some of the sample stories, sharing and recalling one's experience with another person often brings back strong physical sensations. As one respondent wrote, "I have chills today writing to you about the experience, it remains very close and familiar and stimulating to this day" (Appendix 1; Story #20).

4 CONCLUSION

The goal of this investigation was to analyze written narratives collected in a survey about "extraordinary architectural experiences" to understand how people describe and communicate them. It was also to offer and test a quantitative research methodology to probe phenomenologically rich, qualitative data often off-limits to such approaches. The following brief conclusion tries to bring the results into a synthesis that does not repeat but builds on the discussion and inferences already presented in the previous two sections.

This study's original expectations about finding narratives with strong plot-structures and persuasive language were proven overly optimistic and incorrect, respectively. However, these results have been insightful not just by themselves, but in relation to the rich results of analyzing the thematic coding of the 718 narratives. It was confirmed that the preferred method to share an EAE was using plot-structure, and that such a framework allowed people to pack in more subjective and objective content than narratives without a storyline. Related, the investigation found that plot-structured texts were much longer and of more depth and richness than their counterpart. Content analysis of the narratives showed that the most common thematic descriptors were building "features" and "emotions," followed closely by the building's "location," and then at some statistical distance by "physical" sensations and "time." There was less frequent but relatively even use of "social" and "spiritual" content, with "memory" related texts being the least employed.

As a whole, outwardly focused, objective descriptors were the most prevalent content among EAE narratives. In fact, the study discovered significant interdependence among these categories, which demonstrates their strong bond and relevance in communicating the event. Not only were there more significant associations found among external or objective categories (i.e., features, location, etc.) than among internal or subjective descriptors (i.e., emotions, sensations, etc.), but the odds of a written narrative describing objective extracerebral-bodily qualities were 1.6 times higher than descriptions of subjective intracerebral-bodily phenomena. We postulate that the more prevalent use of tangible elements in the texts are due to their 'undisputed' nature (i.e., coders had higher levels of agreement for word-coding categories in such groupings than for subjective ones) and the fact that they are what caused people's inwardly driven, subjective responses in the first place (i.e., the effect of architecture). In other words, the great presence of objective content in the texts make sense only and precisely because of the powerful role that "emotions" and "physical" sensations play in those very narratives. It is in this dialectic and significant relationship where the aesthetic nature of the experience is being grounded and communicated.

Finding that "location" (ranked 2nd) and "physical" (ranked 3rd) descriptors were highly used and correlated with all other coding categories (except for one borderline case), there is support for the case of a tightly interlocked objective-subjective aesthetic construct. This implies two things. First, it points at EAEs as profoundly 'embodied'

experiences in the way Merleau-Ponty would understand it. Even writing about them (a very abstract or intellectual act) could not disentangle the role of the body. This is consistent with contemporary research on embodied cognition (Abel, 2015; Damasio, 1994; Gallese, 2005; Johnson, 2007). Second, the significant association of place (i.e., "location") with all narrative contents underlies the power of "*genius loci*" in the architectural extraordinary (Norberg-Shulz, 1985).

Put differently, although the effects of the events are inwardly felt (i.e., emotions, sensations, spirituality, and memories), the driving force comes from without (i.e., features, location, time, and social conditions). This reminds us of environmental psychologist Stephen Kaplan's research on restorative experiences, in which the external environment was found to produce such a positive effect, based on what he terms "fascination," that there is an unconscious or involuntary (aesthetic) drive toward that external source (Kaplan, 1995). If we now consider the not so prevalent (but still important given its implications) "spiritual" content in the narratives, we are reminded of Juhani Pallasmaa's argument that a true encounter with architecture (i.e., objective conditions) renders the subjective dimension of our existence opaque (Pallasmaa, 2015b). Aesthetics might thus be said to turn into "beauty," a much wider, deeper, and significant phenomenological event (Nehamas, 2007), and an outcome of EAEs that survey participants reported in the multiple-choice portion of the poll.

In addition to "location" and "physical" sensations, it was revealed that two other thematic descriptors relate to most subjective and objective content. This included the "social" (i.e., associated to all) and "memory" (i.e., associated to all but one) categories. While the low use of "memory" (last place and ranked as 7th) highlights the present-centered nature of the shared experiences (i.e., their unfolding without the weight of experiences), its strong association with other thematic descriptors indicates its essential, albeit invisible, scaffolding role in EAE narratives. Related, the widespread association of "social" content with all texts affirms the inevitable and important role that other human beings play not only in the EAE itself, but also in its communication.

