Abstract

Visual programming environments are now in an exciting stage. The vision is becoming reality: visual programming is in everyday use in more and more places, including my lab. Yet the vision has not lost its force; it is still driving the creators, and astonishingly new ideas continue to emerge. How can the practical experiences of users help to guide the stream of creativity?

HCI folk have slowly learnt that expensive, time-consuming evaluative methodologies are not taken up by creators, for very good reasons. Nor are detailed cognitive analyses and models, however well researched. I propose something different, a framework of user-centered discussion tools.

We all have concepts that are vaguely known but unformulated. Discussion tools are elucidations of such concepts. If they resonate with your experience, they can promote a higher level of discourse amongst you, the designers and creators. They can create goals and aspirations, promote the reuse of good ideas in new contexts, and provide a basis for informed critique. Standard examples can become common currency and best of all, once concepts are named and exposed, their interrelationships can be appreciated.

Many such frameworks have been proposed in the field of software design, but most of them are technology centered, such as the ‘design patterns’ now much spoken of in the OO world. But the framework I propose is centered on usability and cognition. I call it the cognitive dimensions framework, a still-unfinalised set of about a dozen terms such as ‘viscosity’, ‘premature commitment’, ‘abstraction level’, ‘closeness of mapping’. I shall explain some of these and illustrate them with reference to some existing visual systems, and show how attempts to improve matters on one dimension can affect other dimensions.

Although the framework is still unfinished, the terms have begun to prove themselves as discussion tools. I shall finish with a mention of some other developments taking place, in which benchmarks have been suggested for practical application of these ideas, formalisations have been proposed, and their effectiveness at the teaching level has been investigated.