Analysis of *Letterscapes: D*, Peter Cho, 2001[1]

Peter Cho's *Letterscapes* is a collection of reactive "typographic landscapes"[2], one devoted to each letter of the alphabet, "encompassed within a dynamic, dimensional environment."[3] Each letter responds to the movement of the cursor. In 'letterscape' *D*, two d's (one lower case, one capital) are constructed of red and blue dots, which respond to the location of the user's mouse, and the speed at which it is moving.

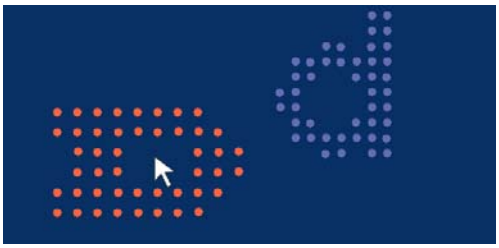
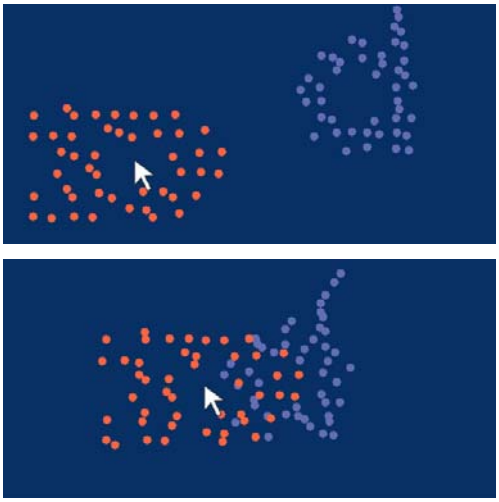


Fig. 1. Red dots arranged to form a 'D', blue dots arranged to form a 'd'.

Initially, the artefact displays a collection of red dots, arranged to form the shape of a 'D' at the bottom-left of the window, and a collection of blue dots arranged to form a 'd' at the top-right (see fig. 1).

As the user moves the mouse, the red 'D' follows the movement of the cursor, and the blue 'd' mirrors this motion, moving at the same speed but in the opposite direction. As the cursor moves the dots begin to disassemble, breaking formation (see figs 2-3). The faster the motion of the mouse, the further the dots break from their original formations, creating apparently random patterns. As the mouse slows, the dots reassemble, regaining their letter-identities.



Figs 2-3. Following the motion of the cursor, the arrangements of dots move and break apart. The faster the cursor moves, the more chaotic the arrangements become.

If the cursor moves over the centre of the window, causing the two collections of dots to overlap, the dots become disassociated from the cursor, burst outwards (see fig. 4), and then reform. When the collections of dots reform, they switch identities – the blue dots forming a 'D', and the red dots forming a 'd' (see fig 5). The collection of red dots, despite having changed its identity, continues to directly respond to the cursor, while the blue dots continue to mirror its movement (see fig. 6).

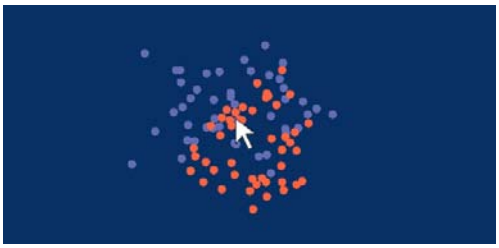


Fig 4. The dots burst apart when the cursor rolls over the centre of the window.

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[1] Cho, Peter, Letterscapes, 2001. http://www.typotopo.com/letterscapes/letterscapes.html (visited 18/04/07)

[2] Unkown author, *Tokyo TDC*, 'TDC Annual Awards 2002',' Interactive Design Prize: Peter Cho', 2002, http://www.tdctokyo.org/awards/award02/Interactive02_e.html (visited 18/04/07)

[3] Ibid.

[4] 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.75.

This example of *construction through motion of parts* may be analysed according to several Gestalt principles. Wertheimer's principles may be applied both to its visual characteristics, and its methods of reaction.

As the user moves the cursor towards the centre of the screen, the 'D' and 'd' arrangements overlap. When this occurs, one letter does not conceal the other – both sets of dots remain simultaneously visible, 'within' each other (see fig 7.). Although both groups of dots remain in their letter-formations, they are now combined, presenting a new shape. Both groups of dots, when occupying the same space, have an overall silhouette that does not resemble a single letter, and could be perceived as a single, meaningless arrangement.