Paradoxically, despite this social dimension of EAEs as both experience and narrative—and philosophical arguments claiming the need for people to share and convince others after encountering beauty—the study failed to confirm the "persuasiveness" of the narratives. This was particularly disconcerting at first because the lack of intercoder agreement happened even with their general (although separate) accord that the narratives presented a compelling language. Although a variety of explanations was offered to account for the failure to reach consensus about "persuasiveness," the most likely motive might have to do with the 'intellectual' variable. Simply put, if "intellectual" content was so extensively used but coders could not agree on their interpretation, then consensus about the persuasive power of the text would be hard to find too. In fact, this phenomenon might also have influenced the lower than expected storyline result. Additionally, the poor communicability of texts deemed "intellectual" could be pointing at the limitations of verbal language to describe extraordinary aesthetics, particularly considering that survey participants reported EAEs to be primarily non-intellectual/analytical events. This is at the root of 'ineffability' as discussed earlier in the paper. Naturally, more study is necessary to verify these speculations.

The results of this study demonstrate the usefulness of content analysis as a method for scientifically probing written narratives about architectural experience, and while some of these findings might seem common sense (and therefore in no need of 'validation'), it is important to go through a process of verification since much of what is considered common sense has too often proven wrong on close scientific examination. If on one hand the use of content analysis expands the current ways for empirically approaching phenomenology, on the other hand this quantitative effort is unable to represent a good quarter of the stories that offer remarkable, sometimes moving, accounts. Hence, although we started this article arguing for the imperative need for empirical/scientific engagement of aesthetics and phenomenology, we end by recognizing the importance of qualitative methods to help illuminate that which cannot be grasped by this quantitative effort. We need both sides of the coin.

ACKNOWLEDGEMENTS

First, thank the hundreds of individuals worldwide who gave their time to participate in the survey. Not only is each selfless act helping advance the state-of-the-art of our knowledge, but more importantly, a living proof of the true and staying power and relevancy of architecture in our lives. Second, we acknowledge and thank the following sixty graduate and undergraduate students, and two professionals, who voluntarily devoted their time and effort to coding the 718 EAE stories. This work was done between Fall 2008 and Spring 2014. These people (all of them having graduated at this point) are (in alphabetical order by last name): University of Utah School of Architecture (2008-2009): Abram, Angie; Allen, Bryan; Baron, Sean; Barton, Dan; Boam, Eric; Bradbury, Eric; Brinton, Bradeson; Brownfield, Jason; Caballero, Cesar; Camacho, Nathalia; Campbell, Justin; Chan, Fok Choi; Clark, Danielle; Costanza, David; Costomiris, Corey; Davis, John; Felt, Bryce; Frassa, Sarah; Gasse, Daniel; Gill, Jennifer; Glad, Brian; Grant, Robert; Ikeda, Erika; Johnson, Brittany; Johnson, Bryce; Kemsley, Judson; King, Nate; Kirkham, Leslee; Kwon, Soonju; Layne, Jonathan; Lloyd, Scott; Lofgen, Seffan; Markkanen, Bryan; Maurer, Gerald; McCallum-Lew, Quinn; Merritt, Leandra; Mitchell, Teran; Montgomery, jarman; Nagy, Stephannie; Nawabi, Naima; Platt, Mallory; Salazar, Christian; Schill, Rich; Seppi, Jessica; Shim, Won; Smith, Trent; Sommer, Mike ; Sonntag, Bob; Tanner, Zach; Walters, Steven; Wilcox, Michael; Williams, Nate; Wilson, Adriane; and Wright, Lawrence A. The Catholic University of America School of Architecture and Planning (2010-2014): Medina, Rossana; Motley, Christopher; Norkin, Benjamin; Ocello, Amanda; Schmalzel, Matthew; and Wivell, Evan. In addition, we had two Utah professionals who also volunteered as coders in 2009: Bagnasacco, Marco and Stern, Lauren. Third, we recognize Robert Albert, Senior Human Factors Engineer on the Global Product Design Team at GE Healthcare, for his generous and essential advice and guidance regarding statistical methods and analyses employed in this article. Lastly, our appreciation goes to the reviewers of the original version of this study, and Enquiry editor Philip Plowright, for their thorough review and feedback that assisted us in substantially improving the article.

REFERENCES

Abbot, H.P. 2008. *The Cambridge Introduction to Narrative*. Cambridge, UK: Cambridge University Press 2008) http://dx.doi.org/10.1017/cbo9780511816932

Abel, C. 2015. *The Extended Self. Architecture, Memes and Minds.* Manhester, UK: Manchester University Press.

