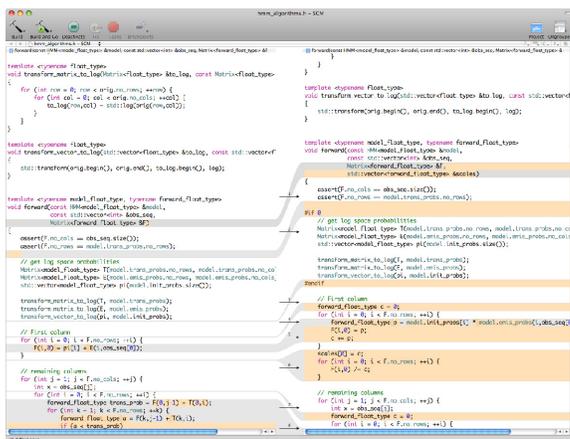




1 Perceptual Organization; Visual Salience

2 Many visual interfaces take advantage of low-level mechanisms in the visual system to ensure
3 fast, accurate, and effortless interaction. One of the most important of these mechanisms is
4 pattern perception, effectively described by the Gestalt principles[6]. In this essay I will
5 demonstrate how the Gestalt principles are leveraged by three visual interfaces: Apple's XCode
6 interface, AJI's iAnnotate interface, and ASCII art.

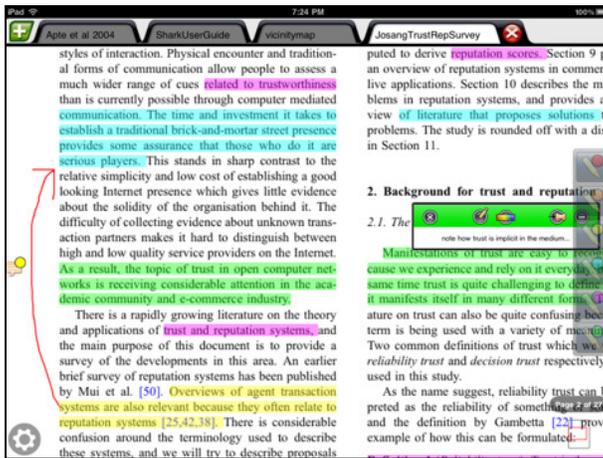
7 The first design example is Apple's XCode programming language, in particular the "Compare
8 With" interface[1] shown in Figure 1. This well-designed interface uses nearly all of the Gestalt
9 laws, but of special interest is how it uses connectedness, continuity, and closure to facilitate the
10 complex task of comparing two versions of the same code. *Closure* is used by altering the
11 background color of code which has been changed. These highlights are then *connected* with a
12 *continuous* path between the two versions, effectively grouping them for a user. The relationship
13 would not be visualized as easily using unconnected or discontinuous paths[6]. *Closure* is also
14 used to delineate the two versions of the file with a frame around each column while *common*
15 *fate* shows the relationship between files as both versions are scrolled vertically with a single
16 control on the right. *Similarity* is used to identify different types of syntax by color and show the
17 hierarchal relationship of "for" loops with alignment.



18
19 **Figure 1: Interface for Apple's XCode "Compare With"**

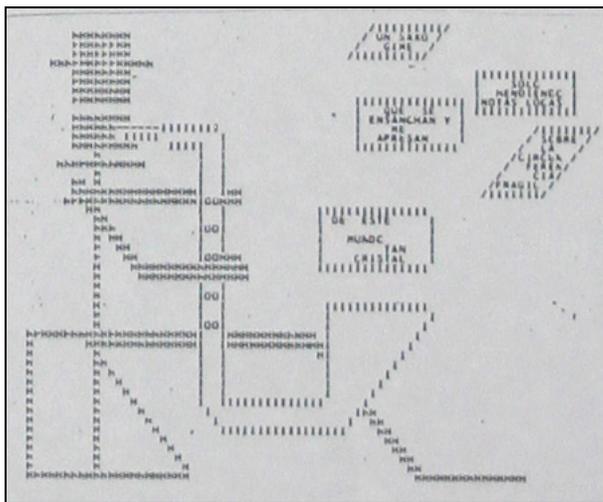
20 A second example is AJI's iAnnotate user interface for the Apple iPad[1]. This faces the
21 challenge of displaying many layers of information simultaneously on a small screen. The
22 transparent toolbar on the right allows a user to interact simultaneously with both the tool and the
23 underlying text[4]. The toolbar is perceived as separate from the text due to lack of *similarity*
24 between the graphics and the text, as well as the grey background that *encloses* it. *Common fate*
25 also kicks in when the toolbar does not move with the text. The tabs along the top are grouped
26 due to *proximity*, while the icons in the bottom right and left clearly perform unrelated functions
27 by the same principle. The overall screen is well balanced. The interface not only uses Gestalt
28 principles, but it also enables them. In Figure 2, a user has highlighted related concepts with the

29 same pink color in an (un)conscious use of the Gestalt *similarity* principle, and has used
30 *connectivity* to highlight a relationship with an arrow.



31
32 **Figure 2: Interface for AJI’s “iAnnotate”**

33 The final example shows how pattern recognitions allow us to perceive a man playing a
34 saxophone in the 1975 ASCII art [2] of Figure 3. *Proximity* and *similarity* allow us to
35 differentiate the man from the saxophone, stool, and other objects, as he is constructed from
36 identical symbols with equal spacing. Even though all of the symbols are separated by white
37 space, the Gestalt principle of *continuity* fills in the object for us. The saxophone is perceived as
38 a separate object, defined by its own proximity, similarity, continuity. *Closure* indicates to us
39 that the saxophone is a single object which is obstructing the man’s legs, but is in turn obstructed
40 by the fingers.



41
42 **Figure 3: ASCII Art**

43 This essay has presented the role of pattern perception in three examples of visual design.
44 Understanding and applying the Gestalt principles of similarity, closure, continuity,
45 connectedness, proximity, and common fate will give us tools to create effective, fast, and
46 effortless visual interfaces.



47 **References:**

- 48 [1] AJI (2011). *iAnnotate*, <http://www.ajidev.com/iannotate/>
- 49 [2] Arambilet (1975). *Pioneering ASCII ART*, Arts and Cybernetics Feb 1978
- 50 [3] Chang et al (2001). *Gestalt Theory in Visual Screen Design – A New Look at an Old Subject*
- 51 [4] Kamba et al (1996). *Using Small Screen Space More Effectively*
- 52 [5] Thomas Mailund (2009). *Cool Diff Display*,
- 53 <http://www.mailund.dk/index.php/2009/04/13/cool-diff-display/>
- 54 [6] Ware (2004). *Information Visualization (2nd Edition)*, Elsevier Inc