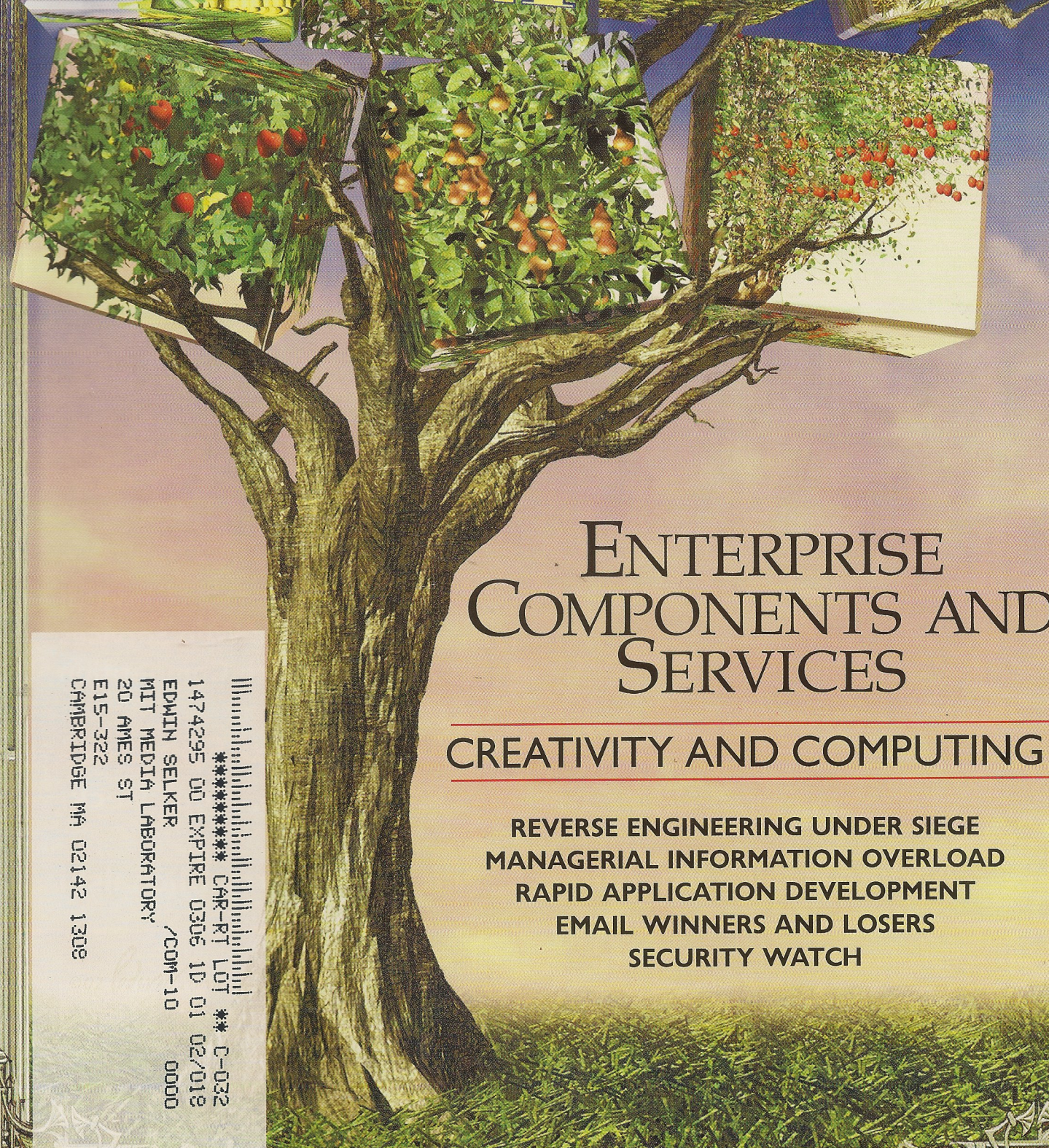


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# COMMUNITY CATIONS

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## ENTERPRISE COMPONENTS AND SERVICES

