LIGHT AS WORD: EXPLORING THE LINGUISTIC ROLES OF LIGHT IN INTERIOR SPACE

By

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To the Faculty of Washington State University:

The members of the Committee appointed to examine the thesis of MEAGHAN K. BEEVER find it satisfactory and recommend that it be accepted.

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Chair

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LIGHT AS WORD: EXPLORING THE LINGUISTIC ROLES OF LIGHT

IN INTERIOR SPACE

Abstract

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Shaping the interaction between light and space is significant to the act of composing interior environments. Within the discipline of interior design, light is often appreciated only for its functional value as opposed to being understood as a compositional tool to be explored and manipulated in the design process. The current state of ambiguity regarding light's role in designed space calls for the development of a framework for understanding light from a compositional perspective. This study proposes that language may serve as a conceptual model for exploring light and thus examines light's potential to behave linguistically in spatial compositions.

Findings are presented from an exploratory study in which subjects were asked to respond to a series of photographs of compositions of light. Two instruments were designed for this purpose, one which asked subjects to scale their level of agreement with 4 different linguistic conditions (noun, verb, adjective, and adverb) and one which asked subjects to "describe the role of light" in each photograph. Descriptive and inferential

statistical analyses revealed that some images elicited significant differences in the way they were perceived and those differences indicate light to be categorizable by linguistic roles; in some images light was perceived to be noun-like, while in others, adjective-like, etc. These results begin to suggest that light is perceived to have language-like traits and that the language model may be useful for exploring light's role as a compositional element in interior space. In addition, this study initiates a line of questioning that, if pursued, could begin to increase our understanding of light from a compositional/aesthetic perspective.

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Dedication

This thesis is dedicated to the Designer whose creativity called light into being.

"…in your light we see light."

INTRODUCTION

The relationship between light and interior space is a mutually dependent one. Light renders space; without light, form, color, texture, and scale are unrecognizable. In return, space captures light—receiving it, shaping it, bending it, hiding it, modeling it. The act of composing interior environments then, as a thoughtful process of manipulating design elements and principles, becomes an exercise, whether deliberate or not, in shaping an interaction between light and space. It follows that an understanding of light is critical to the successful, comprehensive design of a space.

But light is complicated. Its application within the realm of design is far-reaching, ranging from technical, to behavioral, to poetic, to aesthetic issues. Design research has contributed to new knowledge concerning light's technical issues (Kesner, 1997; Moran, 1990) and behavioral implications (Thompson et al., 1990; Veitch & Gifford, 1996). In addition, much design writing, particularly architectural writing, has explored light's poetic/symbolic nature (Lobell, 1979; Plummer, 1987; Tanizaki, 1977). Within the area of aesthetics (i.e. visual composition) however, there appears to be a gap in the way light is understood, investigated, and taught (Brown, 2004). Designers learn to compose 3-dimensional space much like a graphic artist would compose a 2-dimensional layout—using basic design elements and principles to produce a desired effect. Within the discipline of interior design, light is almost universally recognized as one of the design elements, yet it is often overlooked or seen as an additive feature

(Theodorson, 2006) as opposed to a compositional tool to be explored and manipulated in the design process. This observation is supported by Brown's (2004) review of interior design textbooks which revealed an inconsistency in the language used to describe light compared to other basic design elements. Whereas authors discussed design elements such as form, color, and texture in terms of their contributions to spatial composition, their discussion of light focused on technical and functional issues (e.g. lamp technology, photometrics, luminaires). In addition, the same study found noticeable differences in the vocabulary used by the disciplines of art, interior design and architecture to evaluate light and its aesthetic effects (as evidenced in trade magazines) (Brown, 2004).

One possible explanation for this incongruity regarding light's role in spatial compositions may be due to its highly elusive character. By its very nature, light is intangible and fluid, making it difficult to isolate and define. According to Meier (1997), "you can't work with light as though it were a real or solid material. It is a transitory element…" (p. 55). Harlan (as cited in Brown, 2004) reiterates light's complexity by comparing it to color: "Color, because it exists not only in materials but also in the form of paint that can be applied at liberty to surfaces, seems by comparison [to light], both manageable and permanent. Its qualities, though often elusive, can be studied with greater care and certainty than those of light." Though light may be a challenging subject of inquiry, it is a significant contributor to the aesthetic composition of interior space and, therefore, demands further investigation. The current state of ambiguity regarding light's role in spatial compositions only demonstrates—as Brown's (2004) study concludes—

"the need for the development of a framework for designing and understanding light from a compositional perspective."

This study proposes that the analogy between language and design may serve as just such a framework; using language—its form and function—as a conceptual model, this study explores light's potential to behave linguistically in interior spatial compositions. Consequently, by raising the following questions: Does light work like language? and, If it does, then can we use light's language-like behavior as a strategy for designing more meaningful spaces?, this study both challenges the language-design analogy and uses it to generate a new approach to designing with light.

This paper begins by establishing a contextual framework which 1) describes the rationale behind a language-design analogy and reviews its use within the design disciplines, 2) identifies *composition* as a significant way in which the language-design analogy is descriptively relevant, particularly within interior design, and, 3) isolates *light* as the key design element with which the current study seeks to explore the relationship between language and design. The paper goes on to describe the method used to develop and test two instruments for measuring light's potential to behave linguistically in spatial compositions. The findings from that investigation are presented. Finally, the paper concludes with a discussion of questions for future inquiry.

CONTEXT

The Language-Design Analogy

The language analogy is not new to theoretical discussions within the art and design disciplines. As a structural system that constructs, arranges, and organizes components, language offers an exquisite comparison to the processes and products that characterize art and design. What makes the analogy significant, and therefore worth studying, is its descriptive relevance; by describing certain characteristics of language we can inform our understanding of design and vice versa. Because we are innately familiar with language—its function, its symbols, its rules—we are able to clarify systems, by way of comparison, that are similar but less familiar (Chomsky, 2000).

In fact, building analogies in general is an effective way to approach problem-solving (Gleitman, 1996). As Harre (as cited in Abel, 1980) defines it: "An analogy is a relationship between two entities, processes or what you will, which allows inferences to be made about one of the things, usually that about which we know least, on the basis of what we know about the other" (p. 40). Similarly, Zeisel (1981) says, "Thinking of analogies…enables investigators to temporarily picture and use what they do not know by substituting known elements for gaps in their knowledge" (p. 21). As such, analogical thinking provides a means for inference based on existing knowledge (Zeisel, 1981) and thus becomes a method of inquiry that results in scientific explanation and innovation (Abel, 1980). According to Abel (1980), an architectural theorist, "it may be argued,

therefore, that…the language analogy constitutes a perfectly legitimate, and even scientific method, of enquiry into the nature of architecture" (p. 40).

Space as Language

At the analogy's broadest level, language as a system is used to describe various spatial phenomena. Evidence of the analogy appears at all scales within the design disciplines and the fine arts as well. For example, architecture has used a structuralist theory of language to help explain the internal logic governing relations between various systems of a building—how those systems are assembled and combined to obtain an object created for specific purposes and capable of satisfying well-defined functions. Inspired by Noam Chomsky's algorithmic rules for transforming innately understood relationships ("deep structures") into grammatically correct sentences, Broadbent (1980) identifies what he calls the "deep structures of architecture" and goes on to give examples of how architecture parallels certain ways in which new forms of language are generated. Additionally, Abel (1980) explores a relativist theory of language for its relevance in explaining the function of architecture to form and transmit cultural values.

Landscape architects have also utilized the language analogy. Swaffield (as cited in Scarfo, 2006) has equated the landscape with language by calling it a text; emphasizing landscape as communicator, she likens the interrelated organization of the landscape's contents and composition to a grammatical guide through which messages are expressed. Scarfo (2006) has also explored the relationship between landscape and language, arguing for an understanding of landscape as "built narrative." He suggests

that our movement through the environment (or landscape) is not a collection of separate moments but rather a changing continuum, an unfolding "story". He says, "When we overlay a progression of spaces with rules associated grammar, syntax, and idiom, we are guided in the production of a greater social and cultural coherency across space and time."

