

# **Psychology of Style in Design**

by

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## Abstract

A design consists of a series of design processes and their results in a physical form which is called a design product. Studies on style done by historians, critics, and theorists have commonly paid attention to design products. For them, style is a mode of expression in a work of art, and they use style to characterize relationships among different persons, periods, or regions. In this thesis, style is studied from design processes point of view, and concentrations are on how a style, especially an individual style, comes out from design processes. The scope of design processes in this thesis was limited to the processes of developing a conceptual scheme in a preliminary design stage. Special attention was paid to explore the underlying psychological mechanisms that cause the formation of a style.

The method of inquiry was from cognitive science. The operational definition, the degree of style, and the measurement of style were developed to complete a fundamental theory of style which was finally justified by psychology experiments. Four experiments were conducted in this regard with pictures of architecture used throughout as illustrations. In experiment 1 the operational definition was tested by asking college students to sort out pictures of buildings having the same style. Results showed that style is recognized by the common features present in pictures. In experiment 2 the degree of style was studied by asking students to sort out pictures into four resemblance scales. Results showed that the degree of style is in proportion to the number of common features present.

In experiment 3 the measurement of style was observed by having an architectural historian identify a style in pictures that had various feature combinations. Data showed that three features are the lower boundary for style recognition. Experiment 4 tested the degree of distortion to understand the recognizability of a style. When an expert was asked to recognize distorted pictures, results showed that up to 40% of geometric distortion a style is barely recognizable. Results suggest that if an artifact has at least three features a style exists. If four common features replicate in a minimum of three different artifacts, an individual style is recognizable.

In regard to the causes of style, the approach was to develop a cognitive model to predict invariable procedures that occurred in design processes on one hand, and to sort out possible design process variables on the other to predict the underlying mechanisms involved. The existence of these constant procedures and design process variables in design processes had been explored

and verified in a case study on a famous American architect, Frank Lloyd Wright (Chan, 1990b). More protocol analyses were conducted to observe the function and interaction of design process variables to explain the formation of a style.

The formation of a style was hypothesized as the constant applications of some design process variables in a design process. These variables are design constraints, search methods, goals, and the sequential order of applying these variables. The constant applications of the variables ultimately yield common features which define a style. This concept was tested by protocols of a practicing architect collected from laboratory experiments, which included a series of residential designs subjected to sequential changes of design conditions. The method of data analysis was to map protocol data into a cognitive model to observe the underlying mechanisms and variables. Results showed that common features (in design products) and variables (in design processes) appeared across designs. Moreover, there are correlations between these features and variables. Therefore, the style of the subject in this thesis was identified according to the common features and variables.

From the evidences it is argued first that a style results from certain actions and interactions of design process variables. Because of the constant applications of these variables, constant cognitive phenomena appear and consequently produce constant forms by which a style is manifested. Secondly, a style should be described by means of the constant features in design products and by the constantly appearing variables in design processes.