
ONE Conceptualizing User Agency

Enter the User

Before heading into my empirical study of home Internet use, let me introduce the main character of this book – the Internet User – and explicate her or his part in the interplay between technology and society. By the user I mean the 'ordinary man'¹ (de Certeau, 1984) and woman who is not involved as a professional (engineer, programmer, designer, etc.) or decision-maker in the industrial, commercial or service sectors developing computer-networking technology.

Analysts have seen this ordinary user as the person for whom technological innovation arrives last, but who nevertheless represents the ultimate target of innovation's products. Paradoxically, the user is a marginal figure to the technological project as a subject, but has a central place in it as an object. Many will recognize her as the 'adopter' of innovation studies. She is identical with Latour's 'simple customer' (1987, p. 137) who receives the technological artefact packaged as a 'black box' and is often actively discouraged from examining its contents. Critical studies of technology typically define her as the powerless victim of technological domination. Finally, but tellingly, she is the proverbial fool of 'foolproof' design.

In contrast with most of these patronizing representations of the user, I will attempt to conceive of her as an active contributor to the shaping of technology. To achieve this, I will have to identify sources of influence available to the user, that is, to discern the 'power of the powerless', if I may borrow a phrase coined by Václav Havel² (Havel and Keane, 1985) in a different context and in relation to a different object. I will turn to several influential schools of thought to look for concepts potentially helpful in my search for user agency. The place to start, I believe, is the social construction of technology approach (SCOT), as its theoretical framework places human agency at the centre of technological development.

The Social Construction of Technology: Insights and Controversies

The theory and research of social constructivists has demonstrated convincingly that new technological systems emerge through a process of negotiation and struggle over meanings and material shapes involving a myriad of social actors (see Bijker and Law, 1992; Hughes, 1987; Latour, 1987; Pinch and Bijker, 1987). The central premise of the SCOT approach, which represents one particular stream within the broader constructivist movement (Bijker, 2001), is that all technological artefacts exhibit 'interpretative flexibility' (Pinch and Bijker, 1987, p. 27). This concept expresses the constructivist belief that there is not just one possible way or one best way to design an artefact. Different 'relevant social groups' can come up with widely divergent meanings of the same technology. This circumstance gives rise to technological controversies: different interpretations, problems and solutions concerning the technical shape of the artefact contend for universal acceptance. In time, certain interpretations achieve wide acceptance, which leads to closure of debate – the interpretative flexibility of the artefact diminishes. The artefact itself 'stabilizes' in terms of shape and function (Bijker, 1995, p. 86; Pinch and Bijker, 1987, p. 44).

Therefore, so the argument goes, technical artefacts represent contingent products of the activities of social actors rather than inevitable consequences of scientific achievements or autonomous technological development. Their established forms have not been the only possible ones. Contingency and human choice rather than forces of technical necessity, such as natural laws, shape the course of technological history. By advancing this conclusion, constructivists contribute to the demystification of the social and political character of allegedly technologically rational choices (see Feenberg, 1993a).

The main tool for deconstructing technical design back to the logic of social interaction, out of which it originally emerged, is the notion of 'relevant social groups' (Pinch and Bijker, 1987). It draws attention to the perceptions, goals and strategies of the social actors participating in the process of selection among numerous technical possibilities. Relevant social groups, by definition, are:

institutions and organizations (such as the military or some specific industrial company), as well as organized or unorganized groups of individuals. The key requirement is that all members of a certain social group share the same set of meanings, attached to a specific artefact. (Pinch and Bijker, 1987, p. 30)

Although this notion offers a useful insight into the historical process through which some enduring technical structures have come into being, it has attracted criticism from various quarters. 'What about groups that have no voice but that nevertheless will be affected by the results of technological change? What about groups that have been suppressed or deliberately excluded? How does one account for potentially important choices that never surface as matters for debate and choice?' Winner has asked (1993, p. 369). For him, the concept of relevant social groups is dangerously pluralist and gives the false impression that all social groups can be equally active and equally influential in making technical decisions.

Another problem critics find with the constructivist theory model of technical change is its inadequate account of structure and agency. Constructivists, in Winner's view, disregard 'the possibility that there may be dynamics evident in technological change beyond those revealed by studying the immediate needs, interests, problems and solutions of specific groups and social actors' (1993, p. 370). The point is that constructivist theory pays no heed to the enduring features of the social system and the deep-seated political biases that can underlie the spectrum of technological choices, or in other words, to the constraining dimensions of social structure. In a similar vein, feminist scholars (see Berg and Lie, 1995; Cockburn, 1992, 1993; Gill and Grint, 1995) have accused constructivism of rendering women invisible and gender irrelevant in the technology-shaping process. By focusing exclusively on networks of social actors immediately involved in the development of a particular technology, constructivist analysis posits women as non-actors because they are, most of the time, empirically absent from research labs and engineering teams. Thus, male domination and patriarchy remain out of the field of vision of the constructivist analyst.

The need to explicate the structural constraints on technical development has been recognized by Bijker in his later work as a key element of the constructivist approach (1993). To this end, Bijker introduces the concept of 'technological frame', 'the cultural system in which an artefact is set, including exemplary artefacts, as well as cultural values, goals, as well as scientific theories, etc.' (1993, p. 123). The technological frame is constructed and sustained by interactions in the relevant social group. 'It provides the goals, and thoughts and tools for action. It is both enabling and constraining' (1993, p. 123). Even after the introduction of this more comprehensive category, however, it remains unexplained whether and how a technological frame, for its part, is grounded in any continuous socio-economic and political conditions of existence of relevant social groups.

The social-interactionist perspective (see Bijker, 1995, p. 191) apparent in these definitions sets limitations on the 'relevant social group' and

'technological frame' concepts. Implicitly, these concepts presuppose direct interactions among the members of relevant social groups as well as among these groups as collective actors. Such a model works well when the historical process of development of a particular artefact is to be captured in its factual detail. It broadens the technical historian's scope compared to the earlier tradition that focused exclusively on the lonely inventor and the research lab. At the same time, this model silently substitutes the interactional for the social. There are social relationships that never get actualized in the interaction process in which a technology is shaped. Nevertheless, such relationships form the cultural horizon delimiting who is considered an actor in a particular situation and who is not, and what it is possible for actors to think, say and do in the process of negotiating and selecting technical solutions.