Likewise, at the interiors level, the basic design elements which serve as the media for composing space are often referred to as "vocabulary" and the design principles as "grammar" (Ching, 1987; Kilmer & Kilmer, 1992; Malnar & Vodvarka, 1992). Malnar and Vodvarka (1992) describe the use of design elements and principles as a "two-dimensional language that permits communication." They go on to say, "The better the manipulation of this language, the greater the latitude possible in creative activity" (p. 45). Benzel (1998) also makes use of the language analogy to reinforce the importance of context in understanding the interior room. She suggests that a word can be read alone without its context, however, much like an interior space, what gives a word (room) meaning is its relation to surrounding words (environment).

Finally, at the fine arts level, Steiner (1982) explores the structural "strata" of language for their applicability to painting. Building a comparison between literature and painting, she examines the minimal units that make up each, the rules for their combination, and the semantic and pragmatic conventions in each art. Interestingly, Steiner consistently recognizes that the comparison is not perfect; literature, because it is an art produced by language, is created out of and governed by fairly mandatory rules

while whatever formative rules a painting submits itself to are a matter of style or semantic convention rather than necessity. However, the comparison is still useful, as she goes on to state:

> The imperfect structural correspondence of painting to literature does not in fact preclude or even severely limit the comparison of the arts. What it does is permit an ever changing set of correlations by painters and writers, who are free to stress different elements of the structures of their art in order to achieve this correspondence. An interartistic parallel thus is not dictated by the preexistent structures of the arts involved; instead, it is an exploration of how these two structures can be aligned. This alignment is part of the overall essential homonymity and synonymity of semiosis by which sign systems and their texts approximate one another and then diverge. (pp. 68-69)

While the examples above demonstrate the range at which the language-design analogy is applied, perhaps the breadth of the connection between language and design is most concisely revealed in the following description of language as it appears in an introductory psychology text: “Language is creative, it is highly structured, it is meaningful, it is referential, and it is…communicative” (Gleitman, 1996, p. 258). Substantiating the strength of the relationship, the word ‘design’ could easily replace ‘language’ without the above sentence losing its descriptive accuracy.

Design as Syntax

Clearly, language and design share likenesses on many levels, each of which is relevant to the design disciplines; however, of specific importance within the context of interior design, and to this study in particular, is the way in which both language and design are compositional. Both are products of the act of arranging parts into a cohesive whole. And while the parts can be arranged with infinite variation—it is possible, even expected, that sentences, paragraphs, designs will be composed that have never been spoken, written, or created before—both language and design, if generated appropriately, are governed by rules of syntax, or the "orderly or systematic arrangement" of parts (*Webster's New World Dictionary*, 1994).

Language's function as a compositional system has been explored, perhaps most systematically, through the work of Noam Chomsky. As his theoretical investigations demonstrate, the natural complexity of language can be analyzed into simple, almost algorithmic components, which combine to generate meaningful sentences (Chomsky, 1975). [see Figure 1] Chomsky's interest lies in the syntactic realm of linguistic theory—that function of language concerned with formal structure, i.e. grammar.

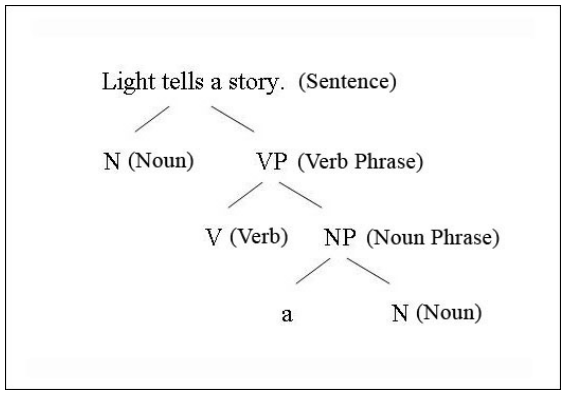


Figure 1. Language's algorithmic components.

In English grammar, words are divided into classes. Making up the core vocabulary of the English language, nouns, verbs, adjective, and adverbs are categorized as form-class words because they have the ability to change their form by accepting derivational and/or inflectional morphemes. For example, the word *composition* is a noun; however, by taking on the suffix *–al*, it becomes an adjective and by adding an additional *–ly* it again changes, this time to an adverb. *Form-class* words are distinguishable from *structure-class* words based on the type of meaning they convey. Structure-class words, such as prepositions and conjunctions, hold grammatical meaning: they signal the structural relationships between words. In contrast, form-class words have lexical meaning: they contain meaning independent of one another (Klammer & Schulz, 1992). While each of the form-class words are capable of standing alone, their combination creates the meaningful compositions that characterize language. Again, Benzel's (1998) language metaphor is particularly insightful. She says:

> …we are able to see and read a word alone without its context, but what counts is the meaning a particular word has in the structure of the work through its use in

> relation to the surrounding words. Surrounding words joined together in patterns of construction support and unfold the meaning of a text. (p. 15-16)

Thus, words combine to create a meaningful, linguistic composition.

Like language, design can also be dissected into basic components—components known as the design elements. Serving as the major components of interior space, design elements are ordered by what, in essence, is a three-dimensional syntax; organizing principles (e.g. balance, rhythm, emphasis, etc.) "permit the efficient and informative ordering" of design elements (e.g. line, shape, texture, etc.) (Malnar & Vodvarka, 1992). According to Ching (1987), "Interior design involves the selection of interior design elements and the arrangement of them within a spatial enclosure to satisfy certain functional and aesthetic needs and wishes" (p. 130). With these elements then, the designer manipulates his/her three-dimensional composition and as such, determines how their combination and arrangement will best communicate the design intent.

Light as Word

While a composition is defined by the whole, each component typically has a relatively specialized role and these components exist in a dynamic relationship with one another. This holds true in both language and design. In language, the form-class words, also known as the parts of speech, have specific tasks or identities within a sentence's composition. According to grammarians Klammer & Schulz (1992), we divide our experiences into two basic categories: objects and actions. Things that we perceive are placed in one category, while the action those things perform or undergo are placed in

another and this is reflected in the way we use words. Based on traditional methods of classification, all major form-class words can be identified by their relationship to these two major categories. In the most simplified terms, objects are nouns, words that modify objects are adjectives, actions are verbs, and words that modify actions are adverbs.

In a similar way, each design element has an identity that is distinguishable from the others, e.g. form can be understood and manipulated separately from color and texture. And in most cases, certain roles are inherent to an element's unique spatial characteristics, e.g. line suggests direction while typically it does not suggest warmth (at least not on its own as texture might). As a result, design elements are selected based on their intended use and function and their particular contribution to a composition. We can assume then, that light, as a design element, contributes to the aesthetic and functional quality of a space in a way uniquely distinguishable from the other design elements.

Interestingly, there is evidence that designers intuitively use light in ways analogous to linguistic roles. For example, in her book on the relationship between light and architecture, Millet (1996) describes light in various roles of spatial composition. She suggests, among other things, that light can create a focus (noun?), produce a sense of movement (verb?), and emphasize form (adjective?). Her observations challenge the current lack of literature on light's compositional role in interior space and further demonstrate the need for systematic investigation.

The Research Question

Light presents itself as an ideal element with which to test the language-design analogy for the very reason that, as discussed earlier, we are in need of a theoretical framework for understanding light. Work related to "codifying" color reflects a similar endeavor; Riley (1995) explores the application of color in philosophy, painting, architecture, literature, music, and psychology, suggesting at least an attempt to clarify our understanding of color through the lens of other disciplines. His research begs the question: "Why aren't we doing the same with light?" This study responds to that question, proposing that the language analogy offers a method of inquiry in which we can draw inferences about light, test them, and if they are supported, we can put them forward towards the development of a framework. By doing so, we can also simultaneously test an assumption about the "sameness" of language and design that has gone, up to this point, unchallenged.

