

The Potential for Application of Gestalt Principles in Screen-based, Kinetic and Fluid Typographic Artefacts

“Written words” were once considered simply “the symbols of spoken words”¹, but contemporary artefacts can present words and letters that are more than this. “What happens when words can speak? when they can move?... As designers probing [‘multimedia’²] technology, our goal may be less to *digitize* than to *dramatize*.”³ Digital, screen-based type can “dance..., dissolve or disappear altogether”.⁴ “In this dynamic landscape, our static definitions of typography appear increasingly imperilled.”⁵ They are inadequate to define and analyse kinetic and fluid type.

We may not need to develop new theories by which to analyse new, dynamic type. We may instead apply established ideas in new ways. One field from which such ideas may be extracted is Gestalt psychology.

Missed Opportunities in Key Texts

Among key Gestalt papers⁶, there is minimal reference to the potential applications of Gestalt theory on typography: Wertheimer references letterforms on only one occasion, in demonstrating how an unfamiliar arrangement can cause letters to become illegible.⁷

More recent texts have acknowledged or implied a connection between Gestalt principles and typography, though these do so briefly and vaguely, suggesting that further exploration is needed.

*Universal Principles of Design*⁸ observes how Wertheimer’s *Factor of Proximity* can influence legibility of signs, referring to layout of whole words, but not to the letterforms individually. In describing the *Factor of Common Fate*, *Universal Principles of Design* utilizes Xs and Os⁹, but presents them as arbitrary symbols rather than as meaningful letters.

The same text illustrates *Pragnanzstufen* (referred to in this instance as the ‘Law of Pragnanz’) with examples of faces constructed from symbol characters (colon, semi-colon, hyphen and bracket)¹⁰. It does not, however, acknowledge that letters may be used similarly.

There are examples in type which demonstrate features that could be perceived according to the law of Pragnanz. Pragnanz states that, When presented with a series

¹ Aristotle, “Aristotle in *Logic*”, as quoted in Helfand, Jessica, *Electronic Typography: The New Visual Language*, 1994, from *Looking Closer 2: Critical Writings on Graphic Design*, ed. Beirut, Michael et. Al. Allworth Press, Canada, 1997.p.50.

² Helfand, Jessica, *Electronic Typography: The New Visual Language*, 1994, from *Looking Closer 2: Critical Writings on Graphic Design*, ed. Beirut, Michael et. Al. Allworth Press, Canada, 1997. p. 49.

³ *Ibid.* p.50-51.

⁴ *Ibid.* p.51.

⁵ *Ibid.* p.51.

⁶ Ellis, Willis D., *A Source Book of Gestalt Psychology*, Routledge & Kegan Paul Ltd, London, 1938.

⁷ He demonstrates that by placing *M* directly on top of *W*, one can create a form that is perceived as an abstract symbol, not as two letters.

⁸ Butler, Jill, Holden, Kritina and Lidwell, William, *Universal Principles of Design*, Rockport, China, 2003. p.170.

⁹ *Ibid.* pp.40-41.

¹⁰ *Ibid.* p.121.

of complex elements, we are likely to perceive them as being parts of a simpler whole¹¹ (where ‘simple’ arrangements are those “having fewer rather than more elements, having symmetrical rather than asymmetrical compositions, and generally observing the other “Gestalt principles of perception””¹²)(see fig1.). Type, particularly illuminated letters, may be constructed of a collection of more complex shapes (fig 2.). Such images are primarily perceived as depicting ‘simple’ letterforms, with its more complex components perceived only secondarily.

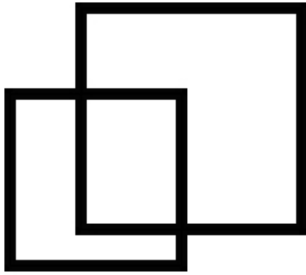


Fig 1. Illustration of *Pragnanz*. This image is perceived as presenting 2 squares, not a rectangle (centre) and 2 L-shapes (bottom left and top right).



Fig 2. Nicholas Cann's *Letter "B" I*, an arrangement of overlapping, complex shapes but perceived as the ('simpler') letter 'B'.