Amoroso, R.L. 2010. *Complementarity of Mind & Body: Realizing the Dream of Descartes, Einstein & Eccles*. New York: Nova Science.

Arhheim, R. 1966. *Towards a Psychology of Art, Collected Essays.* Berkeley, CA: The University of California Press.

Arhheim, R. 1977. *The Dynamics of Architectural Form*. Berkeley, CA: The University of California Press.

Agresti, A., & Finlay, B. 1997. *Statistical Methods for the Social Sciences* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.

Amedeo, D., Golledge, R. G., & Stimson, R. J. 2009. *Person-environment-behavior research: investigating activities and experiences in spaces and environments*. New York: Guilford Press.

Bachelard, G. 1964. *The Poetics of Space*. Boston, MA: Beacon Press.

Barragán, L. 1980. "1980 Laureate Acceptance Speech." Pritzker Architecture Prize, accessed Sept 20, 2015. http://www.pritzkerprize.com/1980/ceremony_speech1.

Benedikt, M. 2008. *God, Creativity, and Evolution: The Argument from Design(ers)*. Austin, TX: Centerline Books.

Berg, B. L. 2001. *Qualitative research methods for the social sciences* (4th ed.). Boston: Allyn and Bacon.

Bermudez, J. 2008. "Mapping the Phenomenological Territory of Profound Architectural Atmospheres. Results of a Large Survey." Paper presented at the *International Symposium "Creating an atmosphere"*, Ecole Nationale Supériure d'Architecture de Grenoble, France. http://www.cresson.archi.fr/PUBLI/pubCOLLOQUE/AMB8-1Bermudez.pdf

Bermudez, J. 2009a. "Amazing Grace. New Research into 'Extraordinary Architectural Experiences' Reveals the Central Role of Sacred Places." *Faith & Form*, 42(2): 8-13.

Bermudez, J. 2009b. "The Extraordinary in Architecture. Studying and Acknowledging the Reality of the Spiritual." *2A – Architecture and Art Magazine*, Autumn(12): 46-49.

Bermudez, J. 2011a. "Empirical Aesthetics: The Body and Emotion in Extraordinary Architectural Experiences." Paper presented at the 2011 *Architectural Research Centers Consortium: "Considering Research"*, Lawrence Tech University, Detroit, MI

Bermudez, J. 2011b. "Outcomes of the Architectural Extraordinary: An Empirical Study." Paper presented at the *Third Architecture, Culture & Spirituality Symposium*, Serenbe, GA. http://www.acsforum.org/symposium2011/papers/bermudez.pdf

Bermudez, J. 2011c. "Profound Experiences of Architecture - the Role of 'Distancing' in the Ineffable." *2A Architecture and Art*, Spring(17): 20-25.

Bermudez, J. 2014. "Considering the Relationship Between Phenomenology and Science." *Environmental & Architectural Phenomenology Newsletter*, 25(3):51-54.

Bermudez, J. 2015. "Le Corbusier at the Parthenon." In Bermudez, J. ed. *Transcending Architecture: Contemporary Views of Sacred Space*, 88-110. Washington, DC: CUA Press.

Bermudez, J. Forthcoming. "Phenomenology of the Architectural Extraordinary and Merleau-Ponty's Philosophy." In T. Barrie, J. Bermudez and P. Tabb, eds. *Architecture, Culture, and Spirituality*. London: Ashgate.

Bermudez, J., and B.R. Ro. 2013a. "The Effect of Gender, Age, and Education in Extraordinary Aesthetic Experiences." Paper presented at the *Healthy + Healing Places: Proceedings of the 44th Annual Conference of the Environmental Design Research Association*, Providence, RI. http://faculty.cua.edu/bermudez/papers/edra_2013.pdf

Bermudez, J., and B.R. Ro. 2013b. "Memory, Social Interaction and Communicability in Extraordinary Experiences of Architecture." Paper presented at the 2013 *Architectural Research Centers Consortium*, University of North Carolina, Charlotte. http://arccweb.org/conferences/proceedings/ARCC2013_UNCC%20Conference%20Proceedings.pdf

Bernard, H. R., ed. 1994. *Research Methods in Anthropology: Qualitative and Quantitative Approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Bernard, H. R., & Ryan, G. 1998. "Text Analysis: Qualitative and Quantitative Methods." In H. R. Bernard, ed. *Handbook of Methods in Cultural Anthropology*, 595-645. Walnut Creek, CA: AltaMira.