The interactionist perspective is also responsible for the inadequate representation of the role of users in technology shaping. Consumers and users are obvious candidates for inclusion in a relevant social group, or groups, because the technology or artefact they are using has a meaning for them. At the same time, the fact that this meaning is not necessarily shared among clearly distinguishable aggregations of interacting individuals complicates the picture. The application of Bijker's (1995) conceptual apparatus to grasp the role of users produces confusing results. According to his definition, the technological frame:

structures the interactions among actors of a relevant social group ... technological frames are located between actors, not in actors or above actors. A technological frame is built up when the interaction 'around' an artefact begins. ... If existing interactions move members of an emerging relevant social group in the same direction, a technological frame will build up; if not, there will be no frame, no relevant social group, no future interaction. (p. 123)

Such a constitution of technological frames and, with them, of relevant social groups can easily be seen to crop up within the communities of photo chemists, electro chemists, celluloid chemists and other professionals considered in the empirical case of the invention of Bakelite, out of which Bijker derives his concepts. The opposite is true of users. How exactly a technological frame forms among them is difficult to imagine given that user interactions around an artefact do not always take place, or elude registration. In fact, it is more plausible to suggest that users become enrolled into the technological frames built up by the different participating professional groups in the capacity of either a cognitive element (the image of the user), or as peripheral participants (buyers). For

peripheral participants ('actors with low inclusion') in Bijker's model, the artefact is not particularly flexible; on the contrary, it typically has a 'relatively undifferentiated, monolithic meaning' (1995, p. 284). Consequently, such actors are faced with a 'take it or leave it' choice. 'This is the obduracy of technology that most people know best, and this is what gives rise to technological determinism', Bijker explains (p. 284). So, one may conclude, there is indeed ample room for human agency in the technical sphere, but it is the agency of the 'princes' having the power of knowledge and/or economic, administrative, and political networks and resources. As far as the agency of users is concerned, we come full circle back to obduracy and technological determinism.

Users are hard to perceive as a social group that shares a common technological frame because of their dispersed state of existence, as well as their diverse cognitive and material resources, interests and ideologies. Users inhabit numerous invisible everyday settings. They have no established forums or channels for interaction either with each other or with the designers of the technologies they employ. In contrast, researchers, engineers, managers and government representatives form distinct professional networks. They share cognitive frames of reference acquired in the course of their training and subsequent participation in a community of practice. Their proposals, negotiations and overall involvement in technology formation leave a palpable trail on paper and in technical prototypes. That is why their activities can easily be captured by the interactionist optic, while the activities of consumers or users escape it.

This is not to say that the paradigmatic constructivist studies have ignored users. In his book *Of bicycles, bakelites, and bulbs*, Bijker (1995) diligently traces users' responses to the three technologies whose history he recounts. With Bakelite and bulbs (fluorescent lighting), the picture he presents of the public's involvement is quite sketchy, reconstructed by professional actors or through industrial survey results. In contrast, his captivating tale of bicycles is profusely populated by users. Various categories of them - 'young men of means and nerve', daring aristocratic women, militant moralists and others - take front of stage in the drama of technology construction. The problems they experience, be it with mounting a bike, racing on it or riding it safely across the city and countryside, drive engineers and mechanics to fabricate alternative versions of the machine. Gradually, the (irrational?) resistance of traditionalists and sceptics is slowly but surely overwhelmed. Technologists build the bicycle and users inevitably come flocking. What remains unexplained is why all these people are so eager to jump onto the jerky contrivance, even running the considerable risk of tumbling down head-over-heels, bruising their legs

and sometimes worse. Where does the user's fascination with the technology come from? Failing to consider the process from the standpoint, or rather different standpoints of users, Bijker's account presents users as a standing reserve waiting to be swept along by technical development. In this way, ironically, the myth of technological progress enters his historical narrative through the back door.

The marked difference in the treatment of users demonstrated in Bijker's three case studies suggests that the character of the technologies chosen for investigation can also affect the degree to which users' participation will be considered in constructivist research with its 'follow the actors' (1995, p. 46) maxim. Some technologies are employed exclusively in highly structured organizational contexts (e.g., nuclear missiles, blast furnaces). Typically, their use is strictly regulated by formal and vocational rules of production and exploitation. In contrast, technologies intended for mass consumption (the microwave, the Sony Walkman) penetrate everyday life and enter diverse, less structured settings. A second, though admittedly more problematic, distinction can be made between technologies with a high degree of openness to interpretation (the automobile, the computer) versus technologies allowing for fewer alternatives with regard to function and application (the microscope, the vacuum cleaner). On the one hand, it is logical to suppose that technologies employed in formally organized settings and those relatively low in openness are less conducive to user involvement and hence user-oriented research. On the other hand, technologies that penetrate everyday life and invite diverse interpretations more often become an object of user creativity. The Internet is a paradigmatic case of an open and ubiquitous technology. It calls for a broadening of the research scope beyond the traditional innovation agencies, the examination of which would have satisfied our curiosity in the case of a more rigid and specialized technology.

To sum up, two main deficiencies of the constructivist approach prevent it from becoming the sole framework for conceptualizing user agency in the case of the Internet. The first shortcoming lies in its lack of sensitivity to the power and resource differentials among relevant social groups and its consequent inability to problematize the macro-dimensions of technological change. The second problem lies in the fact that the interactionist lens misses the forms of involvement in technology construction characteristic of less organized and less culturally uniform groups such as users. In order to overcome these limitations, the helpful concepts proposed by social constructivists need to be incorporated into a different analytical framework – one equipped to both appreciate and transcend the level of immediate interaction among actors.

Critical Theory of Technology

Another perspective on the problem of human agency in the technological sphere that builds on the main insights of social constructivism, but points a way beyond its recognized limitations, is the critical theory of technology proposed by Feenberg (1991). Over the years, Feenberg's theory evolved into an approach that can be characterized as *critical constructivism* (Feenberg, 1995, 1999). The most intriguing quality of this approach is that it upholds the non-determinist and non-essentialist tenets of the constructivist project while addressing head-on questions of agency and structure, inequality and domination. Furthermore, Feenberg's theory has a clear political agenda. It sets itself the task of conceiving ways in which the process of technological development can be made more inclusive and permeable to democratic values.

Critical theory of technology rests on the basic premise, shared with social constructivism, that natural laws and purely technical principles by themselves do not determine the shape of technology. Social forces drive technological development right down to the level of concrete design choices. Feenberg (1991) makes this claim the focal point of his examination of the character of technological rationality. Notably, the social forces he has in mind are much less contingent and transient than Pinch and Bijker's (1987) relevant social groups. Not fleeting technological frames, but the long-term interests and priorities of dominant social agents live, according to Feenberg, under the allegedly neutral surface of technological rationality. This makes technology one of the instruments that insure the systematic domination of certain social groups over others.

Modern forms of domination, Feenberg (1991) argues, are based on a variety of social activities including those that are technologically mediated. Hence, the democratization of society requires radical technical as well as political change. The main task of a critical theory of technology is to explain how modern technology can be redesigned to adapt to the needs of a freer society. Thus, envisaging non-traditional agencies and discovering new possibilities for wider involvement in the social shaping of technology becomes an integral part of the project of social democratization.

Feenberg draws on Marx, Marcuse and Foucault to challenge the purported neutrality of technical rationality. Technological progress, he maintains, may indeed achieve advances of general utility such as ease, convenience and speed, but the concrete form in which these advances are realized is determined by the social power under which they are made, and serves the interests of that power (see 1991, pp. 34–35). Technology, therefore, is not neutral. As far as particular interests have shaped it, it

carries a class bias and helps to entrench capitalist power. It does not follow, however, that critical theory denounces technology and suggests irrationalism as an alternative to technical rationality. The thinkers in this school sought to discover alternative forms of rationality which could oppose the dominant oppressive form. Marcuse saw the possibility of a qualitative change in society in the reconstruction of its technical base, with a view to achieving different ends (1964, p. 232). Foucault (1980), for his part, maintained that the imposition of a particular form of rationality gives rise to a multitude of 'subjugated knowledges' (quoted in Feenberg, 1991, p. 77), which could become the basis for challenging and changing the dominant order. In Marcuse's and Foucault's notions of alternative rationalities lie the roots of Feenberg's own concept of 'subversive rationalization' (1991, p. 92), later re-defined as 'democratic rationalization' (1999, p. 76), one of the main pillars of his critical constructivism.