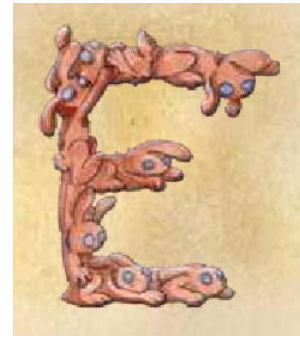


Fig 3. An arrangement of rabbits from *The ABC Game*, perceived primarily as the ('simpler') letter 'E'.

Although Gestalt is not referenced, texts describe typographic artefacts which demand perception according to Gestalt principles. In *Dimension Typography*, J. Abbott Miller describes letters of “modular construction (i.e. letters constructed from separate “repeatable marks”)¹³. ‘Correct’ interpretation of such letters requires the reader to imagine an arrangement of incomplete, ‘modular’ repetitions as complete letter-shapes. This form of perception is described in Wertheimer's *Factor of Closure*¹⁴. The *Factor of Closure* describes how a sequence of parts, located a distance from one another but arranged to form a larger line or shape, may be perceived as forming one complete, ‘closed’ line or shape (fig 4.). In modularly constructed type, the ‘modules’ are perceived primarily as parts of a ‘closed’ letter (fig 5).

¹¹ van Wagner, Kendra, *Gestalt Laws of Perceptual Organisation: The Law of Pragnanz*, *About: Psychology*, 2006, http://psychology.about.com/od/sensationandperception/ss/gestaltlaws_3.htm, visited 30/10/06.

¹² Butler, Jill, Holden, Kritina and Lidwell, William, *Universal Principles of Design*, Rockport Publishers, Inc. China, 2003. p.120.

¹³ Miller, Abbot, J. *Dimensional Typography*, Princeton Architectural Press, c1996. pp.5-6.

¹⁴ Wertheimer, Max, *Special Problems: First Group: Perception*, A. *Perception and Organisation*, Section 5: *Laws of Organisation of Perceptual Forms* ('*Untersuchungen zur Lehre von der Gestalt*'), II, *Psychol. Forsch.*, 1923, 4, 301-350. English translation found in Ellis, Willis D., *A Source Book of Gestalt Psychology*, Routledge & Kegan Paul Ltd., London, 1938. p.83.



Fig 4. An arrangement of dots perceived as a line in accordance with *The Factor of Closure*.



Fig 5. *Monopoint Light*, (Lars Harmsen, Boris Kahl, 2004): A static font constructed of 'modular' parts (dots).¹⁵



Fig 6. Channel 4 Ident, in which animated 'modules' are arranged to form an impression of the number '4' (Martin Lambie Nairn, 1984).¹⁶

As evidenced by the above examples, there is scope for exploration of typography in relation to Wertheimer's *Laws of Organisation of Perceptual Forms*¹⁷. However, these laws form only part of Gestalt theory. Gestalt papers did not only focus on the "organisation of perceptual forms" (or, objects observed in a space), but also the perception of movement (or, parts displayed over time, presenting an apparent moving 'whole'). These two distinct areas of research are separate 'parts' of the 'whole' Gestalt movement.

Print, like most traditional media, is capable of demonstrating Gestalt phenomena from only one of these 'parts'. It can display examples of organisation of forms, but cannot display examples of "apparent motion"¹⁸, as described in the first key theory in the Gestalt movement, Wertheimer's *Phi phenomenon*.

Any instance of motion is only perceived over time. The Phi phenomenon, therefore, can only be applied to artefacts that alter over time.

Traditional, static typography is incapable of demonstrating apparent motion. There are, however, more recently developed media which are capable of temporal dimensions, and hence capable of displaying a combination of apparent motion and typography.

It is only since the introduction of digital and screen-based media that typography with a temporal dimension has been commonly observed. "Digital literature" is distinctly different to "print literature", essentially because it offers "the possibility to manipulate textual motion"¹⁹.

Screen-based artefacts are capable of displaying both spatial dimensions (those which can demonstrate Gestalt laws of perception) and temporal dimensions²⁰ (those which can demonstrate the phi-phenomenon). It can therefore be suggested that screen-based artefacts are capable of more fully demonstrating Gestalt principles than traditional type.

¹⁵ image from MyFonts, Monofont <http://www.myfonts.com/fonts/volcano/monopoint/> (visited 10/01/2007)

¹⁶ image from BBC News online, David Starkey: Laughing all the way to the library, 8 March 2002, http://news.bbc.co.uk/1/hi/in_depth/uk/2000/newsmakers/1860744.stm (visited 10/01/2007)

¹⁷ Ibid. pp.71-78.