Bloomer, K.C. and C.W. Moore. 1977. *Body, Memory, and Architecture.* New Haven: Yale University Press.

Burgess, P.W., I. Dumontheil and S.J. Gilbert. 2007. "The gateway hypothesis of rostral prefrontal cortex (area 10) function." TRENDS in *Cognitive Sciences* 11(7): 290-298. http://dx.doi.org/10.1016/j.tics.2007.05.004

Carey, J. W., Morgan, M., & Oxtoby, M. J. 1996. "Intercoder Agreement in Analysis of Responses to Open-Ended Interview Questions: Examples from Tuberculosis Research." *Cultural Anthropology Methods*, 8(3): 1-5. http://dx.doi.org/10.1177/1525822x960080030101

Chatman, S. 1980. *Story and Discourse: Narrative Structure in Fiction and Film*. Ithaca, NY: Cornell University Press.

Corbetta, M. and G. L. Shulman. 2002. "Control of goal-directed and stimulus-driven attention in the brain." *Nature Reviews Neuroscience*, 3: 201-215. http://dx.doi.org/10.1038/nrn755

Crosbie, M. Forthcoming. "The Sacred Becomes Profane." In T. Barrie, J. Bermudez and P. Tabb, eds. *Architecture, Culture, and Spirituality*. London: Ashgate.

Cullen, G. 1961. *Townscape*. New York: Reinhold.

D'Aquili, E. G., & Newberg, A. B. 2000. "The Neuropsychology of Aesthetic, Spiritual, and Mystical states." *Zygon*, 35(1): 39-51. http://dx.doi.org/10.1111/0591-2385.00258

Damasio, A. 1994. *Descartes' Error: Emotion, Reason and the Human Brain*. New York: G.P. Putnam.

Damasio, A. 2012. *Self Comes to Mind: Constructing the Conscious Brain*. New York: Vintage Books.

Davies, M., & Fleiss, J. L. 1982. "Measuring Agreement for Multinomial Data." *Biometrics*, 38(4): 1047-1051. http://dx.doi.org/10.2307/2529886

Denzin, N.K. and Y.S. Lincoln. 2000. “Introduction. The Discipline and Practice of Qualitative Research.” In N.K. Denzin and Y.S. Lincoln, eds. *Handbook of Qualitative Research*, 1-28. Thousand Oaks, CA: Sage Publications.

Dewey, J. 1934. *Art As Experience*. New York: Wideview/Perigee Book.

Eberhard, J. 2007. *Architecture and the Brain: A Knowledge Base from Neuroscience*. Atlanta: Greenway Communications.

Elkins, J. 2001. *Pictures and Tears*. New York: Routledge.

Gallese, V. 2005. “Embodied simulation: from neurons to phenomenal experience.” *Phenomenology and the Cognitive Sciences* 4:23-48.

Geertzen, J. 2012. “Inter-Rater Agreement with multiple raters and variables.” Accessed March 16, 2014. https://mlnl.net/jg/software/ira/

Gifford, R. 2007. *Environmental Psychology*. Colviller, WA: Optimal Books.

Golland, Y., et. al. 2007. “Extrinsic and Intrinsic Systems in the Posterior Cortex of the Human Brain Revealed during Natural Sensory Stimulation.” *Cerebral Cortex* 17(4): 766-777. http://dx.doi.org/10.1093/cercor/bhk030

Grbich, C. 2007. *Qualitative data analysis: an introduction*. London: Sage Publications.

Guest, G., & MacQueen, K. M. 2008. *Handbook for team-based qualitative research*. Lanham: Altamira.

Harries, K. 2007. “The Ethical Significance of Environmental Beauty.” In *Architecture, Ethics, and the Personhood of Place*, ed. G. Caicco. Lebanon, NH: University Press of New England.

Hejduk, R. and J. Williamson. 2011. “Introduction: The Apocryphal Project of Modern and Contemporary Architecture.” In *The Religious Imagination in Modern and Contemporary Architecture. A Reader*, ed. R. Hejduk and J. Williamson, 1-9. New York: Routledge.

Hillier, B. 1990. *The Social Logic of Space*. Cambridge, UK: Cambridge University Press.

Hiss, T. 1990. *The Experience of Place*. New York: Knopf.

Ivy, R. 2006. “The Essence of Education.” Architectural Record 07(17).

Johnson, M. 2007. *The Meaning of the Body*. Chicago: University of Chicago Press. http://dx.doi.org/10.7208/chicago/9780226026992.001.0001

Jones, L. 2000. *The hermeneutics of sacred architecture: experience, interpretation, comparison*. Cambridge, MA: Harvard University Press.

