

WHEN DEEP STRUCTURES SURFACE

Design Structures That Can Repeatedly Surprise

Jacob Goldenberg and David Mazursky

ABSTRACT: Recent findings in the creativity and marketing literature have revealed a seemingly unexpected phenomenon: Creative ideas frequently share similar design structures and patterns. The present study extends recent research regarding the impact of creative design structures. It addresses the question of whether ads that use the same structure that appears repeatedly in various ads would consistently be judged as original and favorable or whether such judgments would diminish over occurrences of ad exposure. The studies show that, by and large, subjects do not discover the formula of the design structure. Moreover, even if subjects are informed about it explicitly, the impact of ads matching a single design structure shown consecutively is not undermined over exposures. As a result, despite the repeated use of a design structure in series of exposures to ads with unrelated contents, originality evaluations remain high.

When consumers are exposed to a series of advertisements with related themes, their assessment of ad originality is expected to diminish gradually as the repetition leads to boredom and tedium. Given such an expected reaction, evidence that 89% of 200 award-winning ads could be accounted for by a few simple, well-defined design structures (Goldenberg, Mazursky, and Solomon 1999a) may appear perplexing and difficult to account for, at least at first glance. In the present research, we attempt to explain this unexpected and counterintuitive evidence. We focus on the way design structures in advertising influence our judgments.

In the present study, we postulate that several requirements are needed for guaranteeing the superiority of ads that fit a design structure. First, they belong to a set of creative and effective structures developed over years of evolution, and have been identified as such. Second, these structures must remain stable and intact across applications. A major change, such as altering the particular way components are linked, could undermine the creativity evaluation substantially, thus detracting from its value as an important design tool. Third, consumers are unaware of the impact of the design structures on their judgments. They are unlikely to discover the structure's "secret," but even when they are told about it explicitly, they will continue providing favorable ad judgments. As a result, despite the repeated use of these structures in series of exposures to ads, the creativity evaluations of the ads will remain high.

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The superiority of structures in marketing practice can be put to a set of tests by (1) comparing an ad using the structure to one in which the structure is decomposed; (2) investigating whether the structure remains hidden over extended exposure to ads, including in the case of consecutive exposure to ads in which the underlying structure is repeated; and (3) appraising the impact of the design structure, even under the condition that the underlying scheme is revealed explicitly. The present research is intended to tackle the ways ad structures affect consumer attitudes and judgments of creativity. This research agenda is tested both by a single exposure and by a repeated exposure of a common design structure in 12 applications shown consecutively. The investigation has major implications, particularly given the need to maintain high creativity and effectiveness in advertising campaigns in both single and consecutive ad exposures. In particular, it can shed light on the continuing efforts to mitigate advertising wear-out in ad campaigns (e.g., Campbell and Keller 2003; Hughes 1992; Naik, Mantrala, and Sawyer 1998; Scott and Solomon 1998).

DESIGN STRUCTURES IN ADVERTISING

Recent creativity research has shown that there are certain fundamental structures underlying creative designs (e.g., Blasko and Mokwa 1986; Goldenberg, Mazursky, and Solomon 1999a; Scott 1994) and that some structures can serve to enhance creative effectiveness (Goldenberg, Mazursky, and Solomon 1999a, 1999b; and as can be inferred from studies

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with a different research focus, such as Moreau, Lehmann, and Markman 2001). As an example of one of the traditional structures utilized in advertising, consider the Janusian approach, which involves two or more contradictory concepts, ideas, or images that are conceived simultaneously (Rothenberg 1971). Blasko and Mokwa (1986) provide the following illustrations: "We're first because we last" and "We've got the inside of outside protection." This and more recent well-defined structures whose underlying schemes have been specified are fundamental skeletons to which a variety of informative contents can be adapted, depending on the area of application.

Recent studies have shown that design structures can be formulated as well-defined procedural changes in the configuration, which consists of a set of components of products or ads and the links among them. Some structures give rise to ideas that are evaluated as more creative than others, and judgments of the results can be used to classify them as unique design structures. Their widespread adaptability and the manner in which they affect judgments resemble the generalized and fundamental rules defined by Hofstadter (1984) as "deep structures." These can be perceived as "meta-analogies," since they are derived from analogies between analogies.

Some of the classic regularities applied in advertising include frameworks such as the Janusian approach described above. Similarly, the Resonance approach involves dual or multiple meanings surrounding a single word or phrase (e.g., "Forget-Me-Knots" in an ad showing men's ties arranged to form a floral bouquet; see McQuarrie and Mick 1992). In recent studies, certain visual figures were found to enhance attitude favorability toward the ads (McQuarrie and Mick 1999; Tom and Eves 1999). The reasons why creativity reaction emerges from design structures intrigued researchers who approached it from various angles.

For example, Moreau, Lehmann, and Markman (2001) used the concept of the *mutability* of a product component to explain consumers' responses to new products. Mutability depends on the component's variability across category members, as well as the number of other components in the category that depend on it (Love and Sloman 1995). Replacing an immutable component creates a sharper perceived discontinuity than replacing a mutable one.

Another recent approach for tracking the recurring structures that lead to creative ideas is found in Goldenberg, Mazursky, and Solomon's (1999a, 1999b) notion of "creativity templates." These abstract structures are identifiable, objectively verifiable, and subject to schematization. The authors showed that ideas derived from particular structures are evaluated more positively than those that do not match the structure. According to a leading structure they presented termed *replacement*, a creative idea is likely to emerge through the process of replacing a component playing an essential role in the product or ad or their immediate environment. The

replaced component was defined to be an intrinsic one, which is similar to immutability. In these studies, the associative and functional links among the components play an important role in the resulting judgment that the idea is creative.