¹⁸ King, Brett D., Wertheimer, Michael, Max Wertheimer and Gestalt Theory, Transaction Publishers, USA, 2005. p.97.

¹⁹ Ikonen, Teemu, Moving Text in Avant-Garde Poetry: Towards a Poetics of Textual Motion, *Dichtung-digital.de* Newsletter 4, 2003. <http://www.dichtung-digital.com/2003/4-ikonen.htm>. Visited 25/04/2006.

²⁰ Miller, Abbot, J. *Dimensional Typography*, Princeton Architectural Press, c1996. p.2.

Wherever Gestalt *laws of organisation*²¹ can be applied to fixed type, they may also be applied to many fluid or kinetic typographic artefacts (in describing their spatial dimensions), in combination with the *Phi-phenomena* (which describes their temporal dimensions).

As demonstrated above (fig 2), the law of *Pragnanz* can be applied to static, illuminated letters. The same principle applies to animated letters in Orgdot's *The ABC Game* (2003) (fig 3.).

Similarly, if the *Factor of Closure* can be applied to static letterforms of 'modular construction' (fig 5), it is reasonable to suggest that it may also have relevance to artefacts displaying those modules in transience, as is seen in Lambie Nairn's *Channel 4 idents* (1984) (fig 6).

Screen-based, digital, typographic artefacts present letterforms which are 'fluid'²² and 'kinetic'²³. Such artefacts include kinetic, concrete poetry and animated type.

In discussing "poetics of textual motion", Ikonen briefly acknowledges the connection between Wertheimer's phi phenomenon and kinetic poetry²⁴, but avoids exploring or explaining the relationship²⁵. Other texts suggest Gestalt principles other than the Phi-phenomenon can also be applied to many such artefacts.

Karprinska describes her interactive, transient poem, *The arrival of the beeBox* (2003) (see fig 7.) as in part a demonstration of Tobler's "first law of geography"²⁶, that "near things are more related than distant things"²⁷. This "spatial dependence"²⁸ is a property described in startlingly similar terms in Wertheimer's *Factor of Proximity*²⁹.

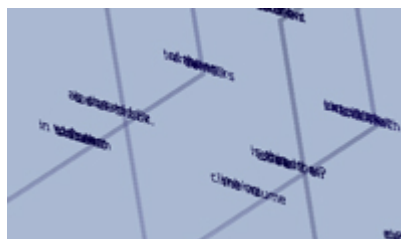


Fig 7. Still from *The Arrival of the beeBox*, Karprinska, Aya Natalia, 2003.

²¹ Ibid. pp.71-78.

²² Kac, Eduardo, *Key Concepts of Holopoetry*, Electronic Book Review, 1997.

<http://www.electronicbookreview.com/thread/electropoetics/uncontrollable> (visited 10/04/06)

²³ Engel, Blake, Ditterline, Patrick, and Yeung, Brian, *The Effects of Kinetic Typography on Readability*, Carnegie Mellon University, 2000. <http://crankyuser.com/kinetic/kineticTypography.pdf> (visited 12/04/06)

²⁴ Ikonen, Teemu, *Moving Text in Avant-Garde Poetry: Towards a Poetics of Textual Motion*, *Dichtung-digital.de Newsletter* 4, 2003. <http://www.dichtung-digital.com/2003/4-ikonen.htm>. Visited 25/04/2006.

²⁵ Ikonen's text reads, "the appearing and disappearing [observed in 'textual motion'] can in some cases be perceived as motion (as in the "phi phenomenon" discussed in Gestalt psychology."

²⁶ Karprinska, Aya Natalia, *The Arrival of the beeBox: an Exploration of Spacial Text*, 2003. <http://technikai.com/box/beeBoxPaper.pdf>. Visited 26/04/06.

²⁷ Tobler, Waldo, *A Computer Movie Simulating Urban Growth in the Detroit Region*, *Economic Geography*, 46, 2, 1970, p.42. Cited in Ibid.

²⁸ Karprinska, Aya Natalia, *The Arrival of the beeBox: an Exploration of Spacial Text*, 2003. <http://technikai.com/box/beeBoxPaper.pdf>. Visited 26/04/06.