Josipovic, Z. 2013. “Freedom of the mind.” *Front Psychol*. 4: 538 http://dx.doi.org/10.3389/fpsyg.2013.00538

Jung, C. 1971. *Psychological Types*. Princeton, NJ: Princeton University Press.

Kaplan, S. 1995. “The restorative benefits of nature: toward an integrative framework.” *Journal of Environmental Psychology* 15(3):169-82. http://dx.doi.org/10.1016/0272-4944(95)90001-2

Knobe, J. and S. Nichols, eds. 2008. *Experimental Philosophy*. New York: Oxford University Press.

Krampen, M. 1979. *Meaning in the Urban Environment*. London: Pion Limited.

Krippendorff, K. 2013. *Content analysis: an introduction to its methodology* (3rd ed.). Thousand Oaks, CA: Sage.

Lacy, S., & Riffe, D. 1996. “Sampling error and selecting intercoder reliability samples for nominal content categories: Sins of omission and commission in mass communication quantitative research.” Jo*urnalism & Mass Communication Quarterly*, 73: 969-973. http://dx.doi.org/10.1177/107769909607300414

Landis, J. R., & Koch, G. G. 1977. “The Measurement of Observer Agreement for Categorical Data.” *Biometrics*, 33(1): 159-174. http://dx.doi.org/10.2307/2529310

Lawlor, A. 1994. *The Temple in the House*. New York: Penguin Putman.

Le Corbusier. 1948. *New world of space*. New York: Reynal & Hitchcock.

Lombard, M., Snyder-Duch, J., & Bracken, C. C. 2002. “Content analysis in mass communication: Assessment and reporting of intercoder reliability.” *Human Communication Research*, 28: 587-604. http://dx.doi.org/10.1111/j.1468-2958.2002.tb00826.x

Manzo, L.C. and P. Devine-Wright. 2014. *Place Attachment: Advances In Theory, Methods And Applications*. New York: Routledge.

Marans, R. W. 1973. “A Perspectus on Survey Research for Environmental Planning.” Paper presented at the *Environmental Design Research: Fourth International EDRA Conference*, Virginia Polytechnic Institute and State University, College of Architecture.

McHugh, M. 2009. “The odds ratio: calculation, usage, and interpretation.” *Biochemia* Medica 19(2):120-126. http://dx.doi.org/10.11613/BM.2009.011

Namey, E., et al. 2008. “Data Reduction Techniques for Large Qualitative Data Sets.” In G. Guest & K.M. MacQueen, eds. *Handbook for Team-Based Qualitative Research*, 137-161. Lanham, MD: Altamira Press.

Nehamas, A. 2007. *Only a promise of happiness: the place of beauty in a world of art*. Princeton: Princeton University Press.

Neuendorf, K. A. 2002. *The Content Analysis Guidebook*. Thousand Oaks, CA: Sage.

Nobre, A.C., et. al. 2004. “Orienting Attention to Locations in Perceptual Versus Mental Representations.” *Journal of Cognitive Neuroscience* 16(3): 363–373. http://dx.doi.org/10.1162/089892904322926700

Norberg-Schulz, C. 1985. *The Concept of Dwelling*. New York: Rizzoli International.

Otto, R. 1950. The idea of the holy: an inquiry into the non-rational factor in the idea of the divine and its relation to the rational (2d ed.). New York: Oxford University Press.

Pallasmaa, J. 2005. T*he Eyes of the Skin*. Chchester, Enland: John Wiley.

Pallasmaa, J., ed. 2015a. *Architecture in Mind*. Cambridge, MA: MIT Press.

Pallasmaa, J. 2015b. “Light, Silence and Spirituality in Architecture and Art.” In *Transcending Architecture*. Contemporary Views on Sacred Space, ed. J. Bermudez. Washington, DC: CUA Press.

Pérez-Gómez, A. 1985. *Architecture and the Crisis of Modern Science*. Cambridge, MA: MIT Press.

Pérez-Gómez, A. 2006. *Built Upon Love*. Cambridge, MA: MIT Press.

Piaget, J. 1977. *The Essential Piaget*. Edited by H. Gruber and J.J. Vonèche J.J. New York: Basic Books.

Petitot, J., et al. 1999. *Naturalizing Phenomenology: issues in Contemporary Phenomenology and Cognitive Science*. Stanford, CA: Stanford University Press.

