

THE IMPACT of 3D PRINTING on ATYPICAL ROAD ADVERTISING DESIGN (CONSUMER PERCEPTION)

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CONTRIBUTION STATEMENT

The meaning of the term "atypical idea" has been sufficiently specified. For example, some important differences in the design of outdoor advertising using the 3D printing technique have been identified. To find the impact this article uses the Atypical Idea, Communication and Response (AICR) model to distinguish between two types of 3D design-typical and iconic (atypical). The researcher identifies the cues that lead to the assessments of the two types. Using data collected from different brands' influences, also show that these cues can have a differential impact on the culture of product attraction and consumption. The results, therefore, contribute to understanding the relationship between reality simulation and atypical formulation in design as an incentive for consumption.



Abstract

Based on the influence of 3D printing techniques for outdoor advertisements, the author has attempted to establish a link between the atypical idea (design formulation) and the tool (3D printing) to determine the potential impact of the visual communication process designed in this study. It presents the gap found by the researcher in the literature review and a series of atypical outdoor advertisements that were implemented with 3D printing technology, which indicates the effect of the proposed model (AICR). Using the Atypical Idea, Communication, and Response (AICR) model, this study is conducted using a qualitative, semi-structured, in-depth interview based on an interview guide. The research technique - an exploratory and in-depth interviews of advertising students at the city university College of Ajman (CUCA). The main recommendation is to highlight the importance of 3D printing through the philosophical structure based on the concept theory, which goes beyond the expression of traditional advertising - towards the adoption and implementation of an atypical expression in 3-dimension aspects. Therefore, the expected results will be a significantly improved (AICR) process that introduces a new 3D printing mechanism that can enrich the visual content of outdoor advertising design methods and affect consumer perception.

Index Terms- 3D printing design, concept, outdoor advertising design, atypical formulation.

Content: This study is about a deeper understanding of the 3D advertising concept and 3D printing design that affects consumer perception.



INTRODUCTION

The term 3D design as preferred brands use 3D technology to allow customers to explore products and services in their environment and experience the product with high reality design before purchasing. In doing so, they improve and enhance the buying process, shorten the purchase cycle, and create more confidence in the purchase decision. In 3D printing, creative design shows possibilities and gives more options to the designer, manufacturers, sellers, and technicians. 3D outdoor advertising is the format that simplifies the creative process for 3D advertising and creates a "strong demand from advertisers, according to buyers" (Hickman, 2021). The promotional potential of 3D is not limited to its ability to provide a three-dimensional product review by consumers. The technology also enables simulation of direct experience with the product by stimulating a new experience referred to as virtual or 'virtual direct' (Klein, 2003). 3D printing as additive manufacturing is the process of producing three-dimensional solid objects from a digital file. A 3D printed object is created by applying successive layers of material until the entire object is created. Each of these layers can be viewed as a thinly sliced horizontal cross-section of the eventual object (Cafolla D, 2016). 3D printing is a group of evolving technologies that additively create 3D objects layer by layer from a predefined 3D computer model (Chua CK, 2020). However, for certain applications, it is questionable whether further scaling of functional size should be pursued, as higher manufacturing costs significantly reduce profit margins (McMahon W & 2(1):33-8., 2003). The use of complex 3D designs that have equivalent performance compared to simple 2D designs are used for improvement analysis (Vaidyanathan, 2007).

ASSUMPTION

Using the effectiveness of the atypical concept in the design of outdoor advertising enriches and influences the INSTRUMENTS and



MECHANISMS necessary for the development of atypical outdoor advertising, attracting the attention of the target audience better than traditional advertising, and also creating a distinctive brand value.

RESEARCH QUESTIONS

The problem of this study can be formulated as follows:

- What is an atypical advertising concept?
- What is the difference between an idea and an atypical formulation?
- What is the relationship between 3D printing and the art of advertising design?
- What are the INSTRUMENTS and MECHANISMS needed to develop an atypical advertising concept for roads?

SIGNIFICANCE OF THE STUDY

Investigating the impact of 3D printing on the design of atypical outdoor advertising and possible determinants surrounding the study.

METHODOLOGY

A qualitative, semi-structured interview will be conducted with City University College of Ajman advertising department students who have previously studied the art of outdoor advertising and C4D software.

RESEARCH DESIGN

In this research, the new type of deductive reasoning that aims to test a concept theory in advertising through 3D printing design is explored as a professional. The reasoning moves from specific observations to broad generalizations for the application of INSTRUMENTS through a 3D product, from traditional ideas to creative ideas in a new form of space.

