

# *Style based automated graphic layouts*

Paul Cleveland, Queensland College of Art, South Bank Campus, Griffith University, South Bank, Queensland 4101, Australia

*This article describes a methodology for producing style based generative layouts which could be applied to magazine or web design. Many graphic designers are passionate about their design work, but mundane and routine design considerations are often left to those less experienced. This paper examines a methodology that can generatively reproduce variations to a design specification based on preset inputs which offer variety in layout without the loss of design aesthetics. An historical survey examines symbolic artefacts constructed from the conventions of a particular culture over time and illustrates how these influence the outcomes of design specifications. A research methodology is used to convert these specifications into generative designs using a set of algorithms.*

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The arrangement of letters on a page has been described by writer, typographer, and journal publisher Blackwell (2004) as ‘an arcane corner of interest’, yet the increased interest in research into visual grammar shows that layout is becoming an important aspect of communication which informs language. Kress and Van Leeuwen (1996, 2002) provided a methodology for analysing colour and layout which complemented the language structure, and Van Leeuwen (2006) provided a discourse on the semiotics of typography which alludes to the semiotics of layout. This paper takes this as a starting point and investigates how design specifications for layout can be automated without the loss of design aesthetics.

Previous research into automated layout systems follows two methodologies. The first applies constraints to the layout so as to control the placement of components (Borning and Duisberg, 1986; Vander Zanden and Myers, 1990; Lok et al., 2004). The characteristic solution uses the concept of a grid which has been adapted from traditional graphic design approach to print layout. The other approach uses a set of templates as exemplars which have been produced by layout experts (Myers et al., 1993; Jacobs et al., 2004).

**Corresponding author:**  
Paul Cleveland  
[p.cleveland@griffith.edu.au](mailto:p.cleveland@griffith.edu.au)

To a large extent layout can be considered formulaic. The development of ‘house styles’ in magazine publication is an example of how the graphic treat-



ment of space can value add to the branding of an entity. Once a page layout has been considered the implementation often becomes to a large extent a mechanical proposition. There are two distinct parts to this process, firstly the aesthetic skill of arriving at a design solution, and secondly the mechanical skill of repeated implementation with a degree of variation.

The design specification is often a negotiated dialogue between a number of parties which can include the designer, client, marketing professionals, product researchers and consumers. Magazine publishers will rely not only on the written content and graphic imagery but also the arrangement of these elements taking into account such things as colour, proportion, dynamics and scale to attract an audience and bring about loyalty in readership. The design of the layout goes further than providing a framework for functionalism. The design of the pages provides a medium for graphic experiment within the bounds of editorial responsibility. Designers often act as jugglers of creative solutions as well as arbiters of communication format. The influences of sub-cultures can be a powerful force in the selection of appropriate graphics and typographic arrangement. The use of the same repeated solutions leads to over familiarisation with the content and a diminished stimulation. Designers are therefore always searching for ways to enrich the novelty value of the visual stimulus. This can become a time intensive activity as different variations to a design specification are explored. Often less experienced designers are given the task to fulfil this activity. This research explores the possibility of using a set of generative algorithms to produce variations to a design specification to speed up the layout process.

This research looks at the shape of elements and their placement in a layout, relative to other elements, and how they form a rhetoric based on their characteristics which determines a design style. More importantly the development of style in contemporary communication design can be regarded as complementary to the complex communication derived from the visual grammar, and are as [Scott \(1994\)](#) states 'not merely analogues to visual perception but symbolic artefacts constructed from the conventions of a particular culture'. These conventions of a particular culture influence the outcomes of design specifications. It therefore follows that temporal based design specifications can be reconstructed using rules which govern this visual language. Style can be interpreted as specific combinations of relationships between elements in a particular visual language. The application of this relationship is explored by constructing a set of rules and then applying them to a computer layout system which can generate multiple solutions based on a predefined logic. This is the basis of our generative system. One particular style genre, 1950s is used to test the validity of the logic employed in the development of an automated system to construct variations to a design specification. The decision to use this particular period was based on the need to work with a limited number of variables to see if a set of particular rules could achieve an intended outcome.

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