To illustrate this idea, consider the version termed *replacement*. Replacement is obtained when a product, or one of the elements that comprises the product space, replaces a symbol consistent with the meaning of the conveyed message—and vice versa, that is, when the symbol replaces the product. The elements chosen from the two parts of the general scheme (the product space and the symbol set) are then unified through a linking operator that matches their shape, color, or sound. A product (or symbol) space is defined by components of the product (symbol) or objects that are prevalent in its vicinity in a regular context of use. Procedures of the replacement templates are provided in Goldenberg and Mazursky (2001).

To illustrate the structure of the replacement template, consider an ad for a Popsicle (see Figure 1A) in which a symbol for natural taste (a strawberry) is linked to an element of the Popsicle (i.e., the product itself). To highlight the unique features of that ad, consider an ad for the same Popsicle that has been "de-templated" (template removed, noted hereafter as TR, as opposed to the original, template-matching ad, noted hereafter as TM), that is, with its template-matching features taken away (see Figure 1B). The latter ad can inspire the viewer to imagine the fresh strawberry placed next to it, serving as the metaphor. The intuitive analogy that the consumer is expected to draw is that the product's unique advantage stems from its natural ingredients. Obviously, this analogy is drawn from a relevant domain that naturally transfers its content to the product context. In this case, the content-based similarity is sufficiently clear to ensure a highly probable analogy and is consistent with other forms or metaphors used in advertising (see, e.g., Ang and Lim 2006). However, once the ad is presented as in Figure 1A, it fits the replacement template. The mere change in the visual presentation (from the version shown in Figure 1B to that presented in Figure 1A) allows it to fit a structure that underlies numerous other ads.

The view that some ads are predominated by certain implicit structures is consistent with research in other disciplines that strive to identify relational structures. Relational structures have been developed in other domains, such as linguistics (Chomsky 1957; Eco 1986), anthropology (Lévi-Strauss 1974), random graphics (Palmer 1985), venture and transitional management (Kauffman 1995), psychology (Simon 1966), and artificial intelligence (Minsky 1988). Identifying structures is particularly appealing for advertising because of the central role that creativity plays in this area. Further research into the ways structures implicitly affect judgments of ads may reveal ways of enhancing ad performance.

The detection and utilization of structures in ads does not necessarily undermine the element of surprise that a consumer

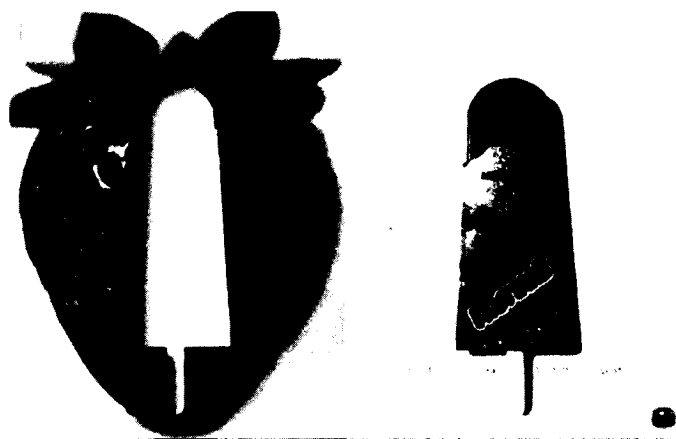
may sense when being exposed to an ad that fits a structure. Even when regularities exist, the perception of creativity is not undermined, because it still allows for the generation of ideas that most people could not or would not have arrived at (Hayes 1978). This view is consistent with Hofstadter's observation that creative outcomes are, in fact, variations on a familiar theme (Hofstadter 1984). Ads that match structures may be perceived as superior because they elicit unrecognized familiarity. They rely on structures that have been proven successful in other contexts (possibly even by the same consumers), but are nonetheless not explicitly noticeable within the new context.

The inability to explicitly express, or even notice, the structure can also be found in judgments made by experts. The reported finding by Goldenberg, Mazursky, and Solomon (1999a) that the incidence of ads that conform to the replacement template among award-winning ads is quite high (about 25%) indicates that experts continually chose them as worthy of the top awards on the basis of creativity and effectiveness without explicitly noticing their underlying regularity. Obviously, noticing the relatively simple structure that underlies those ads would have resulted in boredom and a sense of repetitiveness, and consequently they would have been judged as less creative.

There is a noticeable difference between the impact of structures and the recently growing research on analogical thinking in the marketing and advertising contexts. In attempting to predict consumer reactions, most of the relevant frameworks for analogical thinking investigate surface and relational similarities between domains rather than deep structural similarities. Analogies are created through a process that generates one-to-one correspondence between elements of the representations of the base and target. Such a correspondence can then serve as a path across which additional elements can be transferred. A basic premise in analogical thinking is that access of information is the first stage in the process. It relies largely on schema-based processes as a means of transferring a given problem solution to new problems (e.g., Dahl and Moreau 2002; Gregan-Paxton and Roedder John 1997).