²⁹ Wertheimer, Max, *Special Problems: First Group: Perception, A. Perception and Organisation*, Section 5: *Laws of Organisation of Perceptual Forms* ('*Untersuchungen zur Lehre von der Gestalt*'), II, *Psychol. Forsch*, 1923, 4, 301-350. English translation found in Ellis, Willis D., *A Source Book of Gestalt Psychology*, Routledge & Kegan Paul Ltd., London, 1938. p.74.

The *factor of Proximity*, although not referred to by the artist, is in practice in Harm van der Dorpel's *Type Engine* (2005). Here, abstract shapes rearrange to form letters. The distance between shapes given the viewer an indication as to which shapes are meant to be associated with one another (i.e. which shapes should be perceived as part of one letter, and which of another). Those which are arranged close to one another will form part of the same letter, hence, legibility is aided by proximity.



Fig. 8. *Type Engine* (Harm van der Dorpel, 2005). Here 2 shapes (pink and red) are equidistant between 2 arrangements and are associated with neither.



Fig. 9. *Type Engine* (Harm van der Dorpel, 2005). Here, the red and pink shapes are closer to the arrangement on the left and are perceived as part of it. As a result, the left arrangement is perceived as an 'i'.

Inconsistency in the Number of Objects (actual v. perceived)

Gestalt's central premise surrounds inconsistency between the number of perceived objects and to the number of actual objects.

(Gestalt is applied wherever the 'whole is greater than the sum of its parts'. In the examples above, 'greater than' does not mean 'more than', but both 'less than', 'simpler than' and 'more significant than': In the *factor of closure* and *Pragnanz* (as illustrated above), multiple parts are perceived as one whole. These wholes are single objects (perceived as 'less', in number, than their components), however, they are also more meaningful, more significant, than their arbitrary parts.)

Among examples of fluid typography, there is often inconsistency between the number of perceived letters and to the number of actual forms. Often, a single form presents many letters, or multiple forms present a single letter.

These processes occur as a result of different types of behaviour. One form may present different glyphs or letters depending on its angle of rotation. In Komninos Zervos' *Beer* (2002), a single form evolves, taking the shape of multiple letters ('h', then 'y', then 't' and so on) (see fig. 10). In *Argument* (Dan Waber), a single 'string' reforms itself first into the word 'yes', then the word 'no' (see fig. 11). Each of these is perceived as a different word, but each is formed from the same object.

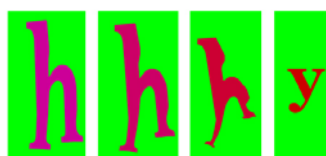


Fig 10. Four stills from *Beer* (Komninos Zervos, 2002). The 'h' and 'y' are presented by a single, morphing form.

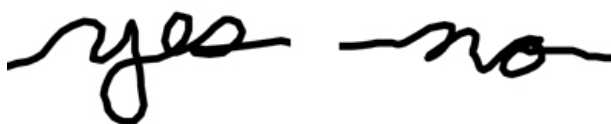


Fig 11. Two stills from *Argument* (Dan Waber). The same 'string' presents different words at different times.

³⁰ Image from Woolman, Matt, *Type in Motion 2*, Thames & Hudson, London, 2005. p.158.



Fig. 12. *Experimental Typography* (Brian Lemen)³⁰

Single objects can also present multiple letters, not by evolving, but by revolving. A shape can rotate to reveal multiple letters, all of which are part of the same form. This requires a shape to have multiple surfaces, as is seen in the animated, volumic type of Brian Lemen's *Experimental Typography*, in which a single object presents 'd' and '2' from different angles (see fig. 12). In channel 4 idents by both Lambie Nairn (1982) and MPC (2005), a single digit, '4', is perceived, although there are multiple objects in its construction.

In both *Type Engine* (2005) and *I Wouldn't Normally do Things Kind of Thing* (2005), Harm van der Dorpel presents arrangements of kinetic 'parts', which rearrange to form various letters. Each collection of parts consists of multiple abstract shapes, which are arranged to form a single perceived letter, then rearranged to form another perceived letter (see fig. 13). Here both the shapes and letters are multiple, but there is still inconsistency between the number of actual shapes, and the number of perceived signs (e.g. in *I Wouldn't Normally do Things Kind of Thing*, 7 shapes are used to construct 9 letters).



Fig. 13. Three stills from *I Wouldn't Normally do Things Kind of Thing* (Harm van der Dorpel, 2005).

The 'O', 'V' and 'L' are presented at different times, each constructed from the same set of 7 parts.