

Pioneers to Power Players

Developing a Research Agenda

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In this paper we develop arguments for a particular research agenda on young “power users” of new information and communication technologies. We begin from a view of *technology* that includes its typical patterns of use and a perspective on *power users* that sees them as pioneers rather than as an intrinsically atypical group. We argue for a sociocultural research agenda that inquires into both their uses of new technologies and their developing identities as members of communities. We propose the use of discourse and multimedia analysis methods and inquiry into how their new ways of using these technologies may impact the future of educational and other social institutions.

Anticipating our conclusions, we first present a number of guiding questions for such a research agenda:

Major Issues for Investigation

- What new ways of using technology by young power users indicate possible future directions for wider sectors of society?
- How do young power users differently construct personal and group identities through their innovative uses of technology?
- What are the implications for educational systems of the future of the new ways of using technology being created and adopted by young power users today?

Further Specific Questions

- How are young power users of technology engaging differently with mass media culture today? How might their experience with creating multimedia increase their capacities to view all media more critically?
- How does intensive communication and networking by young power users change their effective peer groups and the ways these influence their identities, ambitions, and ways of solving problems?
- How should the educational system as presently organized respond to how power users today, and a wider cross-section of all young people in the future, are organizing their learning with technology?
- How might the educational system be fundamentally re-organized in new ways that are suggested by successful learning with technology pioneered by today’s young power users?

What should we mean by “technology”?

What conception of “technology” is appropriate and useful for studies of how young people are using information and communication technologies in new and socially important ways?

There is too often a tendency to decontextualize technical artifacts and see them and their internal processes as defining “a technology”. Instead, contemporary research in science and technology studies has moved, following Latour (Latour, 1996) and others (Jasanoff, Markle, Petersen, & Pinch, 1995) to a notion of sociotechnical networks in which the units of analysis are chains of links among artifacts and what people do with them (as well as more complex webs of intersecting chains). A technology in this sense is always a system of conventionalized practices for using artifacts, and not the artifacts themselves.

In this sense, for example, “writing” is a technology, and more specifically, a “writing system” is a technology (Harris, 1995). It includes the conventional practices by which we record and display durable spatial arrangements of signs, and the practices by which we interpret these arrangements. The convention of putting word-signs in order from left-to-right (or top-to-bottom) and then in rows down a page (or columns right-to-left) is just as much a part of the technology of a writing system as the shapes of the signs or the implements and media that record and display them. So also are the genres of written texts and the conventions for interpreting them into speech or into meaningful imagined scenes.

Programmable computers are *universal machines* in the technical sense that they can re-code any input into any output according to any definable set of conditions. In principle you can link a computer to some peripherals and have it do anything that is algorithmically definable. If you are willing to accept some risks of unpredictability you can also allow it to re-program itself to do things that are not algorithmic for humans (e.g. pattern recognition). But this does not make computers a universal *technology*. Every technology is specific: it incorporates an artifact like the computer into a network of practices that accomplishes something socially meaningful. It is such networks of sociotechnical practices that define a technology.

Power to the Users

Why is the notion of “power users”, and especially *young* power users of new computer-assisted information and communication technologies *interesting*? We believe it is interesting and important most fundamentally because many of us have an intuitive sense that it might possibly presage a shift in the relative social power of age-groups in postmodern society. We believe that many relatively successful and powerful middle-aged people today are afraid of what could happen if society reshapes itself so that high levels of competence with these technologies confer great social power, while that competence is distributed by age in favor of much younger people.

Historically, significant social power was taken away from the 13-21 age group in the time of the industrial revolution first by redefining them as “children”, and taking away their right to bear weapons, and then over time taking away their property rights and rights to sue in courts of law, excluding them from the new political rights of representative democracy (voting rights), denying them the right to use their wage-labor power for their own benefit (child labor laws), and finally isolating them in institutions where they could be monitored and controlled by adults (i.e. through compulsory schooling laws). Some of this was done “for their own good”, perhaps even by well-meaning reformers, but in fact this segment of what had previously been considered adult society was systematically disempowered (Aries, 1962) .