Findings from a series of in-depth, semi-structured interviews with students in the advertising department of City University College of



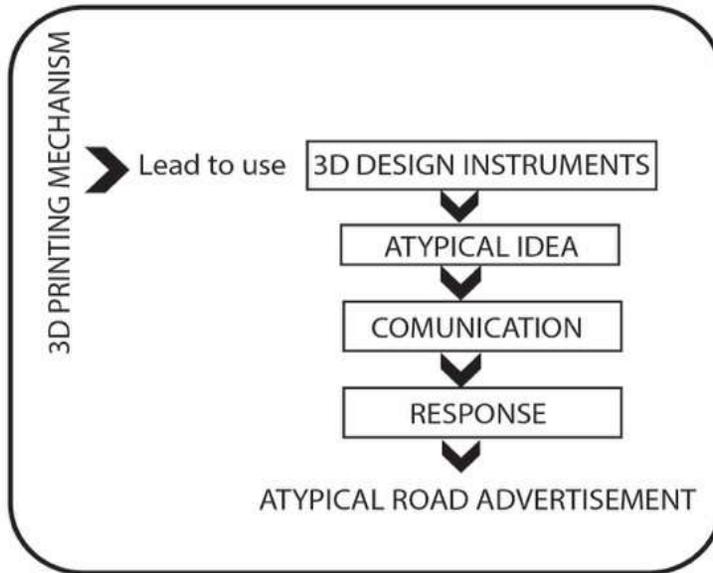
Ajman (UAE) are presented in the context of an atypical idea, communication, and response (AICR) process for outdoor advertising. Analysis of these 3D outdoor advertisements led to a detailed conceptualization process (AICR), shown in a flowchart. The data also suggest two variations in the patterns of 3D printed advertisements (typical - atypical) and students within which the (AICR) process occurs, as well as factors that may be responsible for these variations. A better understanding of the nature, dynamics, and operation of the creative service could allow students to better interact with this advanced type of outdoor advertising.

Atypical Design

Atypical design is particularly important for its aesthetic responses, which are his defining characteristic of creativity. "Concept of visual codes is valuable because of the way it affects design newness" (Talke K, 2009). Consistent with this increasing importance to management, the study of when and why consumers are influenced by aesthetic designs has become a fruitful area of research (Hagtvedt H, 2014). Atypical methods can be justified as an approach to design problems or to study work contexts and focus on thematic approaches to problem-solving and building rational and logical systems of design thinking. By improving knowledge of existing visual conventions and developing and applying a personal visual vocabulary, designers are able to use their perceptions and discoveries more effectively and work practically and creatively with reference to a broader cultural context and system (Bestley R, 2016).

FIGURE 1

ROAD ADVERTISEMENT PROCESS (AICR)



NOTE. –This figure is illustrating the 3D printing mechanism leads to consumer perception.

Atypical Road Advertising

3D Design Form is the norm of 3D printing in atypical outdoor advertising. A new vision of advertising marketing increasingly integrates ideas through atypical 3D design because it brings the positive impact of visualization. When a 3D designer creates three aspects of the product that carry the actual look and feel, from this standpoint, the current study process (AICR) was conducted, "most studies to date have measured consumers' reactions to designs of varied typicality after a single exposure" (Hopkinson N, 2001).



3D printing and the art of advertising design

The terms "additive manufacturing, rapid prototyping, and 3D printing" refer to the use of three-dimensional data to construct physical objects in a layer-by-layer manufacturing process. This technology was originally developed in the 1980s to accelerate the production of small, individually designed objects "(Lichtenberger JP, 2018). "In the 3D form of advertising, the design can convey a visual message more easily and effectively, this interconnectedness creates the importance of 3D printing. Many product design services have great ideas and understand how to transform new concepts into reality. They know what atypical design process is required, where to acquire the new 3D materials to create an atypical product, and how the products function for the benefit of consumers "(Landwehr JR, 2013). "3D printing is the concept of using technologies commonly known as rapid prototyping (RP) to produce final products rather than prototypes" (Celhay F, 2015).

The Differences Between an Idea and Atypical Formulation in Design.

