Studying complex social practice to improve lives:
Humanistic computing for learning

Louis M. Gomez (Northwestern University) and Roy Pea (Stanford University)

The papers contained in this volume are an outstanding tribute to Jan Hawkins the scholar, the researcher, and the person. Like most special people Jan found many ways to have an impact on those around her. In commenting on the connection of these works and Jan's life we highlight three themes of her guiding ethos. As Jan did, the work in this volume urges us to consider the power of diversity to facilitate our understanding and improvement of the social world, the transformative nature of powerful tools on practice, and the reports described here place in stark relief the propositions that a commitment to improvement should lay at the very foundation of the science and research on teaching and learning. In the following paragraphs we highlight each theme as it occurs in this volume and connect it to Jan's life and work. And Roy reflects on how the settings he shared with Jan Hawkins, at Rockefeller University (1977-1979) and Bank Street College (1981-1986), provided important theoretical and methodological influences on her orientation that we can continue to learn from today.

As we look around today, we see attention to diversity in the early 21st century research and popular culture vacillating between two extremes. One the one hand, people of color, non-native speakers of English, and others who contribute to the full spectrum of life in the United States are treated as though they have some fundamental deficit for which education, teaching and learning or technology can make up. On the other hand, with a polite nod to political correctness, all diversity is said to be "respected" and "valued". In neither case is the genuine power of diversity explored as a lens to help us understand the human condition in general and problems in teaching and learning in particular. In this respect, the papers in this volume are a welcome breath of fresh air. The Linn and Schwartz paper, for example, highlights how a core aspect of cognition, namely reflection, can be much better understood by exploring its practice across cultural contexts. Hammond's paper provides an extraordinary example of an ethnographic study of community action. This paper shows how the simple act of building a house is a powerful act of everyday cognition, and how that cognition revealed helps us understand how culture shapes our existence. Hammond highlights in her work how it is that this act of building a house was an act of cultural commerce that highlighted differences in cultural contributions and served as a bridge between two communities. Like Jan Hawkins, these authors deeply appreciate the potential for understanding in day-to-day cognition, especially when we pay attention to how practice spans, and fails to span, cultural contexts.

The papers in this volume, especially those of Lee and of Schofield and Davidson, recognize the transformative power of technical tools to reshape the social context of learning. These papers fit well in the tradition that Jan Hawkins and others initiated in spurring a shift in our consideration of *understanding tools used in context* (in contrast to a focus on understanding tool use as a deviation from designers' intent). Jan and her colleagues conducted a group of formative studies that were instrumental in creating learner-appropriate activities for the first generation of multimedia curriculum design, published as the PBS series, Voyage of the Mimi. Jan's work helped us see that the issue of *mediation* was a central one. She encourages us to ask: how can the interface and teacher's support help guide a student to productive and engaging learning and work? Schofield and Davidson's report in this volume follows directly in this vein. Their paper encourages us to see how powerful Internet tools help children and teachers forge new styles of interactive relationships with one another.

Jan's insight also helped the field to ask how the flexibility of new technologies can serve to mediate *learner's interpretations* of the representations and functions of tools or curriculum. Carol Lee's paper is well aligned with this vital theme. In her paper, Lee helps us understand that through creative design and principled analysis, new technologies can be structured so that they connect more deeply to the day-to-day experiences in learning for children of color. Collectively, the chapters by Lee and by Schofield and Davidson highlight the issue of designing for flexible adaptation of technologies to meet diverse classroom and cultural needs. Jan would have relished these efforts, as the viewpoint of empowering the users of technologies, rather than privileging the intent of the designers, was always her starting place. She would want to ask hard questions about what "flexibility" means here, and whether the people using the tools perceive the flexibility the designers seek.