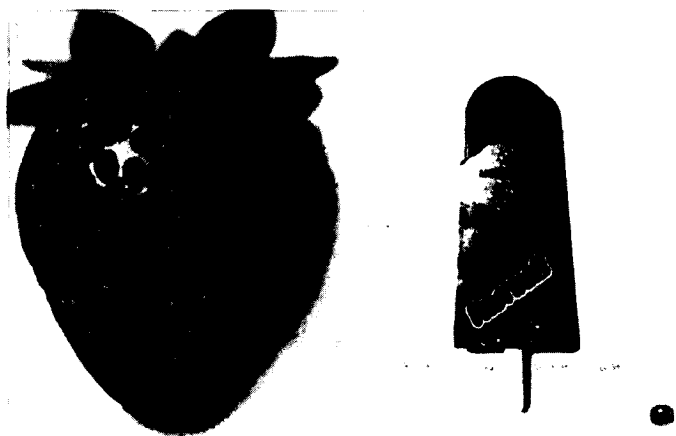
In contrast, structures involve commonalities in their coherence and their abstract procedural definition rather than their informational content. Hofstadter (1984) postulated "deep structures," which force the generation of fundamental and general rules rather than merely providing the opportunity to apply simple, already learned rules (e.g., "if X, then Y") to a new example. Hofstadter's deep structures lack the surface similarities that are normally observable by individuals. Since they are hidden, they can be detected mainly by scientific analysis. Only when they are detected and validated can they be used to distinguish between types of processing and explain the differential effectiveness of consumers' judgments of ads (Goldenberg, Mazursky, and Solomon 1999e). Deep structures

FIGURE 1A
Template-Matched Ad



Naturally ... (BRAND A)

FIGURE 1B
Template-Removed Ad



Naturally ... (BRAND A)

are formed through meta-analogy, that is, from analogies between analogies. To demonstrate one space of analogies, Hofstadter uses the notion of a First Lady as an example. If asked, most people are likely to say that the term means "the wife of the president." In that frame of reference, who might be the First Lady of Britain? Not surprisingly, Hofstadter cites a newspaper article that described Denis Thatcher as Britain's "First Lady."

The present research focuses on the power of design structures to dominate creativity judgments. In Study 1A, structure-matching and structure-removed ads were compared. The present research provides a controlled comparison for investigating the value of design structures. In previous studies

on template identification and validation (e.g., Goldenberg, Mazursky, and Solomon 1999c), different kinds of ads were compared, some of which were template-matched while others were non-template-matched. In contrast, in the present research, the template features were manipulated for the same ads (see Figures 1A and 1B). Questions about the uniqueness and sophistication of the ads were also included, as well as questions eliciting cognitive responses, to see whether structure-matching ads had an advantage over structure-removed ones. In particular, it was postulated that if consumers became aware of the impact of recurring structure on their judgment, they would perceive the ad as less unique and less sophisticated. If, on the other hand, they are influenced by the design structure of the ad, then structure-matching ads should be judged as better, more unique, more sophisticated, and more original. To see whether the findings for template effects are generalizable, Study 1B replicates and extends the findings of Study 1A by including ads that fit two additional templates identified by Goldenberg, Mazursky, and Solomon (1999a). Finally, by showing participants a series of structure-matching and structure-removed ads, Study 2 investigates more thoroughly the mechanism by which deep structures impact creativity and how they survive repeated exposure. The major objective was to test whether simple well-defined structures are hidden and remain masked by the ad content and whether, even if revealed, they continue to be judged as highly original in repeated exposure to structure-matching ads.

STUDY 1A

Method

One hundred and sixty undergraduate students, participating for course credit, were assigned to two groups and asked to judge four ads, each drawn from a pair of ads. Assignment to groups and ads was random. None of the students had a previous knowledge of the template theory, and none had taken a previous course in advertising. The four professionally generated pairs pertained to four different product classes. The only difference between the two ads in each pair was the inclusion or removal of the structure-matching features (as illustrated in Figures 1A and 1B). In no case was a participant asked to judge more than one ad per product class.

Participants were handed a booklet containing the ads, with each ad appearing on a separate page. The questionnaires were printed in a separate booklet. Participants were asked to indicate their responses to each ad on five-point scales relating to six judgments. The first judgment was comprehensibility. It is a simplified measure in accordance with McQuarrie and Mick's (1999) check that the focal brand attribute was conveyed equally in the presence or absence of visual figures. The next three measures were intended to examine creativity

and its persistence. Originality ratings were collected as a measure of creativity.

In addition to the originality measure, sophistication and uniqueness were taken to measure the persistence of these attributes in the face of possible boredom leading to diminishing judgment levels. Respondents were also asked to indicate their overall attitude toward the ads. It should be noted that the choice of measures was similar in the studies. Due to the sequential exposure design in Study 2 and to avoid respondent fatigue, it was necessary to use summative measures rather than multiscale measures (like the multiscale measures used, for example, in McQuarrie and Mick's 1999 study). Finally, participants were asked to list their verbal responses to the ads.

Results

A repeated-measures ANOVA (analysis of variance) was performed with one within-subject factor (ads: consisting of the four ads) and one between-subjects factor (template: template-matched versus template-removed). Table 1 shows the means for each ad broken down by template-matched and template-removed conditions. Equality in brand attribute comprehension between the ads in each pair of ads was measured to ensure that the variation in the visual figure did not affect comprehension of the brand attribute. Although the differences between the ads in each pair were significant, $F(3, 156) = 6.10, p < .001$, neither the template factor nor the ads \times template interaction was significant, $F(1, 156) < 1, n.s.$ (not significant), and $F(3, 156) = 1.65, p = .18, n.s.$, respectively.

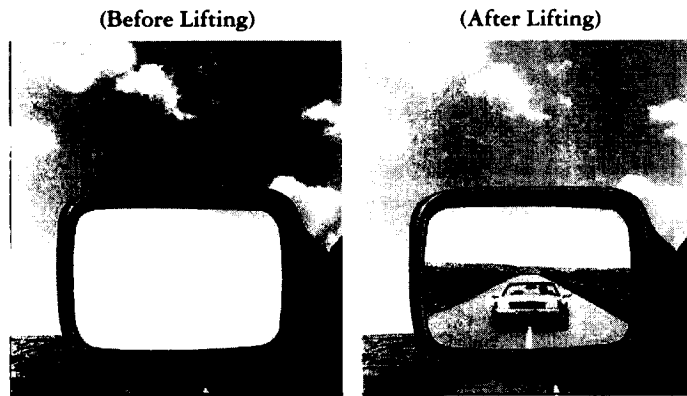
An ANOVA with a similar design was then performed with the ads and template as explanatory factors for the four judgments: originality, sophistication, uniqueness, and attitude toward the ad. The mean judgments are displayed in Table 1. There is a noticeable pattern of results for the impact of the template-matching features. The template factor was significant in all cases (all F s $< .05$), whereas the ad \times template interaction was not significant. Thus, the impact of template-matching features was similarly effective across all the ads and all the judgments. Furthermore, the perception of greater uniqueness and sophistication in the template-matching ad condition indicates that participants judged these ads as superior under different structural conditions.