Thus far, the review of literature has demonstrated that the language-design analogy is effective as a descriptive method of inquiry. There is no evidence, however, to suggest that the analogy has been pushed beyond a primarily descriptive function. Seeing an opportunity for exploration, this study seeks to systematically test the comparison through the discipline-specific filter of interior design; light, a basic design component, will be measured in terms of its ability to mimic basic language components, i.e. nouns, verbs, adjectives, and adverbs. The natural outcome of this investigation will be the generation of a new framework for studying light in interior space. [see Figure 2]

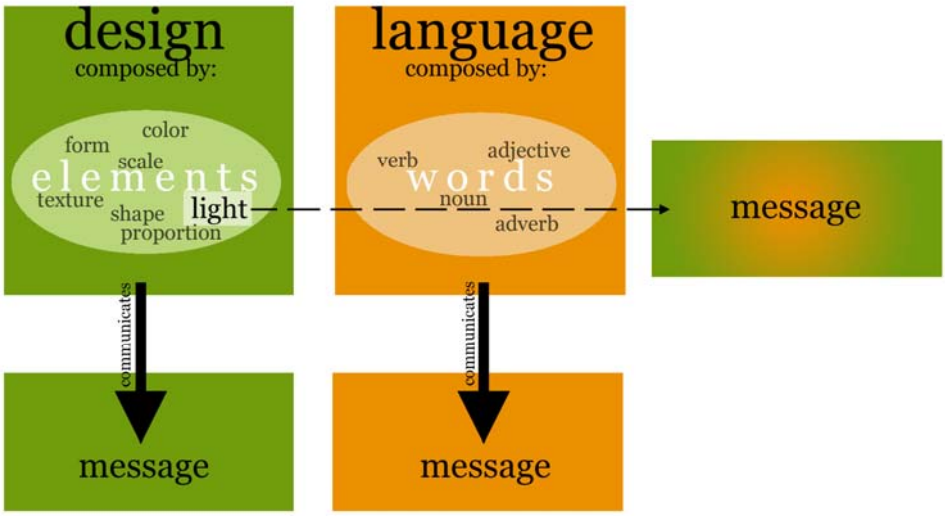


Figure 2. Diagram of theoretical framework.

The focus of this study, then, is to use the structure and function inherent in language (i.e. English) as a model for investigating the role of light in spatial compositions. Driving this study is the question: Can the light/space relationship be deconstructed like a sentence, such that light is perceived to play one or more linguistic roles, i.e. noun, verb, adjective, adverb? Simply stated: Does light behave linguistically? This question frames the intent behind the following methodology.

METHOD

Objectives

In his book, *Inquiry by Design*, Zeisel (1981) outlines the processes of conceptualizing, hypothesizing, and testing which make up the act of research:

> Investigators first formulate hypotheses in an exploratory way based on theory and previous empirical data; then they use preliminary, unfocused investigation to decide with what specific data to confront these hypotheses. As data are gathered and made more visible, exploratory hypotheses are developed into descriptive ones…. The more tenable ones [hypotheses] tend to help investigators organize, simplify, and explain ever greater amounts of related information. Testing these explanatory hypotheses in turn enables investigators to make explicit the holistic conceptual framework they have been developing. (p. 23)

This study began with an exploratory hypothesis—that light is capable of being categorized into linguistic roles. As such, the objectives of the study were: 1) to develop an instrument/technique for measuring light's potential to behave linguistically in spatial compositions and, if the instrument is found to be reliable, 2) to collect data that begins to suggest relationships and helps to refine questions for future inquiries. The following section describes how Objective #1 was carried out. Objective #2 is addressed in the Findings and Discussion sections.

Stimuli Selection

Approximately 700 photographs of student designed "light box" models were donated by two professors at the researcher's institution for potential inclusion in the test instrument. A light box is a model of interior space, typically constructed out of foam core, cardboard, or other model-making materials, and designed for the purpose of observing the effects of manipulated light. It was determined that photographs of the light boxes would be appropriate stimuli for the investigation, as previous studies on interior environments have demonstrated that photographs are effective stimuli for eliciting responses regarding the depicted physical environment (McCoy & Evans, 2002; Ornstein, 1992). Additionally, photographs (as opposed to physical models) helped to equalize attributes such as scale and craft that may have otherwise distracted from the focus of the study. From the 700 photographs, 35 were selected for preliminary analysis. In the end, 20 photographs were selected for Test 1 and six of those 20 were selected for Test 2. [see Appendices A & B]

Instrument Design: Instrument 1

The purpose of the test instrument was to measure whether or not subjects would perceive light to play four different linguistic roles: noun, verb, adjective and adverb. The challenge was to design an instrument that clearly and accurately prompted for these four linguistic conditions. Toward that end, by engaging in a preliminary analysis of 35 photographs, the researcher was able to identify appropriate wording to be used in the test instrument. Approached as an exploratory process, the development of the instrument took several steps.

The first step involved becoming acquainted with the research problem. During this phase, the researcher observed the use of light in each image and took notes, e.g. "light is positive space" or "source of light is unknown." In the second step, the 35 images were studied for dominant characteristics that might place them into linguistic categories, i.e. noun, verb, adjective, and adverb; decisions were based on published definitions of each linguistic category (as defined by Klammer & Schulz, 1992), however, there was some level of intuition involved in the process as well, as there is no precedent for categorizing light linguistically. As an example, an image showing light as a pattern might be categorized as "noun-like" because the pattern is an "object" and therefore meets the criteria of the noun condition. From this process, a third step evolved which included the development of a rubric of questions that could be asked of each image, e.g. "Does light appear to occupy space?" or "Is light used to reveal the character of an object?" By asking these questions, the researcher was able to categorize the images into linguistic conditions, and while determining linguistic categories was not necessary at this stage, this process allowed the researcher to identify a representative sample of images for the test. Finally, after developing these questions, the fourth step—identifying prompts for the questionnaire—was possible; the questions from each of the four linguistic categories were distilled into four statements that could be used to probe the linguistic conditions. [see Table 1]

Form-class Definitions: (from Klammer & Schulz, 1992)	**Example characteristics found in images:**	**Questions generated for determining categories:**	**Resulting test items for Instrument 1:**
Noun = things perceived; names things; an object; fits in the sentence "(The) _____ seems all right (inevitable/necessary."	***Noun****s.* shaft of light, strong pattern of light, spotlight	Is light an object? Does light have a recognizable shape or pattern? Does light appear to occupy space?	**Noun** condition: *Light **is an object** in this composition.*
Verb = actions performed or undergone; an action; fits in the sentence "They must _____ (it)."	***Verbs.*** implied movement of the sun through a space, change in color of surfaces	Does light imply action? Does light effect change from one state to another?	**Verb** condition: *Light **implies action or change** in this composition.*
Adjective = stands for a quality and modifies or describes nouns; fits into the sentence "The _____ man is very _____."	***Adjectives.*** plane washed with light, object illuminated from behind, absence of form revealed	Does light modify an object or form? Is light used to reveal the character of an object?	**Adjective** condition: Light **modifies an object/form** in this composition.
Adverb = modifies verbs, adjectives, other adverbs, or whole sentences; fits into the sentence "The man told his story _____."	***Adverbs.*** light emphasizes the coming together of parts, lit line or curve	Does light modify an action? Is light used to reveal the character of an action?	**Adverb** condition: *Light **modifies an action** in this composition.*

Table 1. Development of prompts for Instrument 1.

From the preliminary analysis of 35 photographs, a representative sample of 20 photographs (including all four linguistic conditions and ranging from abstract to semi-abstract light box models) were selected for the questionnaire. Four statements were used to probe the four linguistic conditions. Each statement was accompanied by a 5-point Likert scale ranging from strongly agree (5) to strongly disagree (1). (A fifth test item was included in the test instrument, however, its content was determined to be outside of the scope of this study so it is not discussed in detail here.) A slide show of the 20

images and a packet of 20 corresponding sets of test items were prepared.[1] [see Appendix C]

Instrument 2

Mid-way through the study, it was determined that a second instrument may be needed. The purpose of developing a second instrument was two-fold: 1) simply by structuring it differently, a second instrument could be used to obtain data that were more qualitative in nature, and 2) by comparing the results of two techniques/instruments that are different yet probe the same question, a second instrument could be determined reliable when tested against an instrument already considered reliable. Zeisel (1981) highlights the importance of both. Regarding the contribution of qualitative research he says: "Quantitative questionnaire data not augmented by researchers' qualitative insight

[1] It is important to note that this test instrument was inspired and supported by a study which demonstrates our predisposition to organize language into conceptual categories. In an experiment testing three- and four-year-olds, an experimenter showed the children a never-before-seen picture of a pair of hands which seemed to be performing a kneading-like motion with a mass of red confetti-like material that was overflowing a low, striped container. The children were introduced to the picture in sentences that used non-sense words, but functioned either as verbs ("In this picture can you see any *sebbing*?"), common nouns ("Can you see a *seb*?"), or mass nouns ("Can you see any *seb*?"). The children who had been asked to show *sebbing* made kneading motions with their hands, those asked to show a *seb* pointed to the container, and those asked about *any seb* pointed to the confetti (Brown, 1957). These findings are relevant to the present study in that they indicate that the brain can and will overlook semantic discrepancies between image and word in favor of recognizing linguistic functions. The significance for this study is that while the task of pairing linguistic functions with unrelated visual stimuli (e.g. a light box) may seem too unfamiliar to yield reliable results, it is really no different than the task the children in the study performed consistently and quite naturally.

or by qualitative data from other methods can provide a hollow and unscientific understanding of important problems" (p. 161). And regarding instrument reliability he says: "Collecting different kinds of data about the same phenomenon with several techniques is likely to counterbalance bias inherent in any one technique with the biases of the others" (p. 79). This "triangulation" of methods allows a researcher to neutralize the weaknesses of a given technique (Groat & Wang, 2002) and was therefore seen as an important endeavor in an exploratory study such as this.