Constructivism in the sociology of science and technology informs Feenberg's (1991) theory by providing numerous concrete examples demonstrating the flexibility of new technical designs and the extent to which their final shape is determined by the cultural logic of particular human actors. The design problems and solutions championed by different relevant social groups represent instances of alternative rationalizations contending for materialization in the new technical device. The struggle among these rationalizations, and not a neutral technical criterion, determines the final outcome. Yet the end result of this contest is not completely open to contingency, as the constructivist model may suggest. It is delimited by the hegemonic technical code at any given historical moment. The technical code is the widely accepted set of technical principles and procedures guiding the creation of technical objects, which is congruent with the interests of the dominant social forces.³ The technical code translates the values of a dominant order into technical terms. Thus it delineates the moral and cognitive horizon under which technical choices are conceived and made (see Feenberg, 1991, pp. 78–83). By introducing the notion of the hegemonic technical code, Feenberg effectively draws boundaries around the 'interpretative flexibility' of any given artefact socially constructed at a given time. He also marshals the varied meanings generated by relevant social groups into a more or less clear-cut hierarchy. Some of these meanings happen to be more in line with the dominant technical code, thus they appear more rational, and are more likely to become part of the winning definition of an emergent artefact.

Feenberg, unlike other critical analysts of technological development (e.g. Robins and Webster, 1999; Winston, 1998⁴) does not see this as

the whole story. Following Foucault, Feenberg recognizes the perpetual resistance to dominant rationality that goes on in the numerous micro-scenes where modern individuals come in contact with technological systems. At such points, diverse technical micropolitical practices challenging the dominant technical code emerge: 'Technical micropolitics involves forms of concrete political protest that aim to transform particular technologies through pressure from the grassroots activities of users, clients, victims' (Feenberg, 1995, p. 37). That is how contingency enters the picture once again and the possibility for constructivist involvement in technological shaping on the part of non-traditional actors is opened up.

Thus in Feenberg's critical constructivist model, technology exhibits a fundamental ambivalence summarized in two principles: the principle of conservation of hierarchy, and the principle of subversive (or democratic) rationalization. The principle of conservation of hierarchy is realized through the 'operational autonomy' of the powerful,⁵ that is, through their capacity to make technical choices that reinforce their dominant position and guarantee them technical initiative in the future. The hegemonic technical code serves to make these choices seem natural and indisputable. The principle of 'democratic rationalization', on the other hand, holds that new technology can often be used to destabilize or circumvent the existing social hierarchy, or to force it to respond to needs it has ignored (see Feenberg, 1999, p. 76).

It follows that the basis for alternatives to technocratic domination need not be sought in any non-technological realm and its technologically innocent inhabitants. These alternatives are generated by the practices of questioning the technical choices made by the powerful, and pushing for solutions that correspond to alternative value systems and a broader spectrum of needs. The capacity for democratic rationalization lies in the hands of individuals who inhabit a technical system. Such individuals are 'immediately engaged in technically-mediated activities and able to actualize ambivalent potentialities previously suppressed by the prevailing technological rationality' (Feenberg, 1996, p. 45).

There are different ways in which the dominant technological system may react to alternative rationalizations originating from the margins. In some instances these initiatives may be reincorporated into strategies that restructure domination at a higher level. On other occasions, they may affect the system in ways that weaken the grip of the dominant rationality (see Feenberg, 1996, p. 48). Playing on Marx's 'expropriation of the expropriators', I will call the first type of response to the practices and definitions developed at the margins, 'appropriation of the appropriators'. This response represents an adaptive and exploitative strategy employed

by the powerful in order to appropriate the fruits of the creativity at the margins and dissolve the tensions that threaten to undermine the system's hierarchical order. An example of this approach can be found in the successful co-optation by corporate enterprise of ideas generated by the alternative technology movement in the 1970s (see Slack, 1984). We are witnessing many similar attempts on the terrain of the Internet – for example, the appropriation of the practice of virtual community-building initiated by users for the purposes of product marketing and customer loyalty (see Werry, 1999).

Reincorporations of marginal rationality that weaken domination remain the hope for democratizing technology. When, how and why do such reincorporations occur? Feenberg (1999) points to three mechanisms constituting contemporary 'technical micropolitics': technological controversy, innovative dialogue and creative appropriation (pp. 120–129). Technological controversies draw attention to violations of the rights and health of those affected by a technological enterprise. The resulting public pressure calls forth new technical solutions, which take into account the demands of the victims. Innovative dialogue brings together the lay person and the expert, and initiates a process of continuous revision of technology in which technological design incorporates different values and comes to reflect a broader range of interests. An exemplary practice is participatory design.⁶ With creative appropriation, new dimensions of a technology are opened up and widely recognized, thanks to the spontaneous inventiveness of its users. Such was the case when computer networks were turned into media for human communication, as opposed to their original, rationally envisaged function restricted to exchange of files and resources by military researchers (Leinier et al., 1997).

Feenberg's (1991, 1999) theory firmly links democratic rationalizations to technology use and to the variety of human contexts in which a working technology becomes implicated:

ordinary people are constantly involved in technical activity, the more so as technology advances. It is true that they may be objects rather than subjects of the technologies that affect them, but in any case their closeness offers them a unique vantage point. Situated knowledges arising from that vantage point can become the basis for public interventions even in a mature technological system. (1999, p. 90)

Dominant rationality under the conditions of capitalism is organized around a value system grounded in the principles of capitalist production. Maximization of profit disguised as 'efficiency' takes the leading position in this value system. Consequently, technological objects are furnished

with features that support and reinforce this normative orientation. Other features corresponding to values characterizing different contexts of existence are either eliminated or suppressed in capitalist technological design. However, when a technology is put into practice, it re-enters actual living systems of relationships and must be integrated with the natural, technical and social settings in which it is supposed to work. This opens the way for other social interests and values to re-define the features of any technology from the perspective of an alternative, locally grounded rationality.

The concept of affordances used in studies of technological design can serve as an appropriate illustration of this idea. The concept refers to what a technical environment offers relative to the person or group perceiving or recognizing that quality of the environment (Gibson, 1979, p. 127). This suggests that people and groups situated in different activity contexts may be able to recognize different affordances in a technical system or device. Thus the employment of technologies in particular local projects by particular actors could bring to the fore new, sometimes unforeseen, potentialities of this technology.

To sum up, the simple customers or ordinary users whose agency I am trying to conceptualize are significant players in Feenberg's scheme by virtue of their contact with and participation in technological systems. These systems can never exhaustively define the conditions of existence of the subjects involved with them. People generate interpretations and applications that often diverge from the ones originally envisioned by designers. These are not irrational modifications as the dominant ideology may see them. Rather, they reflect a practice of rationalization rooted in alternative sets of values and interests. On this basis, users, clients and victims of technological systems engage in technological controversies, innovative dialogues and creative appropriations directed towards reforming technology with more humane and democratic aims in mind. Note that these are not practices of negation, of avoiding engagement with technology, but practices that attempt to draw on unaccentuated or dormant technological potentialities in order to address the needs ignored by mainstream technological development.