Finally, participants were asked to list cognitive responses to the ads. On average, participants produced 1.43 responses per ad. Neither the main effects of template inclusion and type of ad nor the interaction between them was significant, $F(1, 156) < 1, n.s.$ in both analyses. The result indicates that the inclusion of template-matching features in the ad did not affect cognitive elaboration. Namely, they indicate that differences in ad processing do not stem from differential

TABLE I
Study IA: Mean Measures

	Comprehension		Originality		Uniqueness		Sophistication		Attitude		Total		Difference	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	Responses													
<i>Ad A</i>														
Template-matching	4.13	1.01	3.62	.95	3.57	1.12	4.22	.69	3.82	.90	1.45	.93	1.00	1.26
Template-removed	4.40	.90	2.87	1.09	2.72	1.21	3.50	1.21	3.25	1.08	1.55	1.03	.35	1.64
<i>Ad B</i>														
Template-matching	3.95	.93	3.97	.97	4.00	.96	4.05	.95	3.82	1.03	1.40	.87	.85	1.42
Template-removed	3.78	1.12	2.92	1.11	2.92	1.11	3.32	1.18	2.97	1.07	1.42	.78	-.07	1.57
<i>Ad C</i>														
Template-matching	3.88	1.15	3.30	1.18	3.47	1.15	4.00	1.01	3.10	1.21	1.35	.69	-.05	1.43
Template-removed	3.45	1.43	2.40	1.19	2.35	1.09	3.00	1.21	2.62	1.10	1.35	.57	-.65	1.25
<i>Ad D</i>														
Template-matching	4.20	.96	3.12	1.09	2.62	4.73	3.85	.92	3.70	.75	1.50	.87	.50	1.67
Template-removed	3.33	1.07	2.57	1.17	2.35	1.35	3.67	1.09	3.20	1.15	1.47	.90	-.12	1.71

FIGURE 2A
Activation: Template-Matched Ad



If you want to see why Car A is faster than your car, please lift this ad and look in the mirror.

ad comprehension, but are instead due to the manipulation of the ad style. In addition, the favorability of the responses was assessed by three individuals who categorized them either as positive or negative, with a 90% agreement rate. Disagreements were resolved by discussion. The results indicate that when the difference between the positive and negative responses (see Table 1) were included as the within-subject factor, the measure was more positive in the template-matching condition than the template-removed condition, $F(1, 156) = 17.26, p < .001$. Furthermore, the difference between the cognitive responses varied among the ads, $F(3, 156) = 6.59, p < .001$, although the interaction was not significant, $F(3, 156) < 1, n.s.$ Thus, participants provided more positive responses to template-matched ads than template-removed ads, but there is no indication of resulting cognitive elaboration.

STUDY 1B

Overview

With the aim of generalizing the proposition regarding the superiority of design structures embedded in ad information, Study 1B was designed both to replicate the findings and extend them across the three templates identified by Goldenberg, Mazursky, and Solomon (1999a). These three templates recur at different frequencies among actual ads. Replacement was found to be the dominant template, followed by (in descending order) the *interactive experiment template* and the *new parameter connection* version of the *altering dimensionality template* (described below).

The *activation* version of the *interactive experiment template* makes viewers aware of the benefits of the product by requir-

FIGURE 2B
Activation: Template-Removed Ad



If you want to see why Car A is faster than your car, please lift this ad and look in the mirror.

ing them to engage in an interactive experience with the medium in which the ad appears. Typically, the following elements appear in the activation version of this template: (1) the experiment requires physical action, (2) the experiment is executable on the spot, and (3) the experiment's results highlight a general need rather than a unique quality of the specific brand. An example of the activation version is depicted in Figure 2A (template-matching) and Figure 2B (template-removed), where an ad claims that Car A is faster than Car B. When the viewer lifts the ad (Figure 2A) against a source of light, Car B appears in the mirror of Car A, because it is actually printed on the back of the ad page, thus suggesting that Car A is faster.

The specific scheme of this ad consists of two different sets: the senses set and the experiment set. The relevant senses set is drawn from the list of the five senses. The experiment set consists of test scenarios demonstrating the claim. The linking operator requirement is that the experiment represented in the experiment space be performed physically by interacting with the media (newspaper, radio, etc.).

The *new parameter connection* version of the *altering dimensionality template* presents a dependency between two previously independent variables that highlight a product trait. This template is reported as the most influential one for new product emergence (Goldenberg, Mazursky, and Solomon 1999d).

An example of the new parameter connection template is presented in Figure 2C (template-matching) and Figure 2D (template-removed): an ad for flower bouquets in which the size of the bouquet is dependent on how angry the buyer's female partner is. The specific scheme of this template consists of two sets: a set of product attributes and a set of situation attributes. The linking operator connects two parameters of the different sets.

FIGURE 2C
Template-Matched Ad

How mad is she?



FLOWERS BY (A)

FIGURE 2D
Template-Removed Ad

How mad is she?