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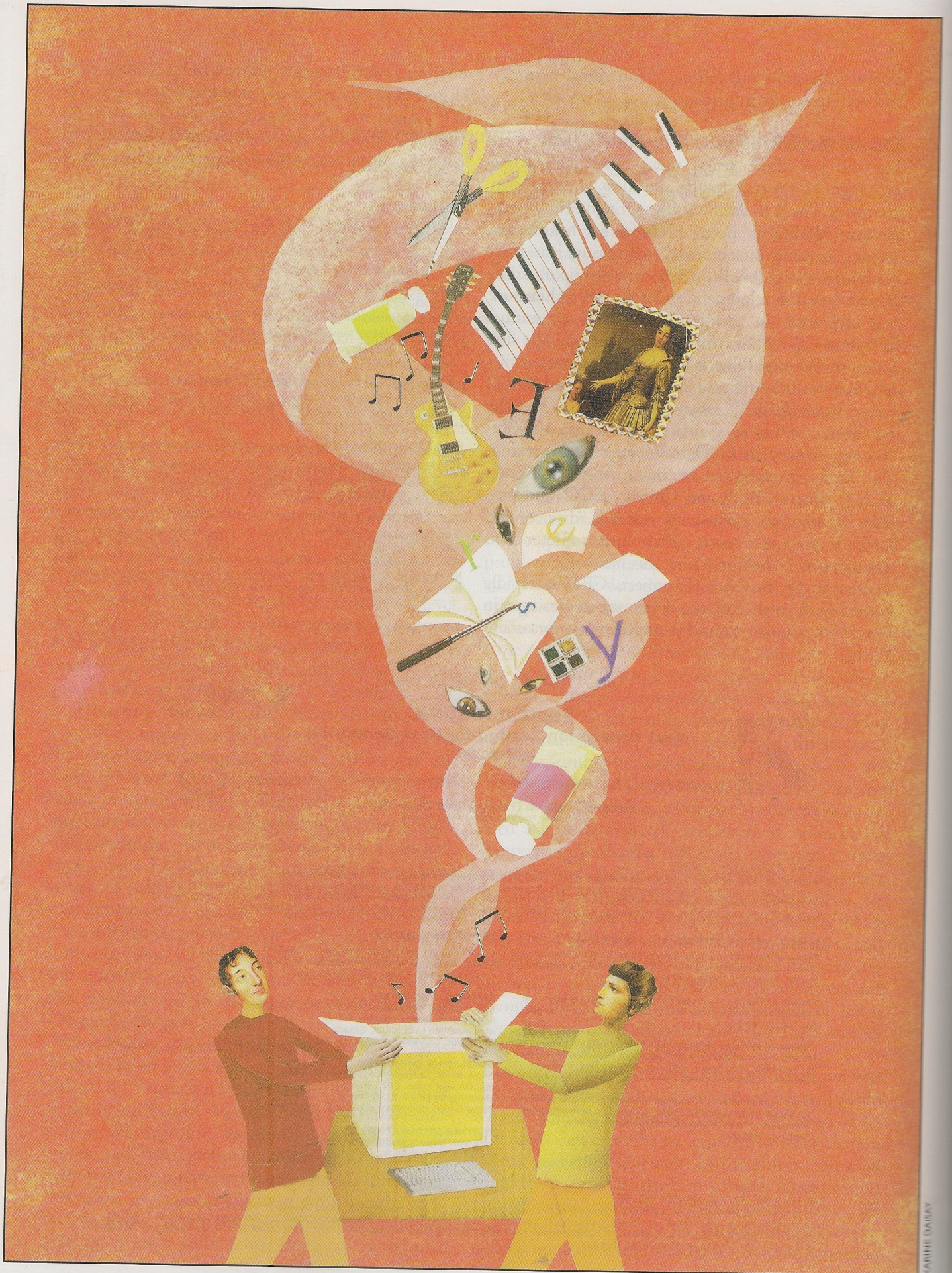
### CREATIVITY AND COMPUTING

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KARIM DAJANI



→ *By Winslow Burleson and Ted Selker, Guest Editors*

# Creativity and Interface

MANY SIGNIFICANT ADVANCES IN RESEARCH ON HUMAN creativity have occurred, yet today's tools often contain interface elements that stymie creative efforts. A discontinuity exists between technology tools and our ability to interact with them in natural, beneficial, and, most importantly for this discussion, creative ways. Some computer scientists and human-computer interaction specialists are finding compelling opportunities to apply creativity research findings to new interfaces [3]. The articles in this section present insights, struggles, and perspectives gained through developing interfaces and technologies to support human creativity. The authors are not experts in creativity but experts in human-computer interaction motivated to bridge the gap between current approaches to computer usability and creativity techniques.