At the same time it was also infantilized. Young adults were denied opportunities to learn valuable social skills by participating in the workplace. The apprenticeship system was gradually replaced by a system of schooling which has never established empirically that what it teaches is of much practical use outside schools and academic institutions (at least beyond basic literacy, numeracy, and limited cultural knowledge). From this time, young adults became less socially responsible in their behavior, less mature in their thinking and desires, as they were excluded from the rest of adult society and isolated within age-graded classes where their interactions were mainly with age-peers, from whom they had little to gain either by learning (compared to interactions with their elders) or teaching (compared to interactions with their age juniors).

In our current era, “adolescence” as a cultural and consumer identity, defined by its behaviors, values, desires and buying habits has been extended by marketing forces to range from the age of six or seven on up to about forty. This creates a large market largely fixated on fantasy desires for products with little other claim on people’s wallets than their contribution to an image, identity, or lifestyle.

And suddenly this disempowered, infantilized sector of society turns out to be radically more adept at learning and using critical new technologies than the older adults who have for the last couple centuries been controlling and commercially exploiting their powerlessness and ignorance.

What is to prevent a software development corporation today from paying a 14-year old programmer much more than his father makes for work he does at home and delivers to the company online? How long will the legal disempowerment of 13-21 year olds last under these economic conditions? What happens when an 18-year old out-competes a 48-year old for the position of leader of a lucrative game-development group, not because of programming skills, but because of better skills at managing online group collaborative activity? How does power shift in the society at that point? Economic power? Political power? Legal rights? Social values and priorities?

The status of women in modern society has changed radically as the needs of the labor market for their contributions have gradually (and still not completely reduced barriers to their equal participation). They are already beginning to outcompete males for many jobs. It has taken them over a century, and they had no particular technological advantage by

gender, though one can argue that industrial and post-industrial technologies have reduced the male advantage of physical strength in its overall social importance, and especially its role in the labor market.

Youth are the women of the 21st century. At least in political terms. And they are acquiring a technological advantage that may make their revolution occur much faster. What is the nature of that advantage? Most fundamentally it is an advantage in adaptability and speed of learning. Humans are a neotenuous species: we are born with neurological and other aspects of our development still incomplete, making us voracious learners as children, and evolutionarily adapted to learning and behavioral lability at earlier ages. Kids learn fast and well, and only the maladaptive routines of schools make them appear to be less adept. In their natural environment, once they identify something they regard as interesting, important, valuable, useful, or “kewl”, they are far better at learning to excel at it than are most humans who are 30 or more years older.

That is an advantage they have always had. What has changed today is the pace at which technological change is accelerating -- including not just new hardware or artifacts, but new social practices of using these artifacts. Older adults have great difficulty keeping up. If we look at what you need to learn to get through the computer game *Final Fantasy X*, or what it takes to be able to contribute to the development of a “mod” or modification of a commercial game as a member of an open-source group, it seems daunting. For most of us it is. Not so for our much younger competitors.

The Tower of Power

How shall we conceptualize “power users”? As a breed apart, or as falling at one end of a continuum? In any complex skill set, some will excel. Whether by time spent, commitment, interest, motivation, relevant previous experience, fortunate networks of helpful friends or mentors, family support, expensive resources, starting age, or relevant physiological advantages (probably the least significant factor, including brain chemistry or wiring), some will always do much better than others. But there will be more or less a continuum of excellence with no sharp qualitative lines. There are geniuses, but there is no category of genius-level humans; geniuses are not a separate species. There are near-geniuses as close to any unchallenged genius as one could ask to find. There is a continuum of degrees of skilled practice.

Power users are also often early adopters, those who entered a domain of social practices and technologies much earlier than most others, and who may retain some residual advantage, or not. But obviously this advantage too falls on a continuum.

So “power users” seems most reasonably to define an arbitrary range at one end of a continuum, rather than a definable, discrete, and qualitatively distinct category.

What makes the high end of this continuum interesting for purposes of research? Not, presumably, the individual importance of the most proficient users, but more likely the potential collective influence of a large number of highly proficient users. And the sense

in which the high-end users of today may reveal to us a possible model for what a much larger segment of the population may be able to do in the future.