For the second instrument, six images were selected based on data collected from the first test. The two photographs with the highest mean scores from each linguistic category were selected (the same two photographs received the highest means scores for both the verb and adverb condition, yielding a total of six—as opposed to eight—photographs). These photographs were then compiled into a slide show. The instrument was structured as a free-write exercise such that the only instructions were: "Using as many words as you need, please describe the role of light in this composition." This allowed the subjects freedom to interpret what they saw and to note what they felt to be the most significant features of the images. [see Appendix D]

Sample

Subjects were recruited from a 4th year interior design studio course at Washington State University Spokane. Thirty-nine (n = 39) students majoring in Interior Design participated in the first test which used Instrument 1. Thirty-six of thirty-nine were seniors in a four year Bachelor of Arts program while three were in their second

year of a three-year first-professional Master of Arts program. Based on pre-requisite requirements within the major for enrollment in this studio course, it was assumed that skill-level and educational exposure were equivalent for all participants. Participation was voluntary; students were not given extra-credit for their participation, nor were they penalized for choosing not to participate.

Thirty-three (n = 33) students majoring in Interior Design participated in the second test which used Instrument #2. Twenty-five of the thirty-three also participated in the study using Instrument #1; in order to prevent systematic bias caused by the order in which two tests are taken, 15 subjects completed Instrument 2 before completing Instrument 1 while the remaining 10 (tested separately) completed Instrument 1 before completing Instrument 2.

Procedure

Test 1 (Instrument 1)

Subjects were tested in three groups that were determined by their studio sections. (To prevent order effects, each group saw the images in a different order that was randomly counterbalanced and assigned to each group). Once all subjects were present, the group was given a demonstration including a sample slide of an image of a light box (similar to the images in the questionnaire but not included in the test instrument) and a slide of the items on the questionnaire (5-point scale and 5 statements they would be asked to respond to). The researcher read the slide aloud and took questions. At this time the questionnaire was distributed and subjects were asked to read the “Researcher’s

Statement" and fill out the blanks indicating 1) Studio Instructor and 2) Major and Year in School. (Note: "Assigned Code Number" was filled out by the researcher). [see Appendix E] Subjects were again given the opportunity to ask questions regarding the study. At this time, subjects were instructed to use the black and white reproductions of the images on their questionnaires as place-finders only; they were asked to focus on the image on the screen when responding to the questionnaire. Having given the instructions, the researcher started the slide show, leaving each image on the screen approximately 45 seconds before moving on to the next image. Each transition between slides was announced so that subjects would know to look at the screen for the next image if they were not already doing so. Twenty slides were shown. [see Appendix A]

Test 2 (Instrument 2)

Students were tested in two groups (only two studio sections participated in this part of the study). (Again, the order was randomly counterbalanced between the two groups to prevent order effects). Once all subjects were present, the group was given a demonstration including a sample slide of an image of a light box (similar to the images in the questionnaire but not included in the set they would be rating) and the prompt: "Please describe the role of light in this composition." Also appearing on this slide was a list of possible responses. [see Appendix F] The researcher read the sample responses and then informed the subjects that the examples were only suggestions and that they could respond in whatever way they felt appropriate. At this time the questionnaire was distributed and subjects were asked to read the "Researcher's Statement" and fill out the blanks indicating 1) Studio Instructor and 2) Major and Year in School (Note: "Assigned

Code Number" was filled out by the researcher). [See Appendix E] Subjects were again given the opportunity to ask questions regarding the study. Having given the instructions and taken questions, the researcher started the slide show, leaving each image on the screen approximately 1 ½ minutes before moving on to the next image. Each transition between slides was announced so that subjects would know to look at the screen for the next image if they were not already doing so. Six slides were shown. [see Appendix B]

Statistical Analyses

A one-factor, four-level analysis of variance (ANOVA) was used to examine the data for both Test 1 and Test 2. Post-hoc comparisons were used to find significant differences between the four linguistic conditions (noun, verb, adjective, adverb) in each test. For Test 1, mean Likert scale scores were analyzed for each image (20 images X 4 linguistic conditions). For Test 2, a content analysis was conducted in which the researcher tallied the total number of nouns, verbs, adjectives, and adverbs used to describe each image (6 images X four linguistic conditions); mean frequencies were analyzed. [see Appendix G] In addition, a Cronbach's Alpha value was obtained for both Test 1 and Test 2 in order to measure instrument reliability.

FINDINGS

Instrument Reliability

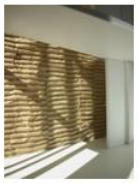
The first objective of the study was to develop an instrument/technique for measuring light's potential to behave linguistically in spatial compositions. As part of the exploratory process, two different instruments were developed—one which gathered quantitative data in the form of a standardized questionnaire (Instrument 1) and one which gathered qualitative data in the form of a free-write exercise (Instrument 2). Based on the data obtained, Instrument 1 was found to be highly reliable (.924) while Instrument 2 fell below the acceptable reliability value of .800 (.779).

Linguistic Categorization

The second objective of the study was to test whether or not light could be categorized into linguistic roles. Test 1 revealed significant differences between the form-class word categories for some images:

Nouns.

Images 18, 2, 16, and 1 received noun scores significantly *higher* than the other three linguistic conditions ($p < .004$, $p < .024$, $p < .049$ and $p < .004$ respectively). In contrast, Images 9, 26, and 30 received noun scores significantly *lower* than the other three linguistic conditions ($p < .002$, $p < .042$, and $p < .029$ respectively). [see Table 2]

Images receiving significantly *high* noun scores:	*df*	*F*	p	Images receiving significantly *low* noun scores:	*df*	*F*	p
 18.	3, 152	10.68	.004 (v) .001 (adj) .000 (adv)	 9.	3, 152	6.12	.000 (v) .000 (adj) .002 (adv)
 2.	3, 152	7.38	.024 (v) .000 (adj) .000 (adv)	 26.	3, 152	11.52	.001 (v) .000 (adj) .042 (adv)
 16.	3, 152	13.16	.000 (v) .049 (adj) .000 (adv)	 30.	3, 148	7.10	.000 (v) .000 (adj) .029 (adv)
 1.	3, 148	7.43	.000 (v) .004 (adj) .000 (adv)				

$p < .05$ is considered significant

Table 2. Analysis of Variance for **Noun** Condition.

Verbs.

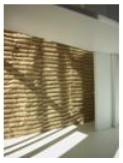
There were no images that scored significantly high or low verb scores. Interestingly, the three images with the highest mean verb scores (Images 3, 15, and 22), also received the highest mean scores for all linguistic conditions combined. [see Table 3]

Images with highest mean VERB scores:	Mean VERB Score (Range = 2.81 – 4.28)	Overall Image Score (Range = 3.30 – 4.16)
 3.	4.28	4.16
 15.	4.17	4.10
 22.	4.08	3.97

Table 3. Highest Mean Scores **Verb** Condition.

Adjectives.

There were five images that received significantly high adjective scores: Image 20 ($p < .000$), Image 6 ($p < .030$), Image 19 ($p < .014$), Image 8 ($p < .022$), and Image 26 ($p < .019$). [see Table 4] In addition, the adjective condition received the highest mean scores overall compared to the other three linguistic conditions: M = 3.93 compared to 3.67 (Noun), 3.68 (Verb) and 3.28 (Adverb).