British cultural theorist Raymond Williams was an early predecessor of the critical constructivist approach to technology in the area of communication studies. In his book, *Television: technology and cultural form*, Williams (1974) discusses in detail the social shaping of the paradigmatic communication technology of his time – television. Williams is aware of the inherited inequalities in terms of power and resources available to the social actors involved in the process. At the same time, he leaves open the possibility of alternative uses initiated by subordinate social groups. Williams

maintains 'Technology opens new dimensions for those perceived as objects, public, market; ... they are exposed to certain uncontrollable opportunities' (1974, p. 74). The viability of these alternative uses and cultural forms is decided in continually renewable social action and struggle.

An important distinction Williams (1974) makes in his discussion of television's social history is the one between a communication technology, and its institutions and cultural forms. While this distinction escapes accounts originating from the sociology of technology and much philosophy of technology, it is very useful for the analysis of communication technologies because it underlines their social complexity. It also points to more levels of variability, which means more arenas of struggle and possible change.

Giving this distinction a contemporary reading, 'social institutions' can be taken to signify the structures of rules, resources and recurrent practices (see Giddens, 1984) surrounding technologies that have acquired an enduring presence in society. 'Cultural form' refers not only to the new genres of television content, but also to the new forms of television viewing. These two related aspects of the notion of cultural form characterize the production-consumption relation. In this sense, television cartoons produced to entertain children represent a cultural form, but so does the domestic practice of using television for babysitting. Computer games constitute a cultural form anchored in computer technology, and so does the computer-game talk practised by schoolboys (see Haddon, 1991). Thus, Williams's formulation makes user activity visible at the level of cultural form. At the level of the institution, user activity manifests itself in regulative controversies and user interventions in political processes related to media's operation in society. The events taking place in these additional arenas of user activity – institution and cultural form – reflect back on the technical problems and solutions that experts perceive and tackle.

Semiotic Approaches: Technology-as-Text

It will be noticed that Feenberg has taken the idea of interpretative flexibility of artefacts into deep political waters. He has turned it into the keystone of a project of technology democratization driven by the inventiveness and techno-political action of users. In this section, I will track a different line of argument anchored in the concept of 'interpretative flexibility'. In this case, the goal is to understand the relationships between producers and users of technologies by examining the emergence, meeting, clash and negotiation of meanings. To make the most of the semiotic

potential of the concept, this approach extends it into the metaphor of 'technology as text', or more concretely, 'the machine as text'.

The machine text, Grint and Woolgar argue, 'is organized in such a way that its "purpose" is available as a reading to the user' (1997, p. 73). That said, the model of text-authoring and text-interpretation can be taken as a guide in the examination of technology design and use. Following this method, Woolgar (1991, 1996) identifies designers' strategies for inscribing certain 'preferred readings' into technological artefacts. Designers, he contends, deliberately grant centrality to certain 'characters' or components of the machine text and relegate others to marginal positions; for example, through the conspicuous or inconspicuous placement of buttons and icons. By the same token, the reader/user is invited to identify herself with certain groups and their respective practices and to dissociate herself from others. In textual examples this can take the form of expressions suggesting various degrees of affiliation or distancing between author and reader, such as the royal 'we' or the alienating 'some people believe ...'. In designing artefacts, analogous techniques include the sorting of menu items under the category 'advanced' or marking particular parts and functions of a machine as off-limits or dangerous (see Grint and Woolgar, 1997; Woolgar, 1991). Taken together, the application of such techniques constitutes the process that Woolgar dubs 'configuring the user' (1991). The end result is that dominant producer preconceptions of the user become embodied in the machine. In the subsequent stage of technology deployment, the actual users are confronted by the preconceptions of themselves reflected in the design of the machine (see Woolgar, 1996).

The machine as text metaphor serves also to address the general question of agency versus determinism, both technological and social. Does the reading-interpretation-use of an entity such as a text or machine arise from the inherent (or inscribed) characteristics of the entity itself, or does it derive from the circumstances of its reception and use? (see Grint and Woolgar, 1997, pp. 68-69.) The answer to this question hinges on the reaction of users to the 'configured' version of themselves. Will they accept and follow through with the preferred readings of the machine text imposed by producers? Woolgar admits that while the reader/user is not absolutely forced to act in a particular way, non-preferred readings or uses are more costly, that is, they require more effort and resources than the preferred ones. At the same time, to claim that readers/users will immediately recognize and enact the preferred reading/use of technology amounts to replacing one form of determinism (technological) with another (social). Despite the existence of a preferred reading/use, there remains an 'irremediable ambiguity' about what the technology is and can do.

Woolgar leaves us with the insight that both the process of construing preferred readings of technologies and that of performing actual readings/uses are imbued with contingency and ambiguity. His handling of the technology-as-text metaphor succeeds in dispelling technological essentialism by demonstrating the work of human agency on the production side of technical development, namely in bestowing machines with selected characteristics and preferred readings. Users are the inextricable obverse side of the 'writing' process. They are present in it from the very beginning as a factor to be predicted and controlled. Users are cast as deciding the ultimate impact, value and success of technologies inasmuch as they conform to, resist or challenge the preferred readings/uses configured by producers. By virtue of all this, user agency figures as an important variable in the technology-as-text formula Woolgar employs to capture the dynamic of technical development. This variable, however, remains cloaked in much more uncertainty and ambiguity when compared to its counterpart – producer agency. While the power of designers, engineers and marketers to configure users is clearly demonstrated in Woolgar's account, user agency is readily proclaimed, but largely unsubstantiated. While it leaves the possibilities open, Woolgar's model falls short of offering any clues as to why users may react in ways different from those prescribed by producers. As I will argue in later chapters, this question can only begin to be answered when the detailed analysis of the process of configuring the user is complemented by an analysis of its dialectical obverse, that is, the process of becoming a user.

Very similar to Woolgar's technology-as-text approach is the method of 'script analysis' proposed by Akrich (1992) and Akrich and Latour (1992). Technology here is seen as one particular and rather categorical type of text – film script. Just as the script determines the plot of a movie, technologies act as determinants of human action. They prescribe the characters of the actors, the space in which they are supposed to act and the concrete actions to be performed. Scripts take shape along the lines sketched by Woolgar in his account of configuring users. Designers inscribe in the technical artefact their own conceptions of users and appropriate uses. When materialized, technologies themselves become actors in the show exerting their influence on human actors. In their 'convenient vocabulary for the semiotics of human and nonhuman assemblies' Akrich and Latour (1992) introduce terms that capture the relationships between human and nonhuman actors: designers, technologies and users. The concepts intended to reflect the agency of users are 'subscription', 'de-inscription' and 'antiprogram' (see Oudshoorn and Pinch, 2003). Subscription and de-inscription are the possible responses of users to the

prescriptions embodied in artefacts. 'Subscription' refers to the acceptance of the preferred readings or courses of action embodied in the technology. 'De-inscription' occurs when users resist and/or try to renegotiate the scenario. An 'antiprogram' is a course of action users themselves want to pursue that appears deviant from the designers' perspective. Accordingly, the 'programs' of action designers inscribe in technologies often attempt to anticipate and block the prospective users' antiprograms (see Latour, 1992). Thus Akrich and Latour's 'convenient vocabulary' starts differentiating the various possible fates that a technology may have at the hands of users. The user agency that this vocabulary recognizes, however, remains largely reactive, that is, delimited in its structure by the designer's agenda. Users may put up a resistance to the script, but they can take no initiative outside it.