We are arguing here that the greatest social and research significance comes when we view power users as pioneers, predicting that many more of their generation will follow them because of the inherent advantage of young people in keeping up with technological change. But this argument also implies that we cannot take an absolute view of what defines power users: that it is their particular skills that define them. Which particular skills define the power users of tomorrow will be different as technologies continue to change. We must take rather a relational view and ask how are power users different from other young users, in degree, and perhaps qualitatively different from older users in the nature of their technological practices? We would expect that they differ in degree from other youthful users mainly by being earlier adopters or having more interest, commitment of time, etc. All these are respects in which other youthful users could follow in their footsteps, especially with support from an educational infrastructure.

Power users can show us what has already happened, and what sorts of things *can* happen, when some youthful users get very far ahead of all other users in *how* they use a technology.

Because we are defining technology to include the socially typical ways of using it (even if now it is only socially typical among power users and near-power users), we can potentially learn from power users what uses might become more widespread in the future, which uses are specific to early adopters, which could eventually become available to many more, which require specialized proficiencies and which are mere innovations that are potentially more widely available, and perhaps most important: why these innovative practices were adopted by power users, what the value of such uses is – from which we have some basis for estimating the likelihood of wider adoption in the future.

Power Users as Mutants

Our culture, particularly in a climate of (recognized or unrecognized) fear, has a tendency to “other” those who are different. To imagine them as somehow a different species of human being, unlike us in far more ways or in far more fundamental and unchangeable ways than is really the case. We do this with our socially constructed categories of racial difference, gender difference, age difference, and ethnic or cultural difference. It is a dysfunctional intellectual strategy, whatever its political uses.

Power users are interesting to society as a whole either for their potential predictive value (as discussed above) or for their diagnostic value. Diagnostically, studies of power users might tell us how various social institutions need to change to respond to the new needs seen first and most visibly among power users, but probably soon to be seen among many youthful users of new technologies. If power users are exploring alternative modes of collaborative learning or collaborative production, or forming different kinds of social communities, which seem to them to be more functional in a world where the new

technologies loom large, then all of us should consider whether mainstream social institutions should change to support such alternative models for larger numbers of future users of the technology.

These are values issues and political issues, not merely issues of efficiency or functionality. But value choices cannot be made except in a space of alternatives, each of which is socially viable in relation to the material infrastructure of society, what society needs to do, or is already doing, to keep itself going. Today we have a very limited set of visions of alternative social futures, and most of them are constructed from the perspective of middle-aged futurists and marketers indebted to the commercial interests of those who finance their imaginings. It can be of fundamental social importance to see what a relatively disempowered group, our youngest citizens, are developing as alternative modes of social being, afforded by uses of new technologies. Power users are not the only such group by far, but they are a group which has a special opportunity today to try out innovative uses of technologies that will soon be available to all.

Power Users and the Future of Education

Schools, as social institutions in their present form, have only dominated the universal social process of education in the last century and in some parts of the world. There are many other ways that communities make it possible for the young to learn. There seems to be little evidence that either for most students, or particularly for those with the potential to be power users of new technologies, schools as we know them are the educational institutions of choice. In many respects they embody what are today highly dysfunctional design features (short learning cycles, uniform curricula, rapid change-over of student-teacher relationships, high student-mentor ratios, little individualization of learning, little provision for future independent learning, etc.)

What might today's young power users of new technologies tell us about how they would rather learn? What re-design of the basic mass-scale learning arrangements and institutions of 21st century society could be based on what they have shown is possible, and what they have come, from their experience, to regard as desirable alternatives?

Power Users and Youth Culture

The culture of schools stands in a complex and often un-easy relationship with Youth Culture as such. It is often in competition with what we can term Popular Culture, the result of uptake and re-appropriation by people of what is offered in the mass media and the experience of everyday life. Contemporary marketing in the developed world has begun to catalyze the development of a new consumer identity or ideal that began with marketing specifically to adolescents in the traditional age range from mid-teens to early twenties, but has now by the logic of the marketplace expanded to include a much wider range. Power Users are situated squarely within what research is coming to see as the new definition of adolescence and adolescent identity (Lesko, 2001; Moje & van Helden,

in press). We propose that this new research model is of critical relevance for an understanding of Power Users in relation to the wider society.

Research on the development, lifestyles and education of adolescents, including Power Users, depends on how we conceptualize adolescence as a category, and new disciplinary perspectives in cultural and discourse studies propose fundamental changes in our view of adolescence.