Unlike the "technological determinism" that can bring a depressing fatalism to discourse and research on technologies and people, Jan was an optimist about the human condition, and the power of the human spirit to innovate, to connect, to explore and to find new pathways towards a reinvigoration of culture and the future in education. "Can't we make it better?" she would ask. "How can we find new tasks to uncover under-appreciated capabilities of learners?" It is worthwhile highlighting some of the fertile ground that contributed to this orientation. In 1980, Jan Hawkins came to Bank Street College of Education in New York City across from Columbia University to begin her work on educational computing. Her orientation was that of a developmental psychologist prepared in a socio-cultural tradition, when she was working with Joe Glick in the developmental psychology doctoral program at the Graduate Center of the City University of New York. Just prior to this period, she had been regularly immersed in the late '70s in the Laboratory of Comparative Human Cognition (LCHC) at Rockefeller University, where Joe brought his graduate students for the lively culture that was established in those halls off York Avenue when Michael Cole, (the late) Sylvia Scribner, Ray McDermott, William Hall, Lois Hood and others were working on an invigorating landscape of intellectual and empirical issues and dilemmas at the intersection of cognitive, developmental and cross-cultural psychology, cognitive anthropology, and sociolinguistics—as the nexus of mind and society was explored, debated, and new

positions were being defined. This was the era in which Scribner and Cole's *Psychology of Literacy* was being written, when Vygotsky's writings on *Mind in Society* were brought together and translated by Mike Cole and his colleagues, and when the LCHC newsletter was launched. It was an era when many of us were seeking to uncover children's un-recognized capabilities that could be due to the nature of the experimental task, a particular issue across cultures but also in developmental studies of reasoning.

It is essential to understand this heritage of ways of thinking about and exploring problems at the interface of mind, culture, reasoning, development, activity, language and other representational forms to begin to understand Jan and her ways of thinking and working. Of course she brought to her life's work her unique spirit and ways of being that probably attracted her to the CUNY program to begin with, but we can find many ways in which this CUNY-Rockefeller period contributed to her theoretical dispositions, the kinds of questions she asked, and the participants' point of view that she always sought to establish. Understanding the meaning of "the experimental situation" from the participant's view was a key strategy in the cross-cultural studies that Cole, Glick, and Scribner had pioneered in their research and this de-centering and empathetic move was to live at the heart of Jan's intellectual and personal style throughout her career. Jan's acute respect for diversity in values and perspectives as they arise in the contexts of education and computing across contexts, institutions, and cultures reflects this keystone commitment.

Jan brought these views to bear in the struggles we and others had together while tackling the problems of how to think about and study the introduction, uses, and outcomes of computers in elementary school classrooms and teaching practices around Logo programming and, later, many other introductions of computing for learning in the Bank Street School, which is where our collaborative work began in 1981. This was an exotic new context as microcomputers entered the classroom for the first time. Here we had an extraordinarily powerful new symbol system – and children were going to control it with Logo, the programming language coupled with Seymour Papert's influential theory of learning change in *Mindstorms* (1980). How were developmental methods appropriate to uncovering children's thinking about how microcomputers create graphics from Logo programs, or in their social interactions around group work with these machines? What roles were the teachers playing as mediators of a new symbol system for the children, and how did these new activities relate to their own learning and role perceptions within the school and college? How might issues of gender differences in play work out in the "computer classroom"? What could we learn from clinical interviewing, about children's conceptions of microcomputers and programming and what they were good for, and what was interesting or challenging to learn? How was the classroom changing? And how could we make it better for the learners and teachers?

Each in their own way the papers in this volume encourage us all to ask, and to continue to ask, "Can't we make it better?" Jan's work, and the work contained in this volume, reminds us that the most important reason we do what we do is to improve the life chances of people. Toward the end of her life, Jan was a realist about how hard systems are to change. But she was, like the authors in this volume, fundamentally committed to

the proposition that "change, they must." Like Hawkins, the authors in this volume have sought to find new designs to uncover under-appreciated potential in people by careful attention to culture and diversity and rich analysis of social practice, and looking to how the affordances of technologies can enrich this action agenda. Here we find in each of the chapters something unexpected about the transformations of human interactions in the spaces of learning with technologies and other mediators. As we remember Jan we warmly recall that she always sought to be a mediator between different disciplines, between teachers and administrators, and between instructional and technology designers. The authors of these chapters carry on this tradition in their work of building bridges that will improve lives.