FLOWERS BY (A)

Method

One hundred and forty undergraduate students, participating for course credit, were randomly assigned to two groups and asked to judge six ads. As in Study 1A, none of the students had previous knowledge of the template theory, and none had taken a previous course in advertising. Each ad was either template-matching or template-removed. The six professionally generated pairs belonged to six different product classes. The six pairs were divided into three template versions: *replacement*, *new parameter connection*, and *interactive experimentation*. Participants were handed a booklet containing six ads, with two ads per template and with each ad appearing on a separate page. Each participant was given one ad per product class, either template-matching or template-removed.

The questionnaires appeared in a separate booklet. The questions and scales included were similar to those used in Study 1A. As in Study 1A, participants were asked to write their cognitive responses to each of the ads they had seen.

Results

The mean judgments are displayed in Table 2. Consistent with the previous studies, comprehension did not vary as a function of the template manipulation, $F(1, 156) < 1, n.s.$ A repeated-measures ANOVA was performed with template (template-matching versus template-removed) as the between-subjects factor and template version (replacement versus new parameter connection versus interactive experiment) as a repeated measure. The template factor was significant in all cases, $F(1, 132) = 55.7, p < .001$, $F(1, 132) = 61.8, p < .001$, $F(1, 132) = 43.2, p < .001$, $F(1, 132) = 9.6, p < .01$, for the originality measure, uniqueness, sophistication, and attitude, respectively. In addition, analyses of the simple effects performed for each template version individually confirmed that in all the comparisons, the template-matching ads were perceived as more original, unique, sophisticated, and favorable than the template-removed ads (all F s significant at $p < .01$).

Finally, as in Study 1, participants were asked to list their cognitive responses to the ads. On average, the participants produced 2.04 responses per ad. Also, none of the terms was significant when the sum of responses served as the measure (all F s < 1). In addition, the favorability of the responses was assessed by the procedure used in Study 1, that is, by computing the difference between the positive and negative responses. The results indicate that when this difference served as the measure (see Table 2), it was more positive in the template-matching ads condition than in the template-removed conditions, $F(1, 132) = 9.74, p < .01$. No other factors were significant in this analysis. Accordingly, as in Study 1A, Study 1B participants provided more positive responses to template-matched ads than template-removed ads, although elaboration was not more extensive in reaction to template-matching ads.

STUDY 2

Overview

The previous studies showed that template-matching ads are perceived as more original, unique, and sophisticated, and generate attitudes that are more favorable, than their TR counterparts. An attempt to understand why these ads are perceived as superior in originality involves two basic questions. The first question is whether the underlying structure, which serves as a code for successful ad design, is noticed by participants even when they are repeatedly exposed to template-matching ads. The second question is whether the design structure is accessible to the participants making the originality judgments and whether this gives it an advantage even when the scheme is disclosed.

To clarify these questions, imagine that participants are provided with an explanation of the scheme underlying the ad design before seeing and judging template-matching ads. Would this lead to superior or inferior judgments of originality compared with those of participants who were not given that explanation? This brings up the paradoxical issue put

TABLE 2
Study 1B: Mean Measures

	Responses													
	Comprehension		Originality		Uniqueness		Sophistication		Attitude		Total		Difference	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Replacement</i>														
Template-matching	3.85	1.13	3.95	1.02	3.99	1.03	3.87	1.10	3.64	1.20	2.18	.90	.75	1.05
Template-removed	3.57	1.21	3.62	1.14	3.65	1.03	3.33	1.12	3.32	1.37	2.07	2.10	-.15	.89
<i>New parameter connection</i>														
Template-matching	3.52	1.36	3.53	1.31	3.64	1.13	3.30	1.26	3.34	1.24	1.86	.67	-.09	.94
Template-removed	3.45	1.27	2.88	1.25	2.93	1.30	2.87	2.08	3.08	1.35	2.06	.71	-.33	1.07
<i>Interactive experiment</i>														
Template-matching	3.63	1.26	4.27	.95	4.21	1.04	3.94	1.15	2.85	1.34	2.13	.95	.33	.88
Template-removed	4.00	1.15	3.40	1.23	3.35	1.26	2.98	1.27	2.56	1.41	1.78	.60	-.63	.80

forward earlier in the paper that the discovery of a simple template may yield a "more of the same" response when single template-matching ads are used repeatedly. On the other hand, if templates represent deep structures and participants are unaware of the way the template affects their judgments, then originality judgments may be high even if they become aware of the scheme underlying the template. Study 2 was designed to tackle these issues by presenting participants with a set of 12 ads shown consecutively under conditions that make it possible to compare them.

Method

Participants

Ninety undergraduate students participated in the study for course credit. As in the other studies, none of the students had previous knowledge of the template theory in this study either, and none had taken a previous course in advertising.

Procedure

The study was conducted in front of a computer screen. Following a brief explanation that the study was part of a marketing-research project of evaluating ads, the participants were presented with one ad at a time on the screen. After they pressed the button to indicate that the ad was understood, a new screen appeared with a short questionnaire with scales ranging from 1 to 7. The questions pertained to comprehension, attitude ("How good is the ad?"), originality, uniqueness, and sophistication. When the participant had completed the questionnaire, a new screen appeared with two open-ended questions asking their opinion of the intention of the ad and their thoughts about how it was presented.

Afterward, a new screen appeared with a new ad, followed by a questionnaire in the same format that was used for the first ad. This procedure was repeated for all 12 ads that each participant assessed. The time that elapsed between the presentation of the ad and the act of pressing the button for a judgment was recorded for subsequent analysis.

The complete database of images (including 12 that were template-matching and their 12 template-removed counterparts) was composed of ads using the same manipulation as that shown in Figures 1A and 1B.