A significant breakthrough with regard to the conceptualization of user agency within the technology-as-text paradigm takes place in works associated with the tradition of British Cultural Studies. From their very inception, the studies of mass media audiences carried out by members of the Media Group at Birmingham University's Centre for Contemporary Cultural Studies recognized the power of readers as active decoders of media texts. At the same time, readers were conceptualized as sociologically grounded subjects whose semiotic involvement in a dialogue with the media is shaped by their socioeconomic and cultural position. British Cultural Studies researchers were committed to establishing a careful balance between readers' freedom and media power. They were aware that the range of alternative readings available to audience members was limited by social and ideological forces: 'Polysemy must not ... be confused with pluralism. Connotative codes are not equal among themselves. Any society tends ... to impose its segmentations, its classifications of the cultural and political world upon its members. There remains a dominant cultural order,' Hall (1973, p. 13) insisted. Thus, while there is a clear correspondence between the idea of different decodings of media texts developed by the school of British Cultural Studies, and the social constructivists' notion of interpretative flexibility of artefacts, cultural studies researchers were explicitly oriented towards the structurally produced inequalities between groups of readers.

In empirical reception studies undertaken by Morley (1986) and other members of the Birmingham Media Group, the importance of the contexts in which media content is consumed came to the fore (see Moores, 1993). Researchers focused their attention on the everyday microsettings in which media reception took place, directing their efforts towards understanding the connection between actions performed and meanings

generated within these microsettings and the wider structural formations of society. Projects like these gave birth to a trend of reception ethnography within the cultural studies paradigm. The stated aim of this research was to see things 'from the virtual standpoint of actual audiences' (Ang, 1991, quoted in Moores, 1993, p. 35).

As noted by Mackay and Gillespie (1992), it does not take a great leap of imagination to extend this approach to the consumption of technologies. Rather than media messages, technological artefacts came to be perceived as polysemic texts encoded by designers, developers and advertisers and calling for active decoding on the part of users. Here too, striking a balance between freedom and constraint was believed to be critical to the analysis (see Mackay, 1997, p. 270).

Informed by the cultural studies paradigm, authors have analyzed communication technologies such as radio (Moores, 1993), television (Silverstone, 1994), satellite television (Moores, 1996) and home computers (Haddon, 1992), identifying divergent interpretations generated by users. One of the most elaborate constructs developed in this tradition is the model of domestication of media and communication technologies proposed by Silverstone and his colleagues (Silverstone et al., 1992; Silverstone, 1994; Silverstone and Haddon, 1996.) It is intended to capture the appropriation of new technologies and their adaptation to the spaces and rhythms of everyday settings, most typically the home. The domestication model decisively sets its focus on users and their everyday world. It qualifies as the counterpart of Woolgar's (1991) 'configuration' model in the sense that it examines in depth the strategies employed by users in their efforts to re-define and re-configure domestic technologies to make them fit into the meaningful activities of the household.

Along with its numerous helpful components which will be discussed and drawn upon in more detail in the following chapters, Silverstone et al.'s (1992) model shows a number of limitations as far as the analysis of Internet use is concerned. True to the legacy of British Cultural Studies with their interest in the cycle of production and consumption of media texts, these scholars view the processes that are set into motion after a new technology enters the home as a specific instance of consumption. The kind of consumption they have in mind is indeed active and creative, but it still ties the analysis to a dualism which renders consumption as the opposite of production. This is problematic at two levels. First, portraying the home predominantly as a centre of consumption fails to recognize the changing functions of this unit in a post-industrial society. Increasingly, the home is being charged with productive functions, such as work and education, and most recently, tele-work and tele-education,

activities representing moments of the social process of production in the classical sense. Thus, new communication technology, and the Internet in particular, is often adopted with specific productive applications in mind. It enters the home as a working tool, rather than as a recreational item or a conduit for commodities to be consumed.

Second, the experience of using interactive communication technologies in the home differs substantively from that brought about by broadcasting media. Unlike broadcasting media, interactive communication technologies have demonstrated their potential to serve as tools in a symbolic productive process involving an active exchange between the household and the outside world. This exchange is, in effect, a weaving and sustaining of social networks and meaningful relationships, in which individuals participate as active creators of public value. In the case of the Internet, users often become providers of content not just for a closed group of friends, but also for the public at large, as exemplified by the proliferation of personal websites serving various purposes. De Certeau's (1984, pp. 30-31) charge that the notion of consumption obfuscates the idea of the active and productive role of the user, of the inventiveness with which she draws the commercially offered product into operations of her own, applies to the Internet with a vengeance. That is why I will follow de Certeau's example, choosing to work with the concept of 'use' rather than 'consumption'.

The cycle of consumption, understood in its conventional sense, inevitably reproduces the 'operational autonomy' (Feenberg, 1991) of the economically powerful, that is, their privileged position in choosing the shape of technology most profitable to themselves and imposing it on the rest of society (with minor compromises eventually brought about by marketing studies of consumer preferences). Consumer creativity is taken into consideration only in so far as it maximizes profit. In order to envision potential sources for a democratic transformation of technology, the cycle of consumption should be, at least theoretically, transcended. Users should be perceived in their threefold capacity of consumers, producers and citizens. For that matter, such a view would be in accord with the way people normally see themselves. The use of technology in everyday life involves not only consumption, but also an array of creative activities constituting the reproduction of the social actor with her relationships, knowledge and emotional well-being.

To reiterate, I believe that in order to reveal how users play a role in the formative process of a new communication technology, its pertaining institutions and set of cultural forms, the overarching concept of 'consumption' should be replaced by the more open notion of 'use'. Use subsumes consumption of both technology and content, but it also encompasses a wide

set of significant productive practices that remain invisible from the perspective of the standard production-consumption dualism.

A Pragmatic Approach: Technology-as-Language

At this point, I feel compelled to generalize my objection to all the dualisms reviewed so far that construe use as the subordinate, passive or reactive member of a relationship: that between production and consumption, writing and reading, generation and interpretation, or inscribing and subscribing. To break the repressive bond, I will take the metaphor of 'technology-as-text' one step further. I will propose a conception of the user-technology relation that goes beyond the 'semiotic approaches' as Oudshoorn and Pinch (2003) have characterized the suite of technology-as-text models. I will lay out a *pragmatic approach* to user agency, where technology use is defined as a formative strand of meaningful action in specific contexts. To begin with, I will explore the idea of what it would be like if technology and, in particular, a complex communication system like the Internet, is conceptualized as language. By this I mean that users will not be seen only as readers, interpreting the technical text. They will be construed as speakers performing speech acts in which they appropriate the technical medium to achieve their own objectives.⁷

Like Woolgar (1991), who engages the metaphor of technology-as-text in an experimental way, I am not saying that technology actually *is* language. I would like to explore the potential of the metaphor of technology-as-language for the discussion of user agency in the technological sphere. Are there any insights to be gained by employing this metaphor? How far can it go? In short, what are the advantages and the limits of 'talking in this bizarre way' (see Woolgar, 1991, p. 61)? Let us consider the grounds for drawing an analogy between technology and language.