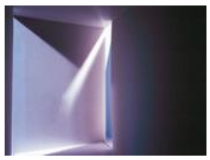
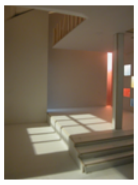
Images receiving significantly *high* ADJECTIVE scores:	*df*	*F*	p
 20.	3, 152	10.66	.000 (noun) .000 (v) .000 (adv)
 6.	3, 152	17.26	.030 (noun) .000 (v) .000 (adv)
 19.	3, 144	7.75	.000 (noun) .014 (v) .000 (adv)
 8.	3, 152	7.21	.000 (noun) .022 (v) .000 (adv)
 26.	3, 152	11.52	.000 (noun) .019 (v) .000 (adv)

p < .05 is considered significant

Table 4. Analysis of Variance for **Adjective** Condition.

Adverbs.

Overall, the lowest mean scores occurred in the adverb condition (M = 3.28). There were no images that received significantly high adverb scores; however, there were four images that received significantly low adverb scores: Image 17 (p < .046), Image 18 (p < .029), Image 32 (p < .001), Image 16 (p < .049). [see Table 5]

Images receiving significantly *low* ADVERB scores:	*df*	*F*	p
 17.	3, 152	3.93	.003 (noun) .046 (v) .005 (adj)
 18.	3, 152	10.67	.000 (noun) .008 (v) .029 (adj)
 32.	3, 152	7.10	.000 (noun) .001 (v) .000 (adj)
 16.	3, 152	13.16	.000 (noun) .017 (v) .000 (adj)

$p < .05$ is considered significant

Table 5. Analysis of Variance for **Adverb** Condition.

Interpretation of Key Findings

The purpose of this study was to explore light's potential to behave linguistically in spatial compositions. If light is perceived to behave linguistically and the instrument used for measuring this perception is reliable, then we would expect to see differences between the linguistic conditions for some, if not all, of the images. The fact that Test 1 demonstrated some images to be role-specific, that is, light was perceived to be noun-like in some images, while adjective-like in others, suggests that light, depending on its characteristics in a given composition, can be categorized by linguistic functions.

In contrast to Test 1, Test 2 did not reliably indicate a difference in linguistic roles. While there were significant differences, they were the same for each image and occurred in only two directions: all images received significantly high noun frequencies and significantly low adverb frequencies. This result may be indicating that rather than demonstrating a difference in linguistic roles, Instrument 2 is simply reflecting the participants' tendency to use more nouns and fewer adverbs in their writing. This finding is interesting nonetheless, because it supports Klammer & Schulz (1992) description of the simplicity of nouns compared to the relative complexity of adverbs: "We use nouns as a major category, naming what we perceive…Adverbs are…removed from tangible experience; they modify verbs, adjectives, other adverbs and even whole sentences. Perhaps this is why they are the most difficult of the four form classes to identify and understand" (p. 72).

Interestingly, the scores for several images revealed direct disagreement between Test 1 and Test 2. For example, in Test 1, Image 9 received significantly low noun scores; however, in Test 2, Image 9 received significantly high noun scores. Similarly, in Test 1, Image 19 received significantly high adjective scores but was given a significantly low adjective score in Test 2. In addition, an image that showed no significant differences between linguistic conditions in Test 1 (Image 22), showed significant differences between all conditions in Test 2 such that: noun > verb > adjective > adverb. [see Table 6]

Images	Test 1	Test 2
 9.	LOW Noun	HIGH Noun
 19.	HIGH Adjective	LOW Adjective
 22.	NO Significance	noun > verb > adj > adv

Table 6. Comparison between Test 1 and Test 2.

These contradictions in findings between Test 1 and Test 2 suggest that Instrument 1 and Instrument 2 are not measuring the same thing. Indeed, the results of the reliability test suggest that while Instrument 1 is effectively probing the question the study set out to answer ("Is light perceived to behave linguistically?"), Instrument 2 is not (at least not as analyzed—see section on Limitations), and so a difference in findings would be expected.

Interpretation of Key Observations

Based on the analysis of the data from Test 1, additional observations emerged that are worth noting. While the interpretations of these observations are speculative, they open the door for future inquiries.

1) *High nouns differed from low nouns in spatial context and light intensity.*

   The results would suggest that the perception of light as an "object" (the noun condition) may be related to a spatial composition's level of abstraction and the intensity of the light source. While images that received *high* noun scores (1, 2, 16, and 18) had a high level of abstraction—minimal to no spatial context, i.e., planes were visible but there were no other forms, shapes, textures, etc.—images that received *low* noun scores had almost full spatial context where the images resembled "real" spaces and the level of abstraction was much lower than that of the high noun images. Similarly, while the *high* noun images were characterized by high intensity levels—the light was bright, almost glaring and emanating from a very obvious source (or sources) in each image—the light itself in the *low* noun images was less intense and the source of light was not obvious. We can speculate from these findings, then, that light is more likely to be understood as "noun-like" when it is not competing with other forms/objects and when it has a strong presence in a space. [refer to Table 2]

2) *Images with the highest mean verb scores shared characteristics of line and rhythm.*

   While there were no images that scored significantly high in the verb category, the three images that had the highest mean verb scores (3, 15, and 22) shared

striking similarities. Because all three depicted the dominant use of line and a suggestion of rhythm, the results would lead us to infer that both line and rhythm are highly associated with "action or change" (the verb condition) in a spatial composition. [refer to Table 3]

3) *Compared to the other three linguistic conditions, the adjective condition received the highest mean score.*

   Because the highest scores were given in the adjective category, the findings suggest that light may be perceived most commonly as a "modifier of objects or forms" (adjective condition). This finding supports the idea that light is often applied as "an additive to design work" (Theodorson, 2006) where the space exists first and then light is added as a secondary feature to complement the primary forms. Interestingly, if we were to predict which linguistic condition would receive the highest scores based on actual language use, we would expect the highest scores to be in the noun and verb categories because they are the most frequently used of the linguistic categories. The results from this study would suggest, however, that light differs from the form-class words in this way.

4) *High adjective scores appear to be related to light as negative space (vs. light as positive space).*

   One image (26) scored high in the adjective condition but low in the noun condition. This finding is interesting in that it suggests a key difference between adjective-like and noun-like light, namely, as seen in this image, light as an adjective is "negative space". Light in this image functions as a canvas where shadows, the texture in the background, and the rectilinear form in the foreground

are the key features and the positive space. Additionally, in all of the images with high adjective scores, light appears to be the space between forms, and as such, the negative space. This difference between noun-like and adjective-like light would further suggest that in order to be perceived as "an object", light must be positive space. [refer to Tables 2 & 4]

5) *High noun scores may predict low adverb scores.*

   Because Images 16 and 18 scored significantly high in the noun condition and significantly low in the adverb condition, we may speculate that a negative correlation exists between light being perceived as noun-like versus adverb-like. In other words, the more noun-like light is, the less adverb-like it is and vice versa. This finding reaffirms what is true about the form-class words: that nouns and adverbs exist on opposite ends of the spectrum, where nouns are a major category relating to physical objects while adverbs are a minor category relating to intangible experience. [refer to Tables 2 & 5]

6) *Curvilinear forms may complicate light's linguistic potential.*

   Interestingly, only two images (7 and 22) indicated no significant difference between any of the linguistic conditions and these two images share a common element that none of the other images have: both are characterized by amorphous shapes and undulating lines. This finding suggests that non-rectilinear forms may be a significant variable affecting one's perception of light as a linguistic element. [refer to Appendix A]

7) *Subjects frequently used other design elements and principles to describe light.*

An important and unexpected observation to come from this study, specifically in the free-write exercise, was that subjects frequently used other design elements and principles to describe light. This finding reveals that students are able to talk about light from a compositional perspective (when prompted) and so raises the question, as Brown (2004) does: Why aren't design text books and other studies talking about light this way? Additionally, subject responses would suggest that light is singularly capable of expressing, among other things, emphasis, rhythm, shape, balance, movement, line, color and texture. These results highlight light's multi-dimensionality and suggest that perhaps light breaks the boundaries of the traditional understanding of a design element. While some sources include light as a design element, some group it together with color, and other do not include it at all. This inconsistency may be a reflection of an underlying debate as to whether light is truly a design element in the same way that line or texture is a design element.