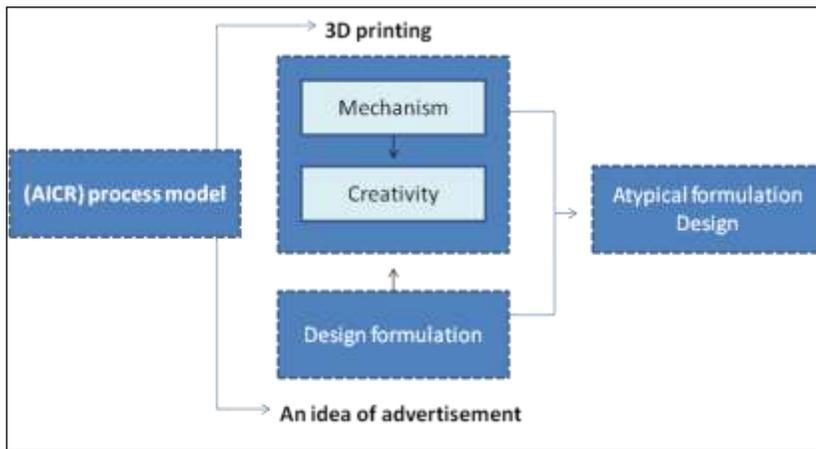
Novelty is an essential feature of creative ideas, but the building blocks of new ideas are often rooted in existing knowledge. From this point of view, the balance between atypical knowledge and conventional knowledge can be critical to the link between innovativeness and impact (Hopkinson, 2001). According to (Uzzi B, 2013), [Uzzi] "tends to associate creativity with the arts and to think of it as the expression of all ideas,

In recent years, modern design and art history have rejected style as a design and interpretive tool that presupposes the presence of certain characteristics of the style in a given object to be discovered or revealed. Instead, the focus has shifted to the ideologies, methods, and discourses that constitute the meaning of a particular object. (TM., 1998) asserts that "What we need to explain the phenomena of dynamic changes in aesthetic appreciation is a flexible cognitive

mechanism that is relatively independent of fixed norms or hard-wired principles, between concept and idea When we analyze the dynamics of aesthetic appreciation, through atypical formulation.

FIGURE 2

(AICR) PROCESS MODEL.



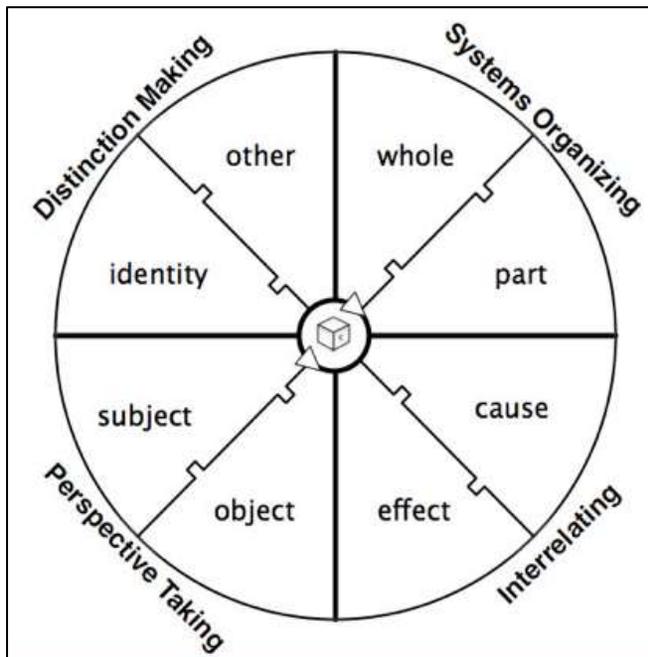
NOTE. — This figure illustrates how the expanding model of (AICR) leads to the atypical formulation.

THEORY OF CONCEPT IN ADVERTISING

The theory of concepts is a view of how concepts are structured, acquired, and deployed. Concepts, as they will be understood here, are mental representations that are implicated in many of our higher thought processes, including various forms of reasoning and inference, categorization, planning and decision making, and constructing and testing explanations (Carbon, 2011). Concept art is often mistakenly referred to as art that is created using the same principles as when creating 2D art assets or illustrations, despite concept art at its core

being based in design (Demberere, 2021). The objective of this concept was to define what common design methods are used by modern game industry professionals to create concept art. Throughout the theory, common methods of concept development were established, and then supported through their practical implementation in the production of concept art for the case project (Rässa, 2018).

FIGURE 3
THE MODEL OF CONCEPT THEORY



NOTE. — A Minimal Concept Theory of Systems Thinking The dynamics of the Model are simple, yet the result is extremely complex. The table illustrates how each component interacts with dynamic complexity. Note that the variables of each component (e.g., identity, other, part, whole, etc.) are shown in (AICR) process. (Cabrera, 2006)



3D Concept and Principles of Road Advertisement Design.

