

In Defense of Demassification: Empowering Individuals

Gerhard Fischer
Department of Computer Science
and
Institute of Cognitive Science
University of Colorado
Boulder, Colorado 80309

Brown and Duguid raise many interesting issues in their paper, decorated with fancy expressions and examples chosen from somewhat arbitrary domains. They state a number of important global observations — to name a few:

- (1) designers can prompt and support change in a community of practice, but they cannot predetermine it,
- (2) design and use mutually shape one another in iterative, social processes, and
- (3) social problems arising from power relations cannot be resolved by technology alone.

I agree with all these statements, but the critical question is: what do these observations mean and imply for designers and users in their work, for their social consciousness, for their personal involvement, and for their interactions with clients and users?

In this commentary, I will focus on the issue surrounding “*demassification*” as discussed in section 3.2 of the paper. Brown and Duguid articulate valid concerns and arguments about the potentially undesirable consequences of demassification. I would like to defend demassification as an important challenge in our age of uniformity (of fast-food restaurants, hotel chains, global TV-networks, and increasingly uniform software environments). The important issue is not “demassification: yes or no”, but to identify contexts, in which artifacts, tools and environments should be individualized (or have the hooks for individualization) and in which they should be socialized. Design means choosing between trade-offs, rather than obtaining optimal solutions [Simon, 1981].

Empowering Individuals. Illich [Illich, 1973] defined convivial tools as those “*which give each person who uses them the greatest opportunity to enrich the environment with the fruits of his or her vision*”. Because people and tasks are different, especially in design (e.g., Schön [Schön, 1983] describes design problems as “*a universe of one*”, I claim that these visions are unique and idiosyncratic. People become engaged and excited about personally meaningful ideas, they strive for self-expression, and they want to work and learn in a self-directed way [Fischer & Nakakoji, 1992]. Rather than settling on the “*lowest common denominator*” approach and trying to make everyone happy, information technology has the potential to re-individualize and empower people [Norman, 1993].

Bringing Individual, Groups and Organizations Together. In our own research efforts in the HCC group at CU Boulder we have developed conceptual frameworks to empower humans as individuals *and* as members of groups, teams and organizations. We have developed domain-oriented design environments [Fischer, 1992] which empower designers within their own tasks and enhance communication and collaboration between all stakeholders in the design process. Design environments extend construction kits by supporting not just the design of *an* artifact, but the design of a *good* artifact. By being domain-oriented, they support human problem-domain communication, making the computer “invisible” and bringing tasks to the forefront. Design environments (created over time as a joint effort between clients, software designers, domain designers, and users) empower individuals by

- (1) letting them articulate a partial description of their tasks with the help of a specification component,
- (2) support the creation of an artifact with a construction component,
- (3) signal potential breakdowns with a critiquing component,
- (4) support the exploration of argumentation and design rationale,
- (5) provide additional feedback with a simulation component, and
- (6) remind and guide them through the process with a checklist.

These environments support indirect, long-term communication and collaboration between designers (e.g., in the context of large software systems which evolve over many years) who will only be able to interact indirectly through the artifact.

Design environments themselves grow over time by their use through extensions made by individuals. This raises the interesting question which of these individual extensions should be embedded in the generic environment to be accessible by all people using it. There is a price to pay for individualization: environments cannot be shared as easily, and it may require substantial work to establish a common background and a shared understanding.

The issue of using artifacts and at the same time modifying and extending them is closely related to another point of the paper: the relationship between producers and consumers (section 2.2). I strongly believe that a strict separation between these two groups is undesirable and unproductive. One of the biggest potentials of information technology is to give people the option to become producers by changing and enhancing a software system (software after all, as already indicated in its name, should be "soft". I claim that one of the major contributions that information technology can lend to the world is to deeply understand and exploit the potential of the malleable nature of software (providing another example to Brown's and Duguid's observation on "borrowing" and "loaning" in section 1).

Empowering individuals requires that we redefine the roles of "high-tech scribes". Conceptual frameworks and computational environments are needed that will give domain workers more independence from computer specialists. Just as the pen was taken out of the hands of the scribes in the middle ages, the power of the high-tech computer scribes should be redefined. To turn computers into convivial tools requires that people can use, change and enhance their tools and build new ones without having to become professional-level programmers. Convivial tools will contribute to the creation of a climate in which a much broader range of people will wish to become "scribes" so that they can take advantage of computational media.

Making Information Relevant to the Task at Hand. Brown and Duguid point out that "*the limited capacity of a newspaper usefully acts rather like a well-designed fishing net (p. 17).*" Fishing nets of this kind serve an important role in a world, where the scarce resource is not information, but human resources to attend to information [Simon, 1981]. But whose fishing net is it? It is the fishing net of the editors of the newspaper. In reading a newspaper, serendipity and information of global interest on the front page have their value. But there are numerous situations where external representations and information sources should be filtered and tuned for individuals: their goals, their tasks at hand, and their idiosyncratic background knowledge. From this perspective, one of the most challenging aspects of computational environments is to "*say the 'right' thing at the 'right' time in the 'right' way*", i.e., supporting information access and delivery, tailored and demassified to the needs of individuals. Paper and pencil technologies (e.g., books, newspapers, forms, etc.) are in principle unable to provide highly task-specific information, because they cannot access the situational context. Creating conceptual frameworks and instrumental versions of computational artifacts

- (1) which can be adapted, tailored and modified by users and
- (2) which can assess and extract situational contexts in order to act in a more task- and user-specific manner

is one of the big challenges in making information technology more human-centered [Fischer, 1993].

Design as Tradition and Transcendence. While we should try to identify and understand the particular values of conventional newspapers, I think it is wrong to see electronic newspapers as a replacement for them. New artifacts create new possibilities and new genres, in most cases not by replacing older artifacts but by *complementing* them. Books have not eliminated oral

conversations, plays coexist with movies, movie theaters have survived cable television, and hypermedia systems have not replaced printed books. New artifacts can serve as the seeds for new perspectives, new genres and new possibilities [Brown, 1986]. Electronic news systems provide opportunities for individualized information access which transcend conventional newspapers. They should be considered as a *new* genre where the seeds exist and the "culture" surrounding it is developed by its users.

Communities of Practice and Empowered Individuals. Until recently, computational environments have focused on the needs of individual users. As computers were used for more complex tasks by more people, it became apparent that environments supporting groups and organizations were needed (as demonstrated by research efforts in computer-supported cooperative work, institutional memories, interoperability, etc.). However, this perspective does not necessitate the development of environments in which the interests of the group inevitably supersede those of individuals. Individuality makes a difference and organizations get their strength to a large extent from the creativity and engagement of their individuals.

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