Despite obvious differences in the nature of their materiality and internal organization, both language and technological systems are culturally established, formal structures of means and rules, or as de Certeau puts it, 'ensembles of possibilities ... and interdictions' (1984, p. 98) that the user actualizes in his or her individual concrete operations. Complex technological systems exhibit the same *double-level agency* as language (see de Certeau, 1984): The forms and functions of the system, invented and established by a knowledge elite or an anonymous cultural producer, become an object of manipulation by practitioners who have not produced them. The practitioner actualizes only some of the possibilities inscribed in the system. She moves them about and invents others – as in new, unexpected figures of speech. Thus, de Certeau observes, 'Charlie Chaplin

multiplies the possibilities of his cane: he does other things with the same thing and he goes beyond the limits that the determinants of the object set on its utilization' (1984, p. 98).

De Certeau insists that the notion of the 'speech act' is applicable in a sphere much broader than that of verbal communication because it suggests a general distinction between 'the *forms used* in a system and the *ways of using* a system' (1984, p. 98). He provides an example of applying the model of language to the analysis of a domain of non-linguistic operations, such as the city maintaining that 'The act of walking is to the urban system what the speech act is to language or to the statements uttered' (p. 97). Following this line of analysis, I propose that *the act of use is to the technological system what the speech act is to language*. For the purposes of my investigation, the distinction between 'forms used' and 'ways of using' can be gainfully applied to the sphere of technological practice. Unlike standard forms, acts of use and the ways of using the system they give substance to are characterized by an 'everyday historicity' (de Certeau, 1984, p. 20). They cannot be dissociated from the existence of the subjects who are their agents and authors. Finally, acts of use, like speech acts are at the same time, both a utilization of the system and an operation performed on it. This circumstance implies that the system, linguistic or technological, may be prone to change originating in the everyday acts of use performed by practitioners.

Technical tools and 'psychological tools'⁸ such as signs and language, have been jointly considered as mediators of all human action and human mental functioning by a school of socio-cultural psychology drawing upon the work of Vygotsky (see Wertsch, 1991, p. 28). The socio-cultural school subsumes language and technology under the notion of 'mediational means' and its equivalent 'cultural tools'. Wertsch (1998) argues that mediational means and human agency are in a constant irreducible tension and jointly shape action. In order to act, individuals have to master and appropriate the mediational means offered by their surrounding environment. The studies of socio-cultural psychologists have drawn on both technological and linguistic examples to demonstrate how the dynamic between agent and mediational means plays out in concrete historical, cultural and institutional contexts (Wertsch, 1991, 1998; Wertsch et al., 1995). Due to the psychological framework in which this school operates, the focus of its interest is on how the use of objects and linguistic or other signs results in changes in the agent and her actions, including her cognitive functioning. The question of how mediational means or cultural tools themselves evolve is given some limited consideration that takes into account the influence of cultural and institutional power and authority. The capacity of the agent to appropriate and resist

cultural tools in concrete contexts of action is also acknowledged, but no effort is made to relate these appropriations back to the evolution of cultural tools. The agent's practical definition of a cultural tool is revealed in the isolated acts of use, but does not necessarily lead to the re-writing of that tool's authoritative dictionary definition.

In the remainder of this chapter, I will mobilize the conceptual resources developed by predecessors of the socio-cultural school such as Voloshinov and Bakhtin⁹ to steer the discussion of user agency with respect to cultural tools beyond resistance and subversion. I will draw on this stock of ideas in my attempt to envisage more dramatic consequences flowing from users' appropriation of linguistic and technical systems. The metaphor of technology-as-language will direct my reading of Voloshinov's work which explicitly addresses the problem of language evolution and relates it closely to the process of everyday speaking or use. My goal in this investigation will come as no surprise: I will be trying to discover how Voloshinov's linguistic insights could shed light on technological evolution and enhance our understanding of user agency.

In his book *Marxism and the philosophy of language*, first published in Russian in 1929, Voloshinov (1929/1986) criticizes the Saussurian approach to language, which he terms 'abstract objectivism', for creating a false dichotomy between language as a system (*langue*) and its implementation (*parole*), or in other words, between statics and dynamics in language. Perceiving language as an abstract system of stable norms dutifully applied by speakers in daily verbal practice is an approach, Voloshinov charges, that fails to account for the multiplicity of meanings carried by the word and the constantly changing and socially conditioned nature of these meanings.

At the same time, Voloshinov objects to the antithesis of Saussurian linguistics – the Humboldtian tradition that postulates the individual psyche as the prime source of linguistic activity. The flaw of this tradition, according to Voloshinov, lies in its 'individual subjectivism' which assumes that the inner world of the speaker has an independent existence and plays the role of the prime mover in language evolution. This view of linguistic activity, Voloshinov argues, is fundamentally untenable, first, because 'there is no such thing as experience outside of embodiment in signs' (1929/1986, p. 85), and second, because the motive force of linguistic expression, does not lie in the individual psyche, but in the social world.

For Voloshinov, 'the actual reality of language-speech is not the abstract system of linguistic forms, not the isolated monological utterance, and not the psycho-physiological act of its implementation, but the social event of verbal interaction implemented in an utterance or utterances' (p. 94).

This event, for its part, is a moment in the continuous process of verbal communication accompanying the all-inclusive social reproduction of a given human collective. Thus it is inextricably interwoven with the 'extraverbal situation' (p. 95) in which it occurs:

Verbal communication can never be understood and explained outside of this connection with a concrete situation ... In its concrete connection with a situation, verbal communication is always accompanied by social acts of a non verbal character (the performance of labor, the symbolic acts of a ritual, a ceremony, etc.) and is often an accessory of these acts. (p. 95)

The connection between verbal performance and its forms on the one hand, and the extraverbal situation – the concrete social conditions in which verbal interaction occurs – on the other, becomes the key to understanding language evolution. Voloshinov analyzes this connection through the concept of 'little behavioural genres'. While innumerable unique situations of social life may elicit a variety of forms of utterances, in any concrete society and culture there exist some typical situations with their corresponding forms of interaction and verbal exchange:

Each situation, fixed and sustained by social custom, commands a particular kind of organization of audience and hence, a particular repertoire of little behavioural genres. The behavioural genre fits everywhere into the channel of social intercourse assigned to it and functions as an ideological reflection of its type, structure, goal and social composition. The behavioural genre is a fact of the social milieu: of holiday, leisure time, and of social contact in the parlor, the workshop, etc. It meshes with that milieu and is delimited and defined by it in all its internal aspects. (Voloshinov, 1929/1986, p. 97)