Participants were randomly assigned to one of three groups. In one condition, participants were presented with 12 TM ads. The second condition contained only TR ads. In the third condition, participants were presented with 12 TM ads, but they were also provided a demonstration and explanation of the ad template and its underlying scheme (similar to Figure 1). Specifically, participants in this condition were shown an example of a template-matching ad and the corresponding

scheme describing the template. The ad shown was not one of those included in the study. To avoid any bias due to the content of the ads themselves, the order of the ads was randomized.

Results

A repeated-measures ANOVA was performed to assess the consecutive judgments of the 12 ads, with the three template conditions (TM, TR, and T-explained) serving as a between-subjects explanatory variable. As in the previous studies, the participants' comprehension of the scheme was not found to make any difference ($F = 1.32, n.s.$), nor did this comprehension change throughout the presentation of the 12 ads ($F = 1.04, n.s.$). The judgments of the originality of all 12 ads and the participants' attitudes to them are shown in Figures 3A–3C. In addition, the figure shows the response latencies of the attitude judgments. It can be seen that template-matching ads (TM) are judged as superior relative to the template-removed (TR) ads.

To estimate the effect, separate blocks composed of three consecutive judgments were created by averaging their values. The analysis of data reported below is based on this design. The template factor was significant in both analysis of originality ($F = 13.04, p < .01$) and the attitude measure ($F = 9.63, p < .01$). A direct comparison between the TM and TR conditions revealed that the TM judgments were significantly more favorable than the TR judgments ($F = 25.25, p < .01$ in the comparison between the originality of the groups and $F = 13.23, p < .01$ for the attitude comparison). Furthermore, a Scheffé test placed the TM and T-explained conditions for both judgments in one homogeneous subset, where the judgments were significantly more favorable than the judgments in the TR condition, with a $p < .05$ significance level. A similar analysis performed on the uniqueness and sophistication variables showed that the TM and T-explained measures were significantly higher than TR. In fact, all 12 repeated measures were never higher in the TR condition than in the TM and T-explained conditions, and Scheffé tests indicated that the TM and T-explained measures formed a subset that was significantly higher ($t < .05$) than the TR condition.

There is also no indication of boredom in the participants' judgments that could be attributable to consecutive ad judgments. Specifically, there is no directional decrease in the gap between the judgments in the TM and TR conditions throughout the judgment task. The interaction between the repeated measure and the template factor was not significant ($F > .80$ for the attitude judgment and $F > .50$ for originality, both *n.s.*).

Another observation involves the distance between the originality judgments in the T-explained and TM conditions. A comparison between initial and later judgments reveals a decrease in the gap between these judgments (the interaction

FIGURE 3A
Attitude

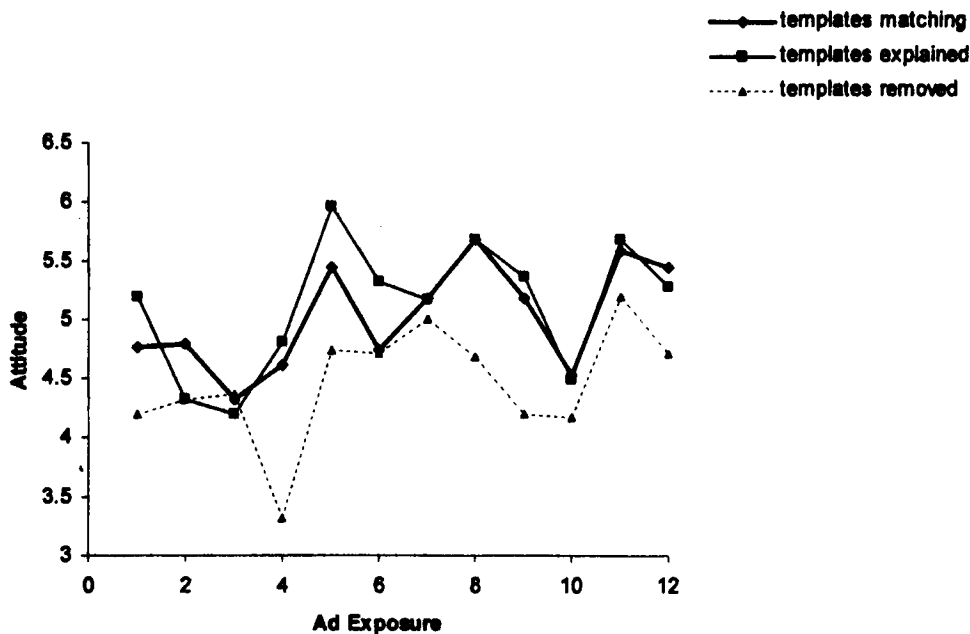
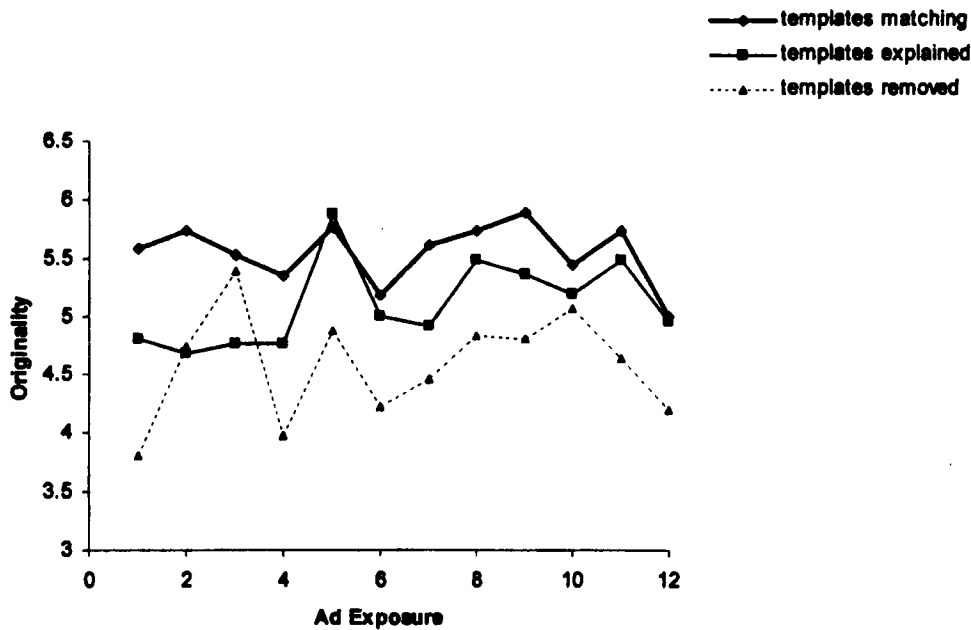