Limitations to the Findings

Content Analysis

It is important to note that the contradiction between Test 1 and Test 2 results and the low reliability value for Instrument 2 may be due to the way in which the content analysis was conducted for Test 2. Data was obtained by tallying the occurrence of nouns versus verbs versus adjectives versus adverbs. [see Appendix G] This technique, though simple and objective, does not address differences in semantic content. For example, "movement" and "motion" are words that "imply action" and are therefore

indicative of the verb condition (according to the prompt used in Instrument 1). Together, both words were used 11 times (out of 99 *noun* responses) to describe Image 18; however, because both words are nouns, the image was given no credit for having verb-like qualities. [see Appendix B for Image 18] It would be interesting to see if an analysis of semantic content or the use of a semantic differential scale would reveal results closer to those of Test 1.

Prompt Accuracy

Another limitation of the study is that the wording for the items on Instrument 1 was not pre-tested for comprehension. Although it appears that Test 1 is a reliable instrument, perhaps a more effective alternative would have been to collect data from Test 2 before conducting Test 1; under this scenario, words generated from the free write could have been used to produce the wording for Test 1. For example, the prompt for the verb condition could have utilized the 3 most frequently used verbs: "Light *defines*, *creates*, or *adds to* something in this composition."

Generalizability

This study is also limited in its generalizability due to the fact that all subjects were upper-level interior design students from one institution. To be more generalizable, future studies could test students from other institutions, and to make even broader claims, samples could be drawn from the general population.

Other Variables

Limitations also exist in the level of control placed on the images selected for the test stimuli. It was decided that in order to represent the most realistic interaction between light and space, the light boxes should be shown as originally designed. While this decision ensured an accurate portrayal of light as it is actually experienced, it failed to address possible effects caused by variables such as color (warm tones vs. cool tones, saturated vs. unsaturated) or level of abstraction (no spatial context vs. some spatial context vs. full spatial context) or even the quality of the image (high resolution vs. low resolution). As such, in order to provide important comparative data and perhaps more conclusive findings, this study should be replicated in a way that controls for these variables. It is interesting to speculate how the same images in black and white may elicit different responses or how images with no spatial context may score compared to images with full spatial context. Clearly, future studies are needed to further isolate possible factors impacting light's linguistic behavior.

Scope

Finally, this study limits itself in its scope. This study limited itself to identifying whether or not light could be recognized in linguistic categories; it did not examine how subjects determined which linguistic category was most applicable for a given instance of light. This and other questions raised by the study are discussed in the following section.

DISCUSSION

One of the explicit objectives of this study was to generate ideas for future inquiry. Rather than lead to definitive conclusions, this study sought to initiate a line of questioning that could begin to increase our understanding of light's compositional behavior in interior space. As presented here, this study's findings are not conclusive; however, the results suggest that light may in fact be perceived to have language-like traits. The following is a discussion of questions that have resulted from this finding.

Implications for Future Studies

While this study begins to demonstrate whether or not light can behave linguistically it does not describe how subjects determine which linguistic category is most applicable for a given instance of light. A comparative analysis is needed to reveal: What characteristics of light cause it to be seen as noun-like as opposed to verb-like or verb-like and not adjective-like, etc? What do images with high scores in each linguistic category have in common? And how do these same images differ from images with low scores in that same category? Similarly, important comparisons should be made *between* linguistic categories. What makes an image score high in the noun condition but low in the adjective condition? In other words, what is the difference between light that *is* an object and light that *modifies* an object? These questions illustrate the potential for important discoveries to be found in comparative analyses. Once comparative analyses have indicated seemingly important correlations, future studies are needed in order to

systematically manipulate the key variables and test these manipulations for confirmation.

While this study explored light as a compositional element, future studies could investigate light as a communicative element. Designers' use of light, particularly in sacred spaces, would suggest that light is understood to communicate abstract and often symbolic ideas (e.g. the presence of a deity or the representation of a specific ritual). Thus the question could be asked: What "meaning" does each linguistic role of light communicate? Do the different linguistic roles elicit different psychological/behavioral responses? These questions suggest important implications for design. For instance, if light elicits different behavioral responses based on the linguistic role it is playing, how might these linguistic roles of light be used to meet varying functional needs? Within retail design, for example, what kind of linguistic condition is best suited for the entry? Display? Wayfinding? How might the manipulation of light's linguistic role contribute to a store's branding strategy?

This study also offers implications for pedagogy and the design process. To begin with, this study embraces a multi-disciplinary approach to investigating a discipline-specific question. Ellen Lupton says, "Foster literacy by integrating the humanities into the studio. Infuse the act of making with the act of thinking." By applying a framework from another discipline (e.g. linguistics), as this study sought to do, a student can be given a broader knowledge base from which to make connections, draw inspiration, and base design decisions. In fact, the findings from this study beg to be tested for their

applicability to the design studio; future studio-based research-design projects could involve designing a literary passage where the student first conducts a content analysis, analyzing words and their linguistic roles and then follows the analysis with a design, using light's word class-specific characteristics to 3-dimensionally "recreate" the words on the page. Defining light by its linguistic characteristics provides an understandable way to talk about and manipulate light; how much more so would this be true if future research were to find measurable correlations between qualities of light and its linguistic roles? Thinking about light linguistically also challenges the student/designer to consider the different effects of light: Should light be objectified in the space? Should it have a dynamic quality implying action? Or will light be used to emphasize an important form or texture in the space?

Finally, the discovery that developed out of the free-write exercise regarding the extensive use of design vocabulary to describe light raises the question: How do non-designers talk about light? Presumably, non-designers do not have an established "design vocabulary," however, would English majors for example, utilize a broader range of the form-class words compared to Design majors? Additionally, future studies should investigate light's apparent "multi-dimensionality." Would a similar study isolating other design elements elicit the same breadth of design vocabulary? Or is light special? Future studies could investigate whether other design elements are as "multi-dimensional" as light or if they are more role-specific. A comparative study of this kind may help to demystify some of light's complexity.

The findings from this study would suggest that light, like the form class words, is adept at changing roles. It appears that not only may light behave linguistically but it may also parallel the behavior of form-class words in that it can change its identity (linguistic role) entirely by taking on different characteristics. This finding has important implications for interior design as we seek to clarify light's contribution to the composition of interior space. As designers continue to shape interactions between light and space, the development of a conceptual framework for studying light is crucial. This study would suggest that language may serve as a model for understanding light and, if nothing else, as inspiration for designing with light. Future studies should aim to reveal even more about the compositional role of light in interior space.