Specific patterns of verbal forms will comprise the genre of the light casual conversation of the drawing room where everyone feels at home. These structures will be markedly different among a random aggregation of people waiting in line, in a village sewing circle, workers' lunchtime chats, conversations between husband and wife, etc. (see p. 97). In all such instances, specific relations among speakers and the practices in which they jointly participate invoke specific forms of verbal expression. As changing circumstances of social life generate and sustain new situations with their characteristic sets of relations and activities, new genres of verbal communications, new word meanings and new linguistic forms emerge:

Language acquires life and historically evolves precisely here, in concrete verbal communication, and not in the abstract linguistic system of language forms, nor in the individual psyche of speakers. (p. 95 [emphasis mine])

Voloshinov's (1929/1986) model is specifically focused on explaining the process of language change as a sociological process involving countless socially situated speakers, practitioners or users. In Voloshinov's interpretation, language evolution exhibits a dual character. On one hand it is determined by 'the basis' (p. 96) of social life including relations of production with their inherent power inequality. But on the other, it is driven by the verbal activity of variously situated language practitioners. Note that while in de Certeau's (1984) terms the activity of users is expressed in subversions of the system that, for its part, remains by and large the same, in Voloshinov's (1929/1986) model practitioners' actions in the numerous situations of concrete verbal communication results in pressures on the linguistic system leading to its gradual change. This is because Voloshinov understands language not as a reified system, but as a 'generative process of signification' (p. 106) that unfolds in actual situations of use.

How is this analytical model to be employed in the study of technology? What relevance can it have for a system (or systems) whose substantive nature, social function and historical evolution are so different from the system of language?

Applying Voloshinov's (1929/1986) model to technology, the actual reality of technology will be found in the concrete acts of its use and, more precisely, in the social events of technologically mediated interaction between the user and her environment. Such events are not isolated and random but, on the contrary, inseparably embedded in the 'continuous, all-inclusive generative process of a given social collective' (p. 95). This leads us to the connection between technology use and the social situation in which it occurs, or in other words, to the phenomenon of 'little behaviour genres'. The element of little behaviour genres of technology use, *use genres*, would augment a model of technology development with an adequate representation of user agency. This notion allows user agency to be understood not as absolute freedom or voluntaristic whim, but as a product of the specific encounter between technology and typical human projects arising in typical social situations. In such instances, reflexive actors come up with ways of using technology that have the potential to expand its meaning, form and function beyond producer 'scripts'.

It is my contention that such use genres can indeed be observed in all spheres of activity involving technology. In their everyday life, socially situated subjects put technologies into use in the course of their interaction with their environment, both physical and social. With time, social custom and circumstances contribute to the stabilization of certain forms of technology use to some appreciable degree. Thus, diverse practitioners initiate genres of technology use delimited and defined by their

immediate social milieu. The meanings that different social groups assign to a technology emanate from these emergent use genres rather than from dictionary definitions or through abstract reflection.¹⁰ The stabilization of some use genres, and the fading of others, is intertwined with the processes of invention, selection, stabilization and re-consideration of concrete technological forms on the production side of the generative process of technology.

What else can the study of *speech genres* teach the emergent inquiry into technological use genres? In his definitive articulation of speech genre theory, Bakhtin (1986) demonstrates that genre represents a blend between the individual and the typical, between verbal form and extraverbal activity. As he defines it 'Each separate utterance is individual, of course, but each sphere in which language is used develops its own relatively stable types of these utterances. These we may call *speech genres*' (p. 60).

Due to their function of shaping verbal expression in accordance with the dynamic of specific spheres of social life and activity, speech genres are for Bakhtin '*the drive belts from the history of society to the history of language*' (p. 65). This is an echo of Voloshinov's insight that language evolves in the very concrete situations in which it is put to use by speakers. Use genres associated with technologies articulate technological change and social practice in a similar fashion. Certainly, there is much more intentionality, expert involvement and interested agency behind technological developments than linguistic ones. Nevertheless, any new technology originates from existing practices, including use genres anchored in predecessor technologies, and becomes socialized through the medium of newly emergent use genres. Thus, conceptually, the notion of use genre becomes a helpful stepping stone for overcoming the duality between the technical and the social.

Like Voloshinov, Bakhtin insists on the essential connection between genre and situation. Genres, he argues, 'correspond to typical situations of speech communication, typical themes, and, consequently also to particular contacts between the meaning of words and actual concrete reality under certain typical circumstances' (1986, p. 87). Miller (1994) argues that typicality and recurrence should not be understood in a purely objective or subjective sense: 'Situations are social constructs that are the result, not of "perception", but of "definition"', (p. 29). What recurs is not a material configuration of circumstances, participants and events, but social actors' construal of a type of situation which draws on their cultural stock of knowledge. Thus the study of the typical uses of language in speech genres opens a perspective on the character of a culture or a historic period

(see p. 31). Here lies the value of the concept of use genre for the study of the social construction of technology as well. Typical uses of technology, along with the recurrent situations in which they arise, make up the fabric of a society and culture. As in the case of language, agents' definitions of the situation and their choices of technologies and use genres are interconnected. New genres of technology use stem from the specific encounter between the functionality of a technology and the characteristics of typical situations of social life as defined by different categories of actors.

Examining the staggering diversity of speech genres, Bakhtin (1986) notes that some of them are fixed and rather rigid in form and content, while others are flexible and open to modification. In general, however, speech genres are much more elastic and free compared to language forms, that is, forms regulated by grammar. The latter are typically stable and compulsory for the speaker. Speech genres, on the other hand, are adaptable and flexible, allowing much more room for personal preference and creativity. Applied to technology, this observation evokes a parallel distinction between use genres and manipulation rules. The computer interface stipulates a set of operations that the user is bound to perform, if she wants to get her machine to work. These rules are not open to negotiation, they are compulsory and rigid. At the same time, the use genres in which the same machine gets implicated can be quite diverse, depending on the situational configuration and the user's goals. The computer can be used to do accounting, to keep a diary, to maintain databases of technical information, to play games, and so on.

Certainly, speech genres themselves exhibit a substantial degree of normativity. Bakhtin (1986) traces the complex dialectic of agency and compulsion involved in the enactment of speech genres. Each utterance is characterized by the speaker's *speech plan* or *speech will* (p. 77). This plan determines the choice of generic form in which the utterance will be cast. The choice of genre is also determined by the specific nature of the sphere of speech communication, as well as thematic and other considerations, and the concrete communicative situation, including the composition of participants. Once an appropriate generic form is identified, the speaker's speech plan, with all its individuality and subjectivity, is adapted to its requirements. Speech genres are 'given' to the speaker in the inherited verbal experience of the community to which she belongs. They are mobilized by the individual in the pursuit of her own intentions in particular situations:

Our speech, that is, all our utterances (including creative works), is filled with others' words, varying degrees of otherness or varying degrees of 'our-own-ness', varying degrees of awareness and detachment. These words of others carry with them their own expression, their own evaluative tone, which we assimilate, re-work, and re-accentuate. (Bakhtin, 1986, p. 89)

Speakers, Bakhtin observes, do not take their words and expressions out of dictionaries, but rather out of other people's mouths, out of other utterances that are kindred to theirs in genre. Yet words and genres become our own 'only when the speaker populates it with his own intention, his own accent, when he appropriates the word, adapting it to his own semantic and expressive intention' (1981, p. 294). By engaging in this appropriation and adaptation of the word or genre to her particular situation, the speaker expands the verbal experience of the community with new shades of meaning, accents and patterns, and thus contributes to what others will be able to say further down the road.

