

On the impossibility of avoiding aesthetics in human-computer interaction

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The simple, really almost trivial, argument of the presentation at the seminar in Dagstuhl can be summarized in the following four statements.

- Human-computer interaction (HCI) is a human action making use of computers.
- This human action involves operations carried out by the computer. They appear to us as if the computer was also active (which in a way, it is).
- The human and the computer are constantly taking turns in their action and operation and, therefore, we call this entire happening „interaction“.
- Interactive use of the computer by necessity requires sensory perception and, consequentially, interpretation. Therefore, aesthetics must play an important role. This is so if we consider aesthetics as the study of sensory perception and understanding.

„Making use of a computer“ really means, using software as if it was a machine.

Nothing in the world, left alone without any human intervention, is true nor good nor beautiful. It is only through human judgment that layers of truth or goodness or beauty are generated. This may happen by three kinds of judgments: the logic, the ethic, and the aesthetic kind of judgment. So aesthetics is, first of all, a way of making judgments. In so far, it is relational. It is not so much about features and properties of things, but rather puts the human into a certain relation with the object under consideration.

The aesthetic judgment discriminates at the sensory level but it possesses an innate tendency of going beyond the sensory domain (if it could really be separated and considered in splendid isolation). So in the aesthetic judgment, we have discrimination and valuation. Valuation is definitely different from evaluation: it is about qualities, whereas evaluation should usually result in quantity and, in fact, much research aims at this.

The subject matter of aesthetics before valuation thus appears as human sensory perception. Since perception creates signs as representers of the objects and processes studied, we enter the field of semiotics. Perception becomes a component of semiosis, i.e. the start into a sign process. Sign processes are processes of interpretation and re-interpretation, essentially without end. Visual aesthetics has its subject matter reduced to the visual sensory mode.

Until recently, *usability* was of great concern within the HCI community. It is not possible to seriously compare aesthetics to usability unless we destroy aesthetics to a sort of instrument. It may, however be justified to identify a few features of usability vs. aesthetics. To usability, the computer is like a tool; only in an environment of work activity does usability make sense; here we have tasks and immediate purposes and, therefore, prediction and measure; in general, usability is a matter of practical reason.

To aesthetics, the computer is like a medium; it becomes important in game activities; decision making and values are guiding principles; and aesthetics is a matter of contemplative reason.

As a general concept, I want to remind of software objects as *algorithmic signs*. These are signs

that allow for, and require two interpretants: the intentional and the causal interpretant. Algorithmic signs are perceivable (by us) and computable (by the computer). They connect the aesthetic with the algorithmic domain. They have, metaphorically speaking, a *surface* (our view) and a *subface* (the computer's view).

As a radically agnostic position, I view the world as the world and nothing else. It is the whole that some call „god“. We can have it in parts only. From a particular (sic!) perspective, the aesthetic perspective, e.g., the world appears as aesthetic signs, aesthetic processes, and aesthetic judgments. Since the aesthetic perspective is the perspective of perception, HCI has no choice but turn to aesthetics in its attempt to better understand certain processes.

HCI, in my view, is the weak coupling of two semiotic processes. One of them is a full-fledged sign process (on behalf of the human, happening on the surface). The other one is reduced to a signal process (on behalf of the computer, happening on the subface). Therefore, the (visual) aesthetics of HCI is the aesthetics of algorithmic signs as they appear in environments or situations of interaction.

Questions of HCI must be tackled from here, i.e. from the dialectics of the new sign class, the algorithmic sign. The designer's operations immediately appear on, and influence, the surface. Through the coupling of the two processes, the computer takes up what the designer does, and carries out the required operations. The result are changes on the subface. They appear visible as changes on the surface, due again to the coupling. In this mediated way, the designer can make use of the algorithmic side of the algorithmic sign.

This new challenge for aesthetics is what HCI is about. It may be the case that my plea for a radical aesthetic turn in HCI is off the main orientation of experimental psychology if it is correct to consider experimental psychology as a kind of normal science (Thomas Kuhn) exploring quantitatively what aesthetics may have to offer. In that case I apologize for an intervention whose basis is design more than analysis.