The principles of design are a set of commonly accepted visual guidelines that you should generally follow to have an aesthetically pleasing advertisement. Though terminology varies, the principles include balance, hierarchy, proportion, emphasis, and unity. Balance means the visual items are evenly weighted throughout the ad. Hierarchy relates to the flow of the ad and the way the reader or viewer's eye should move to uncover the story. Proportion refers to the size and impact of the various elements within the ad. Emphasis is used to make certain elements stand out. Unity is the general harmony of the ad, including clear margins and the use of vertical and horizontal axes, the creative concept is essentially the story behind the messages presented in an ad or series of ads. It ties together the characters and elements in advertisements to help convey a memorable and effective message that will create the desired behavioral response from the target market. Humor, drama, and action are often elements of a creative concept, depending on what the company is attempting to communicate (Demberere, 2021).

INSTRUMENTATION

Semi-Structured Interview (Procedure)

Between February and May, Spring 2021, I conducted qualitative semi-structured interviews with 20 students - level 4 - in CUCA, on how to study 3d design software (20 individual interviews). The 10 questions, undertaken to investigate 3D Road Advertisements impacting on consumer's perception and reactions support from it, revealed the phenomena of 3D PRINTING from atypical formulation to implementation's instruments as a contextual component of the concept theory principles in advertising. This study focused on a sample recruited from (EMPORIO ARMANI) and (BBC) road ads. The findings related to 3D PRINTING usefulness and advantages described here are based on constant comparative analysis of data from the above brands conducted by interviewees of students' perceptions and attitudes



identified in the study. These connections and concepts revealed the process of technology of concept theory to build the participants' feedback and get brand imaging engaged in by atypical formulation in advertisement design implemented within 3D printing instrument's experiences.

Data Collection

The data was conducted through a detailed review of the relevant literature, semi-structured questions in meetings on the research items, and consultation with outside experts, the author developed an interview guide to elicit students, and their perspectives on the decision to recommend (3d printing techniques) and receive/refuse (typical or atypical) design formulation (guide available upon request). Students were asked about their prior knowledge of 3D printing, whether they received atypical formulation for road advertising at the interview, whether ideas were discussed with the other students, and how they made the final visual perception to either accept or refuse ads idea(s). The author asked participants to focus on the specific elements and describe the idea's techniques aspects, impact on the consumers, compare their feedback of atypical formulation with 3d printing instruments, and describe their perception of the buyer's decision. Ten open-ended questions in an in-depth interview conducted the data. The themes were consistent across all interviewees.

Data Analysis

Interviews were audiotaped and analyzed using ATLAS.TI qualitative data analysis software. Analysis was based on a modified grounded theory approach, in which coding was deductive and not based on an a priori coding framework. To take advantage of our study design, we analyzed data both within and across concept theory. Data collection was concurrent with data analysis and continued until they reached saturation, with no new themes emerging. The author independently coded the interviews. Using an iterative process, and



reviewed codes, identified emerging themes, and resolved any discrepancies through consensus. Using ATLAS.TI, each transcript was linked with students' deep opinions and their answers. After all transcripts were coded, themes were finalized based on the research deductive thematic. Representative verbatim comments were selected the present the findings. 3D printing unique value proposition model according to atypical formulation in the design. It's presenting the Massive Tool Builder (MTB) is designed to address the tooling requirements of a range of industries, that require the manufacturing of large parts made of road advertising composite materials.

This indicates general mechanisms underlying such evaluations in this type of vision. It is, however, also obvious that our taste for specific objects is not always stable—in some realms, such stability is hardly conceivable at all since aesthetic domains such as fashion, design, or art are inherently very dynamic. Gaining insights into the cognitive mechanisms that trigger and enable corresponding changes of aesthetic appreciation is of particular interest for designers as this will probably reveal essential mechanisms of aesthetic evaluations. The specific aim will be to develop a model of how and on what basis such aesthetic preferences are susceptible to changes, the so-called “dynamics of aesthetic appreciation” (Sorokowski, 2010). Importantly, this mechanism alone can only explain dynamic changes as a reaction to given streams of design or art innovations. Consequently, we have to propose an initial mechanism started by highly creative sources that generate and trigger such trends, taking the role of so-called “innovators” (Carbon, 2011).

FIGURE 4
ATYPICAL FORMULATION



NOTE. – This figure illustrates the differences between the typical and atypical ideas in road advertisements.