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APPENDIX A

TEST 1: IMAGES

Image 1

Image 2

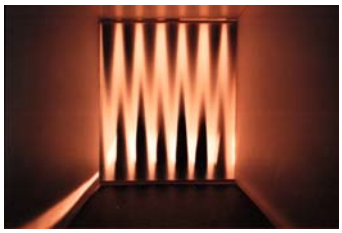


Image 3

Image 4

Image 6

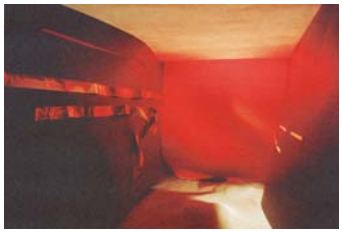


Image 7

Image 8

Image 9

Image 11

APPENDIX A continued

TEST 1: IMAGES

Image 14

Image 15

Image 16

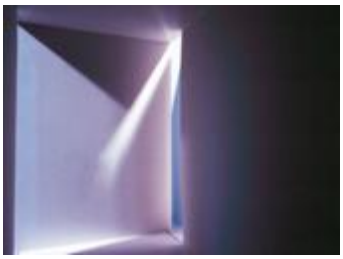


Image 17

Image 18

Image 19

Image 20

Image 22

Image 26

APPENDIX A continued

TEST 1: IMAGES

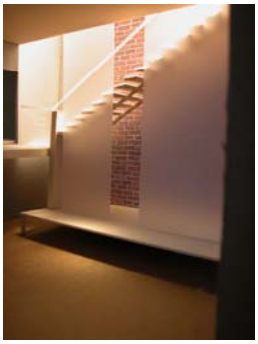


Image 30

Image 32

APPENDIX B

TEST 2: IMAGES

Image 6

Image 9

Image 15

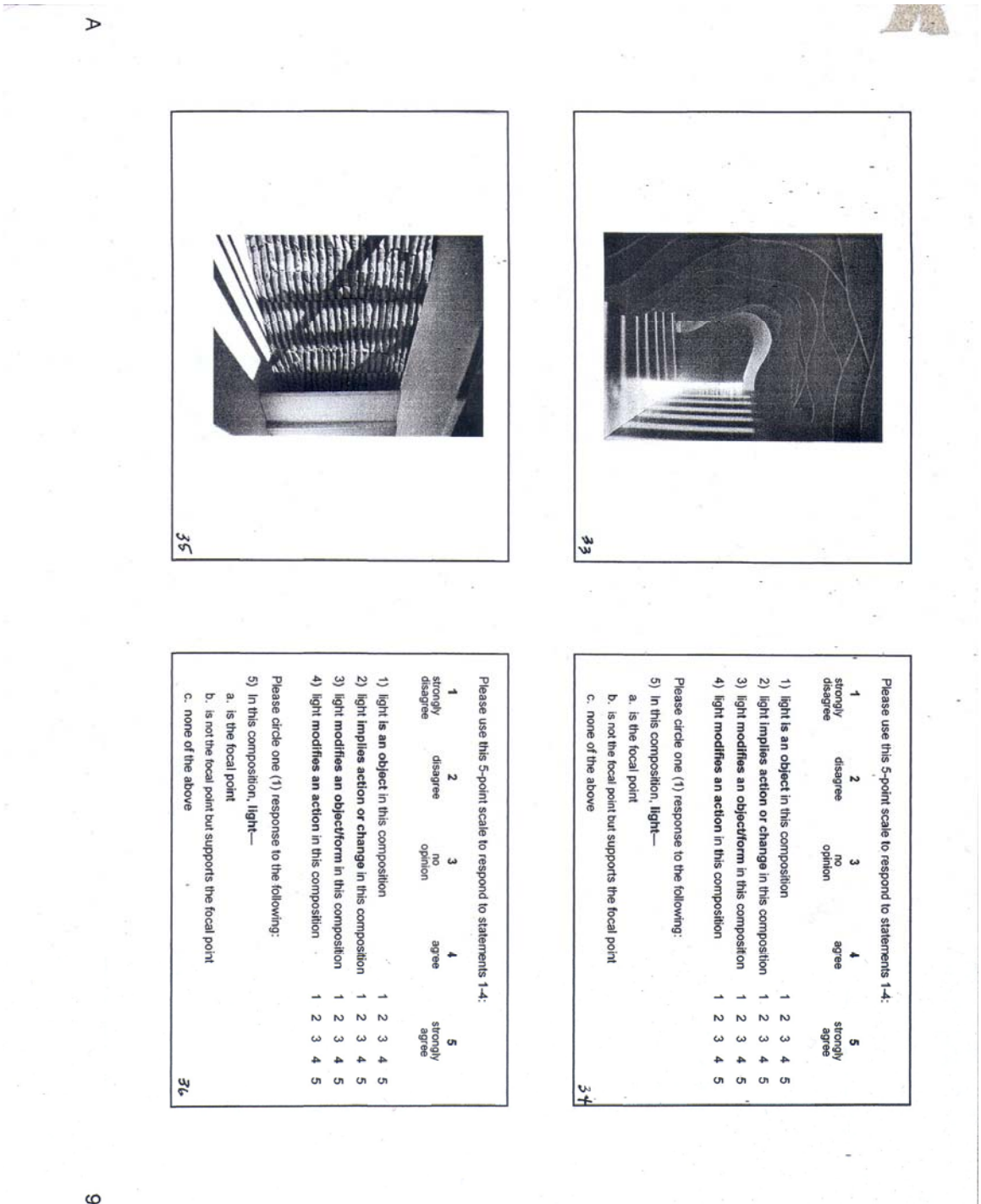
Image 18

Image 19

Image 22

APPENDIX C

INSTRUMENT 1: SAMPLE TEST ITEM



APPENDIX D

INSTRUMENT 2: SAMPLE TEST ITEM

1) Using as many words as you need, please
   DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

2) Using as many words as you need, please
   DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

3) Using as many words as you need, please
   DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

APPENDIX E

CONSENT SCRIPT

Dear Student,

I am asking you to participate in a research study that will provide data for my Master's thesis. The purpose of this study is to explore light's role as an aesthetic element in the composition of interior space.

You will be shown a series of slides and asked to respond to an accompanying questionnaire. The entire session should take no longer than thirty (30) minutes. Before we begin, I will show a sample slide/prompt and give directions for filling out the questionnaire. At this time, you will be given the opportunity to ask any questions you may have related to the study and to decide whether or not you want to participate. This process is called 'informed consent'. You will be given a copy of this form for your records.

All data will be confidential. (You will not be asked to identify yourself on the questionnaire). Only the researcher and her major professor will have access to the data. All questionnaires will be kept a maximum of eight years from the date of collection.

This study has been reviewed and approved for human subject participation by Washington State University Institutional Review Board (WSU IRB). If you have questions or concerns regarding your rights as a participant, please contact WSU IRB at 509-335-9661 or irb@wsu.edu. Thank you for your willingness to contribute to this research.

Sincerely,

Meaghan Beever
M.A. Interior Design ('06) candidate
Washington State University Spokane
Contact: meaghan@wsu.edu

Studio section (Instructor's name):

_____

Major and year in school:

_____

Assigned code number:

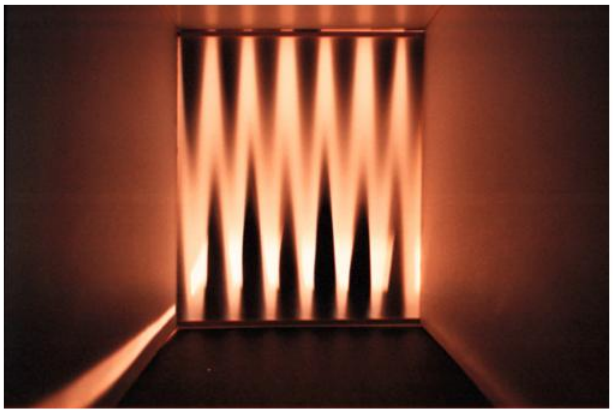
_____

Please complete the following:

APPENDIX F

TEST 2: DEMO SLIDE

In as many words as you need,
DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