FIGURE 3B
Originality

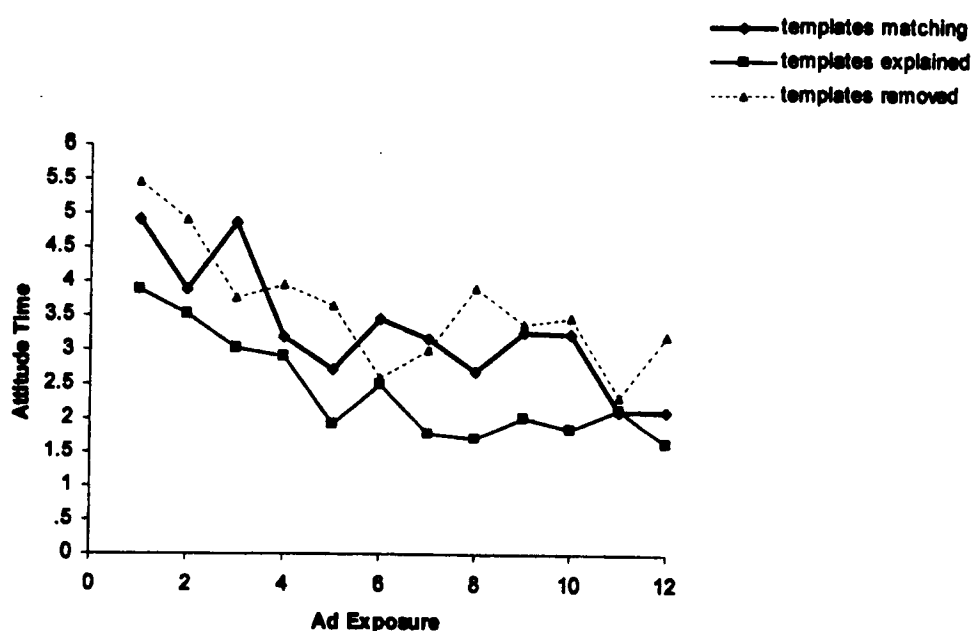


effect between the repeated measure of originality and the template factor was significant, $F < .05$). In contrast, in the attitudinal judgment, the trends of TM and T-explained conditions generally coincide (the interaction was not significant, $F > .70$).

It is interesting to note that beyond the reduced judgment time overall (the repeated measure of response time

was significant, $F = 18.30, p < .01$), there is a clear pattern of shorter judgment time among those participants who received an explanation (T-explained) compared with the TM and TR groups; in no case of the 12 consecutive exposures was judgment time in the T-explained condition longer than the response time for ads in the TM and TR conditions. The analysis based on a comparison among the four blocks indicated

FIGURE 3C
Attitude Time



a shorter response time in the T-explained group than in the TM and TR groups, which formed a separate homogeneous subset (Scheffé test, $p < .05$) with longer response times. Thus, it appears that disclosing the template structure accelerated the response times, but did not decrease the judgments of ad originality, sophistication, or uniqueness, or the attitudinal judgments due to overexposure (see Table 3).

Finally, participants were asked an open-ended question about the intention and design of the ad. In only eight individual cases out of the entire possible participants \times ads set was some connecting theme indicated among the ads (five for TM ads and three for TR ads). However, in none of these did the participants say anything that might indicate that they had discovered a structural theme common to even a single pair of ads. Thus, the participants did not recognize any shared element of the creative code among the template-matching ads, even though they were presented with repeated occurrences of the same template up to 12 consecutive times in one of the conditions.

GENERAL DISCUSSION

The reported studies focused on the effect of design structures in advertising. Despite their simple scheme, the findings indicate that participants do not discover their formula. Moreover, even if they are informed about it explicitly, the impact of ads matching a single design structure shown consecutively is not undermined over exposures. Finally, despite the repeated use of

a design structure in series of exposures to ads with unrelated contents, originality judgments remain high.

Creativity is an enigmatic phenomenon. Like intelligence, it represents a highly complex and diffused construct (Sternberg 1985). Other thinkers and researchers conclude that the secret of creativity is concealed in the rather vague notion of rule transcending rather than rule following. Rule transcending was formulated as total freedom, achieved by the elimination of directional guidance, constraints, criticism, and thinking within bounded scopes (Csikszentmihalyi 1996). Yet at the same time, researchers clearly endorse the claim that creative thinking consists of the same mental processes involved in regular thinking (e.g., Buchanan 2001). It is thus claimed that the ability to produce novelty is required even in regular everyday thinking, suggesting that the mechanisms that underlie creative thinking are normal ones.