This is conceptualized as a movement from traditional, two-dimensional outdoor advertising, through three-dimensional and four-dimensional, towards a more overt multimodal perspective. The main point here is to highlight a series of interesting ontological shifts relating to the visual embodied, and performative function of such advertising signs, whereby product marketing begins to increasingly incorporate place, encompassing a sophisticated use of ‘spatiality’ to change the relationship(s) between outdoor advertising, the urban environment and its people (Koeck, 2014).

FIGURE 5

THE 3D PRINTING TECHNIQUES



NOTE. – This figure shows the techniques of atypical idea in road advertisements using 3D printing techniques.

3D Printing Tools and Mechanism

In this study, the researcher will be going to develop an atypical road advertising design based on 3D printing tools and mechanisms to explore the impact and kind of relationship. For many domains, aesthetic appreciation has proven to be highly reliable.

FIGURE 6

3D PRINTING TOOLS AND MECHANISM.



NOTE. – This figure illustrates the tools and mechanism of 3D printing and how it developed the manufacturing side in the advertising field, which increases positive consumer perceptions using high-quality products, available at: <https://massivit3d.com/solutions/massivit-tool-builder/>



RESULTS AND ITS IMPLICATIONS

Results Obtained

The proposed study represents a major step toward a self-consistent theory of atypical concepts in 3d road advertising design. Overall, the study will broaden our understanding of atypical 3d printing tools and its mechanism. For the field of Road advertising design, this study will produce a new model that can generate atypical insights into 3d road advertising design ideas. For the designing field, the study will lay a knowledge basis for the application of specific methods to large-scale 3d road advertising design through an in-depth semi-structured interview with advertising students at City University College of Ajman (CUCA) and use AICR process model. As mentioned earlier, a semi-structured interview consisting of five questions was conducted with 20 participants whose responses to which were audio-recorded. The qualitative part of the research has focused on identifying the major tools that form the road advertising basis with the students of advertising department; the method in which the 3d printing ads use atypical ideas or intend to use in the future and stating assumptions regarding the side of ad idea will create the effectiveness in which the potential tools and mechanism.

IMPLICATIONS

The Results of the Structured Interview with advertising department in the college, the presentation of the main results, obtained after analyzing and processing the data, will be done considering the questions that formed the basis of the research assumption: Q1. What is an atypical advertising concept? In the case of the majority of the respondents, there have been noticed different views in the answers and the main problem raised by all students pointed to the effects of using such a wave in advertising design, which has made significant changes to the strategy of the companies implementing it and the way in which the budget is allocated. All the



interviewed has a knowledge where they present their skills in using 3d design software, the details referring to the atypical concepts they provide; the atypical idea being unanimously considered very important for attracting viewer to road ad. In other side of grapping and attracting were mentioned by applying (AICR) model were the method to produce the effective road commercial messages sent by linked between 3d mechanisms of design with atypical formulation. After attracting viewers, the majority of road ads viewers will consider the important of new type of elements to keep eye flow for those potential customers and their interest, developing the ad idea. Based on these reactions, Q1 is answered. Q2. What's the difference between an idea and atypical formulation? To a very high proportion all the students have referred to that they know 3d printing tools but in the typical face. A few of them stated that they do not know for what means 3d printing instruments for road ads and the difference between this method and the atypical one; 3d printing design feed is rather known by its name rather than the mechanism and way using; the instant showing was another unclear topic for some and this is why there were mentioned examples such as "EMPORIO ARMANI", "3D sport SHOE" as the atypical 3D printing part in design present the idea of ad, etc. The Q2 is shown as suitable. Q3. Determine what is the relationship between 3D printing and the art of advertising design? Based on the answers there can see an alignment of the views regarding the purpose and the usage methods of the 3D printing tools: the design is in general the first contact of eye entry also draws path flow, for a potential or present customer, with the brand, in the actual environment; this is why it is very important to use 3d printing tools in design correctly and to keep it functioning in a proper way.



CONCLUSION, LIMITS AND FUTURE DIRECTIONS OF RESEARCH

The use of typical and traditional style in the design of the road advertising is still an immature method but it holds a great promise of getting closer to Using 3D printing design as an innovative way to generate non-stereotypical ideas to develop road advertisements, through an Analytical tool that is used in the research circumstance (AICR), as a means for discussing the development and comparing visual expressions, and as a means of documenting a development whose outer manifestations are constantly disappearing. What styles will be used, and how much this mapping and outlining will be able to tell us about the creation of atypical concept in general, are matters that it is still too early to discuss.

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