In order to successfully interpret this arrangement as presenting two different letters rather than one meaningless crowd, the user must disassociate the blue dots from the red, and vice versa.

Despite the fact that the 'D' and 'd' have interfered with one another, the user recognises them as distinct, separate arrangements, because they are coloured differently. This kind of perception can be analysed according to *the factor of similarity*, which states that "like parts"[4] will be perceived as being associated with one another. Because the first set of dots that form the 'D' are alike (i.e. the same colour), they will be assumed as being part of the same form. Likewise, the remaining dots, which resemble one another but are of a different colour to the first set, will be assumed to be part of a different form – the 'd' form.

Once the dots have been perceived as divided into 2 separate groups, the user perceives meaning in each arrangement. Another of Wetheimer's factors, *the factor of closure*, becomes applicable in the interpretation of those groups not as meaningless arrangements but as letters.

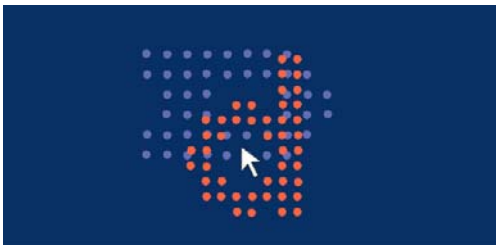


Fig 5. The groups of dots rearrange, adopting each other's identities.

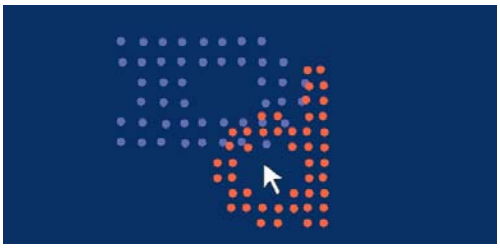
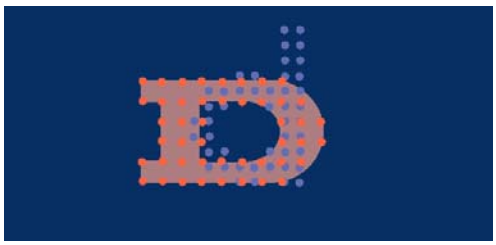


Fig 6. The red dots continue to follow the cursor, despite their new identity.

Fig. 7. When the groups of dots overlap and the cursor remains steady, the groups of dots interfere with one another, creating a single arrangement. The arrangement is still perceived as containing two separate forms.



Figs 8-9. How the user perceives the identity of each arrangement of dots (according to the *factor of closure*) – as if they were 'closed' shapes.

The user's previous experience of letterforms is likely to largely be of forms that are constructed of solid, complete strokes, not dots or 'modules'. He/she must therefore translate multiple dots, which are spaced at intervals, into a single, complete form. In effect, he/she must imagine that the gaps between the dots are 'closed' (see figs 8-9).

As the user interacts with the artefact, Gestalt laws may be applied again, this time in reference to behaviour rather than form. Both the *factor of proximity*, and the *factor of similarity* contribute to the user's understanding of the artefact as being interactive.

Throughout the user's experience with the artefact, his/her mouse movement is reflected onscreen through a cursor. This is a white arrow, as standard for most applications, so is immediately understood as being controlled by the user.

The arrangement of red dots follows the cursor. As a consequence, the cursor is always located within the centre of this arrangement. The constant proximity of the cursor to the red dots ensures that the user immediately recognises that the dots are responding to his/her movement. Were the cursor located elsewhere, the user would not find the interaction so intuitive.

Also due to the fact that the arrangement of red dots appears to follow the cursor, mimicking its movement, the *factor of similarity* applies. This similarity between the motion of the mouse and the motion of the dots ensures that the two are perceived as being related. In addition to this, the movement of the group of blue dots is similar (though not identical[5]) to that of the red dots, ensuring that the user perceives this secondary movement as also being (perhaps indirectly) associated with his/her own actions. These similarities ensure that the user becomes and remains aware that the artefact is responsive to his/her actions, not engaged in an independent, pre-programmed performance.

Barbara Brownie, 2007
University of Hertfordshire
www.fluidtype.org

[5] The movement of the blue dots is a mirror image of that of the red dots.