Rapoport, A. 1982. T*he Meaning of the Built Environment*. Beverly Hills: Sage Publication.

Rasmussen, S. E. 1959. *Experiencing Architecture*. Cambridge, MA: MIT Press.

Recchia, H. E., Brehl, B. A., & Wainryb, C. 2012. "Children's and Adolescents' Reasons for Socially Excluding Others." *Cognitive Development*, 27(2): 195-203. http://dx.doi.org/10.1016/j.cogdev.2012.02.005

Riley, R.B, et al. 1993. "Most Influential Landscapes." *Landscape Journal* 12(2):169-189.

Rudas, T. 1998. Odds Ratios in the Analysis of Contingency Tables. Sage University Papers Series on Quantitative Applications in the Social Sciences, 07(119). Thousand Oaks, CA: Sage.

Ryan, G.W. and H.R. Bernard. 2000. "Data Management and Analysis Methods." In N.K. Denzin and Y.S. Lincoln, eds. *Handbook of Qualitative Research*, 769-802. Thousand Oaks, CA: Sage Publications.

Singh, K. 2007. *Quantitative Social Research Methods*. New Delhi: Sage.

Seamon, D. 1993. *Dwelling, Seeing, and Designing*. Albany: State University of New York Press.

Seamon, D. 2000. "Phenomenology, Place, Environment, and Architecture: A Review." *Environmental & Architectural Phenomenology Newsletter*. <http://www.arch.ksu.edu/seamon/Seamon_reviewEAP.htm>

Stemberg, E.M. 2009. *Healing Spaces: The Science of Place and Well-Being*. Cambridge, MA: Belknap Press.

Tuan, Yi-Fu. 1997. *Space and Place, the Perspective of Experience*. Minneapolis, MN: University of Minnesota Press.

Tuan, Yi-Fu. 1990. *Topophilia: a study of environmental perception, attitudes, and values*. New York: Columbia University Press.

Twombly, R., ed. 2003. *Louis Kahn: Essential Texts*. New York: W. W. Norton & Company.

Varela, F. 1996. "Neurophenomenology: A Methodological Remedy for the Hard Problem." *Journal of Consciousness Studies* 3(4): 330-349.

von Eckartsberg, R. 1998. "Existential-Phenomenological Research." In R. Valle, ed. *Phenomenological Inquiry in Psychology: Existential and Transpersonal Dimensions*, 21-61. New York: Plenum. http://dx.doi.org/10.1007/978-1-4899-0125-5_2

Wells, J. and E. Pavlides, eds. 2013. *Proceedings of the 44th Annual Conference of the Environmental Design Research Association*. Providece, RI: Environmental Design Research Association.

Wright, E. 2008. *The Case for Qualia*. Cambridge, MA: MIT Press. http://dx.doi.org/10.7551/mitpress/9780262232661.001.0001

Appendix 1: Ten Examples of Written Narratives

• *Sample 16: Ronchamp Chapel, Ronchamp, France (1981).* We arrived at the bottom of the hill where Ronchamp was located and it was raining just enough to get you damp and a little wet. As we walked up the winding path / road that leads to the top of the hill, Ronchamp started to appear over and through the trees, and as we reached the top of the hill, the sun broke through the clouds, the rain stopped, and the building was bathed in a very crisp contrasting light that made it stand out against the darker clouds that surrounded us. It was unbelievable the feelings we had as we just stood there and stared at the edifice that we had all seen pictures of before in school. It was like it came to life before our eyes.

• *Sample 17: Union Station, Washington, D.C. (no date provided).* I remember approaching Union Station from a distance (I can't remember which direction we came from, but we were walking uphill). When we finally reached the station, I was amazed at its sheer size. Upon entering the building, walking under the massive barrel vault ceiling, the columns, and the coffers, I couldn't believe that human beings could construct something so beautiful and monumental. The details made me wonder how they did it. It was almost nostalgic, making me wish for an earlier time when people used trains more frequently. It was a very secure and powerful place.

• *Sample 18: Machu Picchu, Peru (no date provided).* Visiting the ancient city of Machu Picchu was an extraordinary experience on many levels. From an Architect's view it was a magnificent piece of work. The experience of visiting this place was the culmination of a 4 day trek along the Inca trail, passing several Inca structures along the way. The hike concluded with a sunrise visit to Machu Picchu before other tourists arrived from bus or train. The profoundness was in part due to the strenuous journey to such a great place with a strong sense of completion, but a visitor coming directly from the train without the 4 days of hiking would also have a profound experience while visiting this place. The details, craftsmanship and use of stone were amazing and the setting was one of the most beautiful natural places I have ever visited. However, the mystery surrounding its creation added to the quality of experience, allowing me to contemplate its beauty in the most unrestrained and imaginative state of mind I've ever experienced.