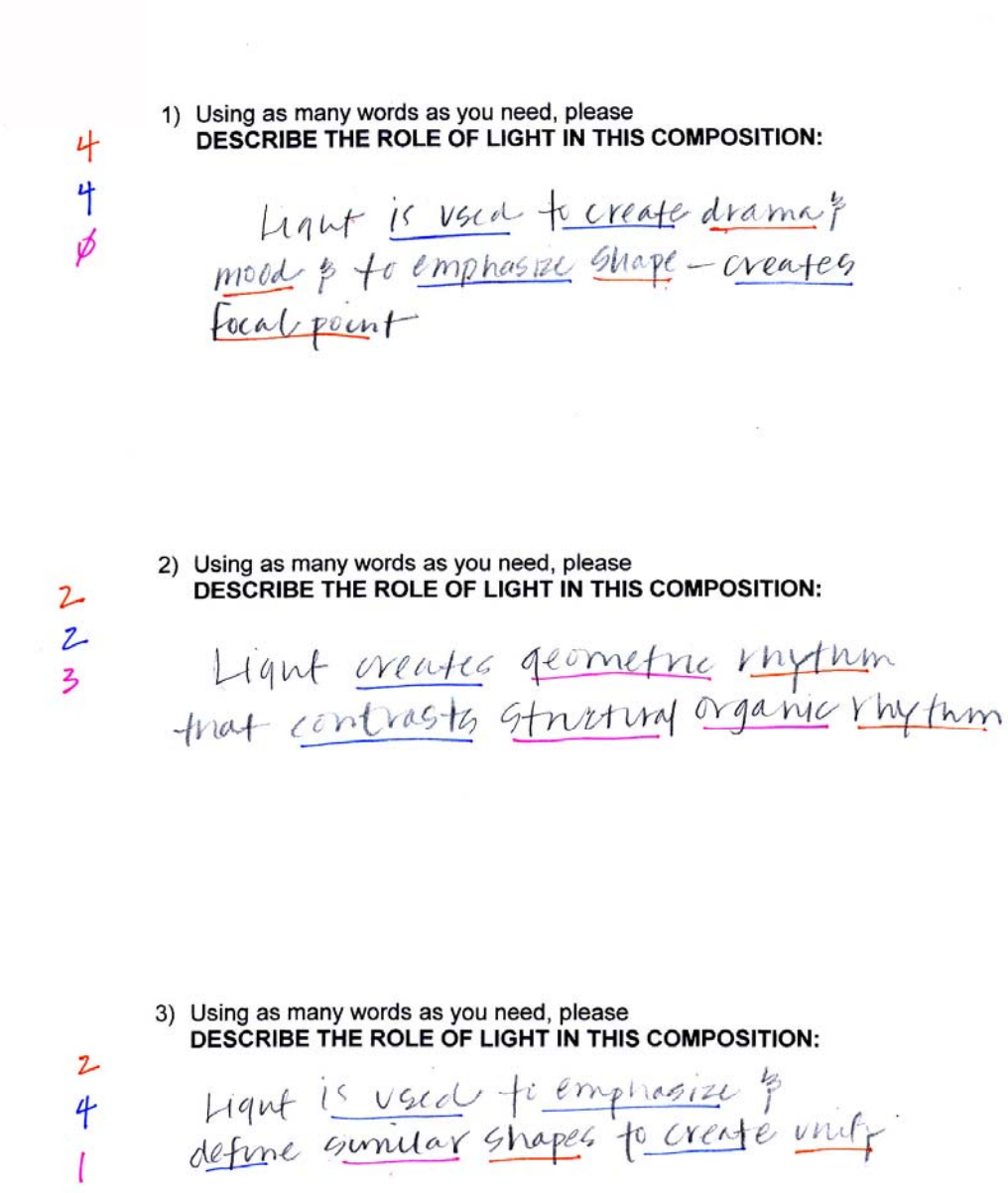


Some EXAMPLES:

Light is a pattern. Light zigzags. Light is energetic. Light moves rhythmically.

APPENDIX G

TEST 2: SAMPLE RAW DATA WITH CONTENT ANALYSIS



4
4
Ø

1) Using as many words as you need, please
DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

Light is used to create drama, mood & to emphasize shape – creates focal point

2
2
3

2) Using as many words as you need, please
DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

Light creates geometric rhythm that contrasts structural organic rhythm

2
4
1

3) Using as many words as you need, please
DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

Light is used to emphasize & define similar shapes to create unity

APPENDIX G Continued

TEST 2: SAMPLE RAW DATA WITH CONTENT ANALYSIS

4) Using as many words as you need, please
DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

2
3
ϕ

light is moving - bouncing
creating rhythm
light as a spotlight

5) Using as many words as you need, please
DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

2
4
1

light sparks - moves toward
you and away from
solid pieces. light comes
from below and creates
shadows above.

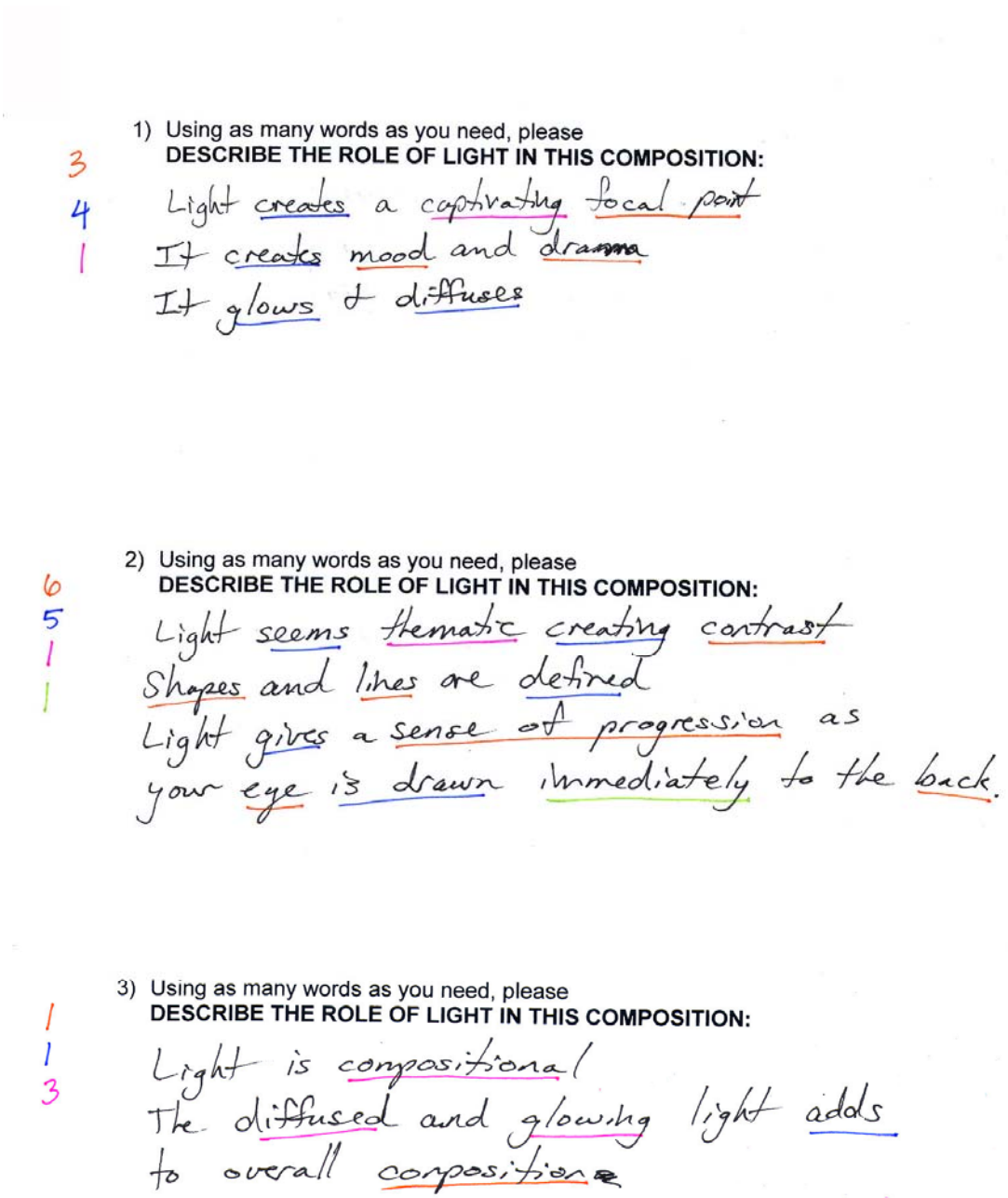
6) Using as many words as you need, please
DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

ϕ
2
2

light dives down and
springs up.
light is random but
~~across~~ focused.

APPENDIX G Continued

TEST 2: SAMPLE RAW DATA WITH CONTENT ANALYSIS



1) Using as many words as you need, please
DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

3
4
1

Light creates a captivating focal point
It creates mood and drama
It glows & diffuses

2) Using as many words as you need, please
DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

6
5
1
1

Light seems thematic creating contrast
Shapes and lines are defined
Light gives a sense of progression as
your eye is drawn immediately to the back.

3) Using as many words as you need, please
DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

1
1
3

Light is compositional
The diffused and glowing light adds
to overall composition

APPENDIX G Continued

TEST 2: SAMPLE RAW DATA WITH CONTENT ANALYSIS

4) DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

LIGHT IS ALWAYS CHANGING, THEREFORE MOVEMENT. HELPS DEFINE DIFFERENT PIECES & ELEMENTS OF THE SPACE.

4
2
1
1

5) DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

RHYTHM, LAYERS OF DEPTH AND TRANSPARENCY.

4
ø
ø

6) DESCRIBE THE ROLE OF LIGHT IN THIS COMPOSITION:

LIGHT DEFINES SPATIAL DEPTH & PERSPECTIVE OF SPACE.
LIGHT IS RHYTHMIC AND DYNAMIC

3
1
3

APPENDIX H

FINAL PRESENTATION POSTER