Some researchers emphasize the importance of prior knowledge in creative endeavors (e.g., knowledge retrieval, antecedent cognitive structures that underlie idea generation, and exploration). Incubation, a seemingly mysterious phenomenon in creative processes, has also been attributed to regular cognitive mechanisms such as spreading activation or contextual function. Dynamic qualities of creative thinking are linked to dynamic mental representations that typically give rise to memory distortions. Others show that only slight variations of computational models of comprehension are needed in order to account for creative thinking. These cognitive mechanisms are similar to those studied in noncreative

TABLE 3
Study 2: Mean Measures

	Ad 1	Ad 2	Ad 3	Ad 4	Ad 5	Ad 6	Ad 7	Ad 8	Ad 9	Ad 10	Ad 11	Ad 12
<i>Comprehension</i>												
Template-matching	5.88	5.56	5.03	5.26	6.26	5.94	6.06	6.32	5.97	5.03	6.15	6.65
Template-explained	5.96	4.84	4.60	5.40	6.24	5.96	5.64	5.96	5.80	4.96	6.24	6.00
Template-removed	5.81	5.81	5.16	4.68	5.81	5.68	6.00	6.00	5.19	4.71	6.48	6.06
<i>Sophistication</i>												
Template-matching	4.62	5.26	5.00	4.88	5.03	4.26	5.12	5.32	5.32	4.56	5.24	4.38
Template-explained	4.60	4.80	4.64	4.68	5.20	4.84	4.20	5.36	5.28	4.96	5.20	4.68
Template-removed	3.06	4.10	4.35	3.81	4.45	3.45	3.90	4.35	4.10	4.52	3.97	3.68
<i>Uniqueness</i>												
Template-matching	4.74	5.50	5.35	5.09	5.26	4.59	5.12	5.44	5.29	4.82	5.06	4.53
Template-explained	4.56	4.80	4.76	4.60	5.20	4.88	4.24	5.40	5.16	5.00	5.12	4.60
Template-removed	3.45	4.23	5.10	3.74	4.45	3.61	4.00	4.29	4.06	4.81	4.10	3.77

contexts (see Smith, Ward, and Finke 1995, pp. 327–328). Simonton (1984, 2003) states that the creative genius is an expert in a given domain, well acquainted with its rules and regularities. Even in the exact sciences, however, one cannot apply fixed rules mechanically.

Indeed, recent studies have revealed that ads repeatedly using the same structure are consistently judged as highly original and favorable, and retain the benefits of *surprise*. It further appears that some design structures give rise to ideas judged as more creative than others, and evaluation of the results may be used to classify them as unique. We can conclude that deep structures pertain to the way information conforms to a predetermined structure evoked by the ad theme. At the same time, consistent with Stoltman (1991), ads inconsistent with other ads of the same product category or schema are judged as novel.

The impact of deep structures was measured empirically in pairs of template-matching ads compared to ads without template-matching features. Participants indicated more positive attitudinal reactions toward ads that matched templates. In addition, the originality, uniqueness, and sophistication of template-matched ads were perceived as superior, even though the visual content was matched in both types of ads. An interesting phenomenon involving deep structures was revealed. If the structures had been explicitly recognized by the participants, it might have been expected that their impact would have detracted from the ads' effectiveness rather than increasing it. Paradoxically, the present research indicates that even when the scheme underlying the design structure was disclosed and explained, it continued to have a positive impact on judgments. The only influence of revealing the structure was the reduction of response.

Managers should be interested in some implications of these findings. Repetition is one of the factors that contributes highly to awareness and recall. A shortcoming of repetition, however, is the possibility of boredom. If managers want to increase the repetitions of their ads without losing consumers' attention and impacting their attitudes negatively, they might attempt to reveal the deep structures of the ads. Deep structures should fulfill three conditions: (1) Their formula should not be visible, (2) they should be stable across content (e.g., products' target audience, messages), and (3) they should appear solely in creative sets (and not in noncreative sets). It may be practically difficult to identify and tailor a deep structure for a specific marketing-communication case, although a few deep structures have already been identified in the literature.

Research on the impact of deep structures on the effectiveness of communication should be encouraged in light of their frequent recurrence among award-winning ads. So far, such research has been developed systematically in two directions. In some studies, rhetorical figures (e.g., Corbett 1990; McQuarrie and Mick 1999; McQuarrie and Phillips

2005) have been defined as stylistic variations that appear to enhance effectiveness. In others, templates were identified by Goldenberg, Mazursky, and Solomon (1999a) as simple structures that can be uniquely formulated schematically. In other studies, the impact of structures was observed even when this was not the focus of the research (e.g., Moreau, Lehmann, and Markman 2001).

The detection of deep structures may have a role in understanding consumer reactions to ads if we recognize that people tend to consolidate processing paths rather than proliferating them. In quite a different domain, Tolstoy has been paraphrased as saying that well-defined problems are all alike, but every ill-defined problem is ill defined in its own way. This paraphrase of Tolstoy's famous remark illuminates an important dilemma about the perception of originality. Advertisers tend to prefer the distinguished, one-shot ad content and format, believing that it will be perceived as more creative. In contrast, recent literature, including a report on a template-matched idea-generating algorithm (Goldenberg, Mazursky, and Solomon 1999b), indicates that structure-consistent ideas outperform random ideas and that the former are actually evaluated as more creative.

Finally, the value of studying the impact of structures in information processing can be extended to other domains. Haynes (1999) stressed the role and generalizability of deep structures:

[T]he most creative composers of music know the rules the best, and even when they break them, [they] do so within restraints (e.g., Stravinsky decided on self-imposed limitations). Composers work with realities of sound and forms, they must relate to physical and mental structures that are enduring. This does not negate the importance of a deep understanding that may work its way into the music subconsciously. Templates help keep people's attention, e.g., a composer builds expectations and then teases them, often in small ways (e.g., themes and variations). Even big departures from expectations are often the juxtaposition of familiar elements brought together from different contexts. The "unexpected" or hidden symmetries and templates that the listener (or viewer of art) gradually discovers are another source of pleasure associated with creativity.

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