• *Sample 19: Kalighat Kali Temple, Calcutta, India (1991).* I had the opportunity to visit the Kahli Temple with an associate. The temple is the only Hindi Temple that still sacrifices a Goat everyday on it's altar. The energy of the Space far exceeds the actual architecture itself. You feel as if you have stepped into ageless history and the universal. The impact and beauty of fresh blood, combined with rose petals and marigold petals seared an immediate connection. We were allowed down into the depths of the temple. My associate spoke Hindi and talked our way into what was not open to tourists. The deeper we went into temple through the stairwells the sounds and chanting became louder and louder. I felt as if I was completely out of body, in a dream. We entered into a chamber that was filled with what seemed to be hundreds of men in Hindi cloaks. When we entered the Chamber, every eye was on us and they were yelling more chants at us. It evoked fear and a psychedelic response to the surroundings. The architecture was obviously thousands of years old and yet it wasn't the actual architecture, beauty or ornate details of that temple that I remember, it was that the temple was a container of energy and power. After all these years, it instilled in me a

connection to the idea that we as humans are all empty containers of the universal. The idea of emptying ones self is a beautiful and profound thought in my everyday existence.

• *Sample 20: Mayan Temple, Tikal, Mexico (no date provided).* My visit to Tikal was early in the morning, very few people had begun to arrive. I did not know what to expect so the experience was even more powerful. I am still not sure if it was the location on the edge of a cliff overlooking the turquoise ocean or the building itself, or the combination of the two. The impact was overwhelming, I was about 23 years old and still open to new experiences, the moment I stepped into the area surrounding the temple, I began to have an other worldly feeling. It was of a stimulating, thought provoking, spiritual moment at first that grew the closer I walked into the area surrounding the temple. It was a time of realization that there were places, architectural places that could touch your soul and stir your spirit. I have chills today writing to you about the experience, it remains very close and familiar and stimulating to this day.

• *Sample 21: Cathedral of our Lady of the Angels, Los Angeles, CA (2004).* The courtyard next to the building is entered through a gate. From street through gate to courtyard, then up the path to the building felt tied together into one composition, with one element, to a certain degree, preparing you for the next. The nave of the building opening up in a rush of space upon entering and filled the mind with the possibilities of what space could become. The morning light spilled through the windows giving life to the space and accent to it's features. Though empty, but for a few people, the space felt both alive and calm at the same time. I believe this building helped me truly to appreciate architecture and its possibilities.

• *Sample 22: Pantheon, Rome, Italy (no date provided).* I was in my early 50's and I was visiting Rome for the first time. I am fascinated by history and had some knowledge through school and art classes about early Roman architecture. I had to see the Pantheon. At first, it was the excitement of finding it after emerging from the narrow neighborhood streets, and then it was the impact of seeing the facade in person for the first time. The outside was less grand than I had anticipated, but there it was. The real impact took place when I entered the interior, my gaze took me immediately to the shaft of light and then upward to the center of the dome. It really did take my breath away. I then realized how massive a structure this was. I marveled at how the Roman's had been able to construct such a structure with the technology available at the time. It was awe-inspiring. I imagined myself being transported back in time to when the Pantheon was first constructed and tried to imagine how impressed I would have been to have seen it then when the average person would not have been exposed as we are to such monumental architecture. I still feel a sense of awe recalling that day and I feel a profound appreciation for the men who produced such a lasting testimony to their abilities to create such an innovative structure.

• *Sample 23: St. Peter's Basilica, Rome, Italy (2002).* I took a spring break sketching/drawing class in Rome, Italy during my first year at architecture school. Myself and 10 of my peers went to the Basilica of Saint Peter at the Vatican City on a Sunday on our own accord. I had previously had architectural history courses, and I had briefly studied and knew about St. Peter's from that course, but it did not prepare me for what I was in store of. As I entered the structure and gazed up to the ceiling, the enormity became increasingly clear to me. I am not a religious person, but I felt the presence of the divine that day. Light came into the space as I had never seen light before. It's size and mass belittled me. I felt compelled to kneel and weep. How could man build such a place for something that he could only rely on faith for proof?? My relationship with God, though still very personal, has been forever altered. You could never have an experience with a place like this by studying it in a book.