Premises:

- Adolescence is a cultural construct which incorporates a set of features that can be present to different degrees in any human being of any age.
- Popular culture is a dominant post-ideological force, which is consumerist by nature and an integral part of economic, political and cultural systems.
- Young people's attitudes, behaviors, values and beliefs, or 'identities' if you will, are affected by these cultural constructs of adolescence and discourses of popular culture in important and mutually informative ways.

More traditional approaches to adolescence (medical, legal, psychological, educational) are becoming outdated, and are both limiting research as well as oppressing young people. *The new view of Adolescence is that it is a set of qualities or features which can be present in any person of any age to a certain degree.* It is therefore not a set stage in life, a limited time period of 'transition', or by definition more present in teenagers than it is in forty-somethings.

The term 'Youth Culture' is often used to describe cultural artifacts and events produced by young people, mostly when they re-use or appropriate more commercial and mainstream Popular Culture. Youth Culture is, however, not culture exclusively made by youth, but is the product of an interaction between young people, all other age groups, and the cultural manifestations all of those have encountered and are in contact with at this time. Youth culture can only be youth culture when it's understood as part of the larger system of cultural manifestations with which it communicates and in which it is embedded. These perspectives certainly apply to a sociocultural understanding of the culture of Power Users.

This approach suggests a number of specific themes for research:

Studying the Identification Process

- What do people who identify as adolescents or as power users of new technologies identify with, and why?
- Why do people in these categories choose particular cultural artifacts and behaviors/practices or activities to identify with and to see as characteristic of people who share their identification?
- What are the characteristics of the artifacts and practices that lend themselves to (afford) these identifications?
- What are the meanings of the artifacts and practices for members of the identity category?

- How are they used by members to reinforce or perform their membership identity?

Competing Discourses about Adolescence / Power Users

- How do popular culture and youth culture discourses and practices define adolescence and afford opportunities for adolescent identifications?
- How are the new discourses and practices influenced by the rise of a global consumerist culture in which marketing to adolescent interests plays a key economic and cultural role?
- How do people who identify with adolescent interests encounter images and ideals of adolescent lifestyles in the media or from peers or others?
- How do they re-appropriate or transform these images as part of their own lived culture?

Discourse Analysis Methods for Research on Power Users

How, in practice, are we going to go about answering any of the many interesting questions raised about young power users of new technologies?

Many academic disciplines will offer various research models and methods.

Psychologists may want to study how their behavior in controlled laboratory conditions differs from that of comparison groups in such matters as problem-solving skills and abilities. That may provide more incentive to do other studies insofar as it establishes just how different this group may be. But I would not trust such studies to tell us very much about how power users behave in their natural environments, and that I think is where we will learn most of what they might tell us about possible technology-use futures. Also of interest would be developmental psychology studies that track the intellectual and social-emotional development of individual power users from the youngest ages onwards.

Ethnographic studies will keenly observe young power users as they go about using technology in new ways in their lives, but this is especially difficult to do if they are also moving about and in and out of settings where the ethnographer, for practical or ethical reasons, cannot easily follow.

Sociological studies might be able to characterize this group in terms of its distribution over the various categories by which our society divides itself: gender, age, class, ethnic culture, first- and second- languages, etc.

But much of what we want to know about power users has to come from talking with them, from structured and informal interviews, individually and in groups. It also has to come from close analysis of what they write, the games they play, their communications with peers, their responses to media of many kinds. Insofar as we are interested in how they define and construct their identities in relation to their use of technology, and how they frame their attitudes towards peers, adults, mass media culture, education, and

technology itself, we are going to have to collect and analyze very substantial quantities of *verbal and multimedia data*:

- Interview tapes and videos
- Transcripts of interviews, CHAT or IM sessions, and online communications of many kinds (email, multiplayer game-logs, etc.).
- Video records of power users at work and at play using new technologies for many purposes
- Copies or records of the media they interact with (commercial or independent video, audio, websites, games, advertising, zines, blogs – old media and new) and their responses to these.

Such data take the form of language and audiovisual productions whose meaningful content needs to be systematically analyzed.