In a comparable way, users of technology find tools and machines already steeped in earlier uses, charged with the intentions, accents and achievements of previous users. New users, children for example, learn when and how to use everyday utensils in the same fashion that they learn how to speak their native language. New technologies reach ordinary users after some considerable degree of experience in their application has already been accumulated in various quarters of society. Then there are always the 'dictionary definitions', the guides and manuals prepared by the gurus who, like grammarians, understand the inner workings of the technical system. These are the 'authoritative utterances' (Bakhtin, 1986, p. 88) that emanate from the 'masters of thought' (p. 89). They are cited, imitated and followed. Consequently, varying degrees of otherness and our-own-ness fill individual acts of technology use. Each of these acts is an exercise in assimilation, re-working and re-accentuating of previous ways of using with respect to our personal circumstances and agendas. Unsurprisingly, the most meaningful and easily acceptable are the uses kindred to ours in situation and genre. Operating in the tension zone between otherness and our-own-ness, practitioners become involved in two important developments. First, they select, expand and perpetuate use genres corresponding to typical situations, activities and plans. Second, they give technology a new, possibly peculiar, spin or accent that others may assimilate at a later point.

Let me now go back to the technology-as-language metaphor and review the gains from applying it to the analysis of the user-technology relation. Thanks to this metaphor, I was able to focus on technology use as an integral moment of situated action. This action emerged as a complex entity encompassing the agent's definition of the situation, her intent and received cultural means. In it, I was able to distinguish analytically the components of the individual act of technology use, the use genre, and the typical situation, which, for its part, represents an instance of and a link to the broader social and cultural context. By thinking about technology use in this way, it is possible to avoid determinism associated with

the driving force of technology but at the same time stay away from naïve subjectivism attributing unlimited freedom of choice to the agent. Positing users as doers, and not simply as consumers, interpreters, adopters and so on, makes it logical to go on looking for the effects of their action on the tools they select, appropriate and implement. Recognizing the situated character of users' doings opens up a perspective on how the technical, the social and the subjective interpenetrate, delimit, and facilitate each other. The notion of use genre comes to the fore as a focal point in which these different forces meet. It promises help in balancing out the uniqueness and recurrence, the freedom and constraint, the originality and replication that transpire in each individual act of technology use.

Summary

To develop an adequate account of the user-technology relation proved to be a complex task which could not be accomplished solely by drawing on existing approaches. It necessitated a radical re-thinking of the received notion of technology as self-contained physical artefacts, machines, or equipment conceived, designed and produced by experts and expert organizations. To start comprehending the part of users in this relation as active, reflexive and consequential, I had to join the physical objects known as machines, instruments or equipment with the living, generative process of their use. As a second step, following Voloshinov, I had to recognize the inseparable unity between use and social situation. Use is neither a prescribed, or 'configured' (Woolgar, 1991) course of actions nor a subjectively voluntaristic project. In use, a human agent mobilizes available cultural tools to respond to a social situation. By doing this, she either enacts or invents use genres, or both. Thus the phenomenon I am addressing in the rest of this book can be characterized as technology-in-use-in-social-situations. An awkward species, to be sure. But cut its hyphenated tail off, and you have expelled the user from the generative process of technology.

Three central points for a research programme follow from my conception of technology extended to include the acts of use in social situations. The first stage is an exploration of the variety of use genres emerging around a particular technology. The second stage includes examining the course of selective stabilization of some of these genres, their normalization and their reinforcement by supporting technical forms, as a course determined by social structures, culture and the typical, everyday situations that constitute them. The third stage aims at identifying possibilities for retaining a richer spectrum of use genres, or in more ambitious

political terms, for technological democratization. Returned to ordinary users, the products of this research would encourage their informed participation in the generative process of technology.

In the following chapters I will start implementing this research programme by surveying the territory in which the engagement of ordinary users with technology takes place – everyday life – and specifically, one of its central loci: the home. First, I will develop a detailed conception of everyday life and the place and role of the home within it. Then, I will enter this territory in order to meet some of the common heroes who bring the new Internet technology into their homes and engage in the complex process of ascribing it place and function, meaning and value. I will try to understand the choices of these users against the backdrop of their specific social situations. In this way, I hope to grasp the rationality of the emergent Internet-use genres and to uncover their implications for the generative process of technology.

Notes

¹In the dedication of his book *The practice of everyday life*, de Certeau (1984) wrote: 'To the ordinary man. To a common hero, a ubiquitous character walking in countless thousands on the streets. In invoking here at the outset of my narratives the absent figure who provides both their beginning and their necessity, I inquire into the desire whose impossible object he represents'.

²*The power of the powerless: citizens against the state in Central-Eastern Europe.*

³Feenberg explains: 'Capitalist social and technical requirements are thus condensed in a "technological rationality" or a "regime of truth" which brings the construction and interpretation of technical systems into conformity with the requirements of a system of domination. I will call this phenomenon the social code of technology or, more briefly, the *technical code* of capitalism. Capitalist hegemony, on this account, is an effect of its code' (1991, p. 79).

⁴Winston (1998) offers a number of historical examples of how the radical potential of new technologies of communication has been contained within the boundaries of the established social hierarchies through selective technical configurations and regulatory measures. In Winston's story, however, there is little hope of ever turning this tendency around toward democratic rationalization.

⁵Speaking about the 'powerful' in this context, I do not understand the concept to signify any general and fixed positions held by social groups, but the temporary constellations of knowledge and resources that differentiate the participants in technological development. In this particular context and its pertaining set of relations, experts, managers, granting agencies, venture capitalists, corporate decision-makers and others stand out as significantly more influential than lay users. For their part, lay users may hold very diverse assets, and hence positions of influence, in other contexts, but they typically remain a marginalized category with respect to the technological establishment.

⁶In participatory design, workers and engineers collaborate in teams to design technologies for particular work settings. It represents a user-centred approach to information system development that originated in the Nordic countries with the idea of empowering workers in technology-rich environments both individually and collectively (see Schuler and Namioka, 1993).

⁷Benston (1988) proposes such a view of technology, observing: 'The technology available at any specific time provides a range of options for acting on the world ... these options function rather like words in a language' (p. 18). Benston goes on to argue that contemporary technology represents a language created by men, which limits the action options available to women.

⁸This notion stems from Vygotsky (1978), *Mind in society*.

⁹Despite the widespread belief that it was Bakhtin who wrote some of the works published under the name of his friend and disciple Voloshinov including *Marxism and the philosophy of language* (see Clark and Holquist, 1984), I prefer to go by bibliographical authorship. The possibility remains that Voloshinov did in fact write, or contributed significantly to these works. Moreover, the controversy around the authorship has no implications for my use of the ideas articulated in the book.

¹⁰The Wittgensteinian slogan 'meaning is use' (1958, para. 43) is clearly at work in the case of technology.