• *Sample 24: Cologne Cathedral (Koelner Dom), Cologne, Germany (1990).* Walking into the Cathedral, I remember going from the bright outside to the dimly lit interior. Once my eyes adjusted, I could see and experience the expansiveness of the vertical nave. It was lit from above by the many stained glass windows and gave me the feeling of a higher power. It made me feel insignificant and joyous at the same time. My friends also had the same experience, and it didn't stop for us until we left the Cathedral. I have never felt this way about any other building in my life, and the only other comparable experience is when I saw the Grand Canyon for the first time.

• *Sample 25: Guggenheim Museum, Bilbao, Spain (2003).* I was in Spain on my first trip abroad, and alone. I knew beforehand that I wanted to see Bilbao, and specifically, The Guggenheim. I expected to be awed, I didn't expect to be completely blown over. I spent 8 hours at The Guggenheim on the day that I was in Bilbao. It is a wonderful building, very sensual and inviting. There is an energy that permeates the museum that is sort of indescribable. To be sure, I overlooked much of the wonderful architecture in that city, but I felt like I was at home with a very close friend and I just wanted to sit and absorb whatever it was that I was feeling. The art inside was a secondary perk. I had similar experiences in other Spanish cities, especially Barcelona, but none quite so private, so moving, as when I saw The Guggenheim the first time.

Appendix 2: Comparative Matrix between Data Variable Types

Word-coding ranking	Continuous variable	Categorical variable
1	**Intellectual**	**Intellectual**
2	Emotional	Features
3	Features	Emotional
4	**Location**	**Location**
5	**Physical**	**Physical**
6	Time	Social
7	Social	Time
8	**Spiritual**	**Spiritual**
9	**Memory**	**Memory**

Note: Words in bold share the same ranking despite the difference in data type.

Appendix 3: Pearson's Chi-square Tests of Association and Odds Ratios between Coding Variables

Variables Tested	n	df	χ2 statistic	p-value	Odds ratio
Physical ↔ Emotional	718	1	9.761	0.002**	–
Physical ↔ Spiritual	718	1	12.4	< 0.001**	–
Physical ↔ Memory	718	1	5.22	0.022*	–
Physical ↔ Location	718	1	3.35	0.067	–
Physical ↔ Time	718	1	14.474	< 0.001**	1.89
Physical ↔ Social	718	1	14.073	< 0.001**	1.91
Physical ↔ Features	718	1	7.853	0.005**	1.49
Emotional ↔ Spiritual	718	1	2.109	0.146	–
Emotional ↔ Memory	718	1	9.608	0.002**	–
Emotional ↔ Location	718	1	19.828	< 0.001**	1.98
Emotional ↔ Time	718	1	1.396	0.237	–
Emotional ↔ Social	718	1	6.237	0.013*	1.56
Emotional ↔ Features	718	1	2.254	0.133	–
Spiritual ↔ Memory	718	1	7.109	0.008**	–
Spiritual ↔ Location	718	1	5.016	0.025*	1.51
Spiritual ↔ Time	718	1	0.146	0.703	–
Spiritual ↔ Social	718	1	4.564	0.033*	1.51
Spiritual ↔ Features	718	1	1.615	0.204	–
Memory ↔ Location	718	1	6.836	0.009**	1.75
Memory ↔ Time	718	1	7.356	0.007**	1.76
Memory ↔ Social	718	1	6.288	0.012*	1.72
Memory ↔ Features	718	1	2.056	0.152	–
Location ↔ Time	718	1	43.76	< 0.001**	–
Location ↔ Social	718	1	33.306	< 0.001**	–
Location ↔ Features	718	1	25.671	< 0.001**	–
Time ↔ Social	718	1	30.483	< 0.001**	–
Time ↔ Features	718	1	14.64	< 0.001**	–
Social ↔ Features	718	1	8.079	0.004**	–
Plot Structure ↔ Physical	718	1	54.048	< 0.001**	3.52
Plot Structure ↔ Emotional	718	1	34.786	< 0.001**	2.49
Plot Structure ↔ Spiritual	718	1	29.458	< 0.001**	2.87
Plot Structure ↔ Memory	718	1	34.561	< 0.001**	4.12
Plot Structure ↔ Location	718	1	129.624	< 0.001**	6.23
Plot Structure ↔ Time	718	1	75.577	< 0.001**	4.97
Plot Structure ↔ Social	718	1	93.189	< 0.001**	7.45
Plot Structure ↔ Features	718	1	44.43	< 0.001**	2.82

Note: *significance at 95% confidence level; **significant at 99% or greater confidence level