Discourse analysis (DA) and Multimedia analysis (MMA) are emerging research techniques and fields of study in their own right (Kress & van Leeuwen, 2001; van Dijk, 1997; Wodak, 2000). There are many specialized methods within each general category, based on linguistic and semiotic models of how people make meaning with language and other symbolic-representational media. For language data as such there are methods that highlight, for example: topical content, descriptions and explanations, narratives, conversational interaction patterns, value orientations and evaluations, development over time, cross-references to other texts, etc. These are mainly well-developed and well-understood tools (J L Lemke, 1998). For multimedia analysis we are much nearer the beginnings of the field. We know a lot about how to analyze static two-dimensional diagrams and pictorial images and spatial layout (Kress & van Leeuwen, 1996). We still know somewhat less about how to analyze dynamic, interactive, and immersive visual media, from animations to virtual reality worlds. When, as most often, visual media are combined with text, speech, or other audio media, we can use Discourse Analysis (cautiously) as a Rosetta Stone to help interpret the meanings of the other media (taking into account their mutual influence on each other's ways of meaning). Non-speech audio media are much less studied, except for music, and their role in multimedia (or multimodal) meaning-making is an important current area of research (van Leeuwen, 1999).

One area in which such research techniques are already being used to study young power users of new media technologies is the field of digital game studies (videogames and computer-based interactive, immersive games). This area can serve to illustrate some of the more general points already made in this paper.

The Many Faces of Power Gamers

Academic researchers are increasingly coming to recognize the importance of “digital games” (video- or computer- games on console- or PC- based platforms) as a field of study. Game theorists try to identify the unique characteristics that distinguish games from other forms of art and literature, of play and interactive software (Aarseth, 1997; Wolf & Perron, 2003). Social theorists examine forms of social interaction and social

community among gamers, online and offline. Educational researchers and learning sciences researchers study games as learning environments and as potential models for educational media of the future (Gee, 2003; J. L. Lemke, 2004).

Within such research, there is a special place for research on “power gamers”. These may be, most obviously, those who are exceptionally good at playing a particular game, or a particular genre of game. Often, but not always, they are also those who spend the most time playing. Their skills may be “single player” skills, or also “multiplayer skills” such as social cooperation and leadership. They may even be political skills in large online massively multiplayer gaming worlds. Notable episodes of gameplay are often recorded and made available online. For some games there are national and international tournaments of high-level gameplay, as a form of competitive sport.

Another face of power gamers are those who create games, not as professional developers, but as amateurs who may learn to “hack” or modify first minor and then more significant elements of the programming of the game (usually at the level of files and scripts, more rarely at the level of basic code). They may then, often as part of online communities, participate in the creation of “mods” or modifications of an existing game, that may introduce new items or characters, alter some elements of gameplay or rules, and very often change the scenery and settings of gameplay, while retaining much of the underlying computer code that enables the game to operate. Full-fledged mods have in some cases become new games with commercial support. Lesser mods exist for many, many games and are available for download online from amateur, and sometimes from commercial websites.

A third face is presented to us by those game fans who become experts on the game and write what are commonly known as ‘walkthroughs’ – detailed advice on how to play the game. Less comprehensive are game FAQs, answers to frequently asked questions, and Cheats or ways to evade game rules and limitations by discovering elements of the game program included by the designers for their own convenience or amusement, but not intended to be used by ordinary players. These game experts may act as respected advisors online to communities of players. They frequently have rather vast and comprehensive knowledge of the most minute details of the game and its fictional gameworld or “universe”.

Finally there is another group who write “about” games, those who create their own fictions set in the world of the game (which, given transmedia franchises and crossovers, may also be the world of a movie, cartoon, or book), known as “fanfic”. There are online communities where reputations are made by writing fanfic and where members read and critique one another’s writing, often relating it to gameplay. I assume it must also happen that scenarios originating in fanfic may actually get played out in multiplayer gaming and in the persistent online gameworlds.

For each of these faces of powergaming, there are degrees of proficiency and recognized community reputations.

Research on digital games and gaming in all its aspects has a great deal to learn from and with young powergamers, and in turn would contribute to our understanding of the culture and practices of power users of this particular technology.

Conclusion

Research on young Power Users of new technologies can help us envision significantly different social futures if we study their ways of using technology and the impact of their practices on their identities, social attitudes, and preferred forms of learning, communication, and community. This can be done in part by using research methods of discourse and multimedia analysis within a general framework of sociocultural theory.

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Working Draft