Although the definition of creativity is often debated there is some consensus it deals with a process that results in a novel and useful product. Amabile developed the componential model of creativity, stating individuals possess domain-relevant knowledge, creative skill, and intrinsic motivation that interacts with a fourth element, the external social environment, to form a confluence that contributes to creativity [1]. Csikszentmihalyi, in his systems approach, describes an individual operating within a domain, presenting work to the gatekeepers of the domain, who in turn judge the work for acceptance to the domain as a creative contribution [2].

Interface is the element between the technology and the person, sometimes it is the keyboard and pointer, or the GUI, the sound, the dynamics of interaction, and more recently, context awareness. The interface is an opportunity for user interaction with task-relevant knowledge, skill utilization, and motivation; each have an impact on creativity. At the very least human computer interaction can be enhanced by reducing inhibitors to creativity.

The common themes of the articles in this section include exploration, parallel experimentation, generative ideation, media and content pliability, iteration, support for creative mistakes and insights, and process assistance. Ernest Edmonds, John Thomas, and Ben Shneiderman present overview theories, ingredients, and heuristics for developing interfaces, drawn from experience, experimentation, and case studies. Lena Mamykina, Sharon Greene, Michael Terry, and Chris Roast present specific tools they have developed, or experiences they have engaged in, depicting an active how-to approach to facilitating creativity through design. A unifying element among the articles, also supported by most literature on the topic, is that motivation is a key contributor to creativity.

The first two articles in this section start from a theoretical position. Ernest Edmonds and Linda Candy argue that the constraints of technology have a positive set-breaking effect and we must balance the interface of constraint, control, and freedom. This balance can be achieved through the support of a mix of top-down and bottom-up strategies and by devising access to knowledge necessary for creative leaps. Next, Lena Mamykina joins Edmonds and Candy to address social aspects of trust and collaboration and its contribution to social facilitation, belief, and intrinsic motivation.

This is followed by an emerging set of creativity heuristics based on experiences creating compelling and entertaining interfaces. Sharon Greene is developing learning tools focused on domain-specific experiences through kiosks in public spaces. These are applications for exploration and experimentation featuring user control, flexibility, and engaging content.

The next article is a particular example showing that specific simple techniques might be all that are needed to enhance creativity. Michael Terry and Elizabeth Mynatt developed Side-Views, a user interface



mechanism offering multiple alternative previews of graphics. They describe a system supporting dynamic iterative experimentation and exploration processes.

The following article shows how techniques can enhance the process of examining creative content. Chris Roast and coauthors interface with Early English Tudor Poetry, leading to innovative literary interpretations. The application is motivated by the concept of Active reading, the creative interpretation of variant texts. Issues of integrity and transportability of original textual variations are discussed as they impact generative debate within a social and scholarly community.

The next article's ideas are based more on direct experience and examples of developing interface tools for creativity. John Thomas and coauthors present a strategy for design that employs a valuable suite of tools for motivation, knowledge extension, and pattern languages. Finally, Ben Shneiderman proposes a framework and process for using creativity based on extensive background and study of both creativity and human-computer interaction. He reviews existing contributors to the goal of creativity tools and outlines the iterative Genex Framework (collect, relate, create, donate). Calling for a smooth integration of media manipulation across tools, he proposes corollaries to the familiar cut-copy-paste command

annotate-consult-revise and collect-explore-visualize.

These examples and approaches of coupling interface development and creative strategies are presented here to encourage *Communications* readers to contribute to this emerging field, and to promote the development of software that is sensitive to the creative and motivational impact it has on its users. **C**

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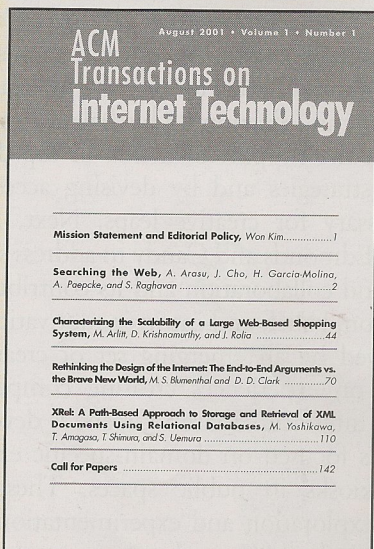
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