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TELEVISION'S NEXT GENERATION: TECHNOLOGY/INTERFACE CULTURE/FLOW

Like many people in my profession I spend a lot of time traveling and thus in hotels, and for me, at any rate, one of the pleasures of this nomadic life is television. Besides my sense of amazement at the clever disguising of the television set into furniture forms of uncertain stylistic reference, I am fascinated by the many capacities of hotel television systems. During a stay at the Marriott in Cambridge, my television offered such features as interactive messaging, account updates, nearly forty films on demand, and Sony PlayStation, in addition to cable television and both closed-circuit and cable teletext systems. Simply turning on the television provoked a staggering array of decisions regarding language, services, and menu options, all of which had to be dealt with if one wanted to watch television in any of its forms.

The conception of television involved here rubs against the grain of the work I've been doing on early conceptions of the televisual, conceptions that in their nineteenth-century embodiments rendered the appearance of the film medium as something of a disappointment.[1] Simultaneity, I argue, was one of the long-anticipated but ultimately suppressed or bypassed defining characteristics of a medium of "far seeing," a medium more dependent than photography or film on the camera obscura (a metaphor, it should be recalled, with temporal as well as spatial dimensions). This notion of simultaneity was bound up with the idea of con-

nectivity, with extending the boundaries of event and the direct access of the viewing public to it. The idea of the medium, explicitly invoked in terms like "television" and the German word for television, *Fernsehen*, was about the extension of vision in real time.[2] And it is this aspect that in my larger project I've been trying to trace through its many permutations to things like Web-cam sites or Nokia's next generation of mobile telephones.

But hotel television (and the sometimes late nights spent interacting with it) became for me something of a devil's advocate, provoking reconsideration of my research assumptions. The nature of the provocation resonated with images of Raymond Williams, sacked out in his own hotel room in Miami after his long transatlantic crossing, watching a heavy dose of defamiliarized (read American) television.[3] Williams was struck by the seamless flow of American programming, by the strategies that transformed the diverse program elements into a whole. My experience certainly differed from the British broadcasting that Williams had seen, but more significantly it differed dramatically from an earlier generation's ideas of how the medium would function. Having said this, although concepts such as generational distinction offer a heuristic advantage that I will exploit in this essay, it is important to remember that the realities of generational overlap and plurality complicate the lived experiences of television. Williams, for example, commented on the limited persistence of an older notion of programming (in which mix, proportion, and balance still operated), which coexisted along with the more dominant idea of flow.[4] But the heuristic of generational distinction will dominate the pages that follow.

I would like here to explore a particular aspect of television, namely the changing viewer interface with the medium, and pursue some of its implications. The issue is generational in the sense that television's technology, its program access capacities, and its patterns of user interaction have appeared as clustered relationships. These constellations have changed significantly over the years, as evidenced in the space between the idea of direct connectivity so much a part of nineteenth-century television conceptions and the Marriott's elaborate sequence of choices and schedule of movies (or what the trade journals call "near video") on demand. The notion of flow, one of the most developed discursive strands in television studies, touches directly on this point. Flow is obviously a loaded term. Closely associated with Raymond Williams's 1974 groundbreaking contribution to the study of television, the concept has gone on to support very different arguments, and in the process it has helped both to chart shifts in the identity of television as a cultural practice and to map various undulations in the terrain of television studies. It has been deployed perhaps most consistently in the service of defining a televisual "essence" (adhering to Williams's description of flow as "perhaps the defining characteristic of broadcasting, simultaneously as technology and as a cultural form").[5] It has been used to describe the structure of textuality and programming on macro, meso, and micro levels (e.g., Williams's long-range, medium-range, and close-range analyses). It has given form to the viewing experience, serving as a framework within which reception can be understood (variously activated in terms of larger household regimes and the logics of meaning making). And, as Michael Curtin argues in this volume, it can describe the movement of transnational programming.

Williams's formulation and application of the concept is at once evocative and precise, theoretically diffused and carefully (if not completely convincingly) applied and tested. The concept's power and longevity owes as much to this dynamic and shadowy definition as to its descriptive power for the ever-slippery identity of television. Despite its continued (if more muted) invocation, the concept of flow is perhaps most important for the debate and theorization it has provoked. Scholars including John Ellis, Jane Feuer, Rick Altman, John Fiske, John Hartley, Richard Dienst, Klaus Bruhn Jensen, Jostein Gripsrud, and John Corner have all in various ways challenged the operations that Williams sought to describe, in the process contributing to the formation of a discursive field.[6] However, my point in this essay is not to retrace the genealogy of the term, but rather to reposition flow as a means of sketching out a series of fundamental shifts in the interface between viewer and television, and thus in the viewing experience.

A word is perhaps necessary here about the implications of the changes in television's technology, programming, interfaces, expectations, and so forth, some of which this paper will touch on. From its start, television has been a transient and unstable medium, as much for the speed of its technological change as for the process of its cultural transformation, for its ephemeral present, and for its mundane everydayness. While this has always been television's fate, the present day's convergent technologies, economies, and textual networks have not only subverted many of the assumptions that have until now driven the logics of television but have also transformed the medium's context and cultural place.[7] Stephen Heath has put it as follows: "One of the main difficulties in approaching television is the increasing inadequacy of existing terms and standards of analysis, themselves precisely bound up with a specific regime of representation, a certain coherence of object and understanding in a complex of political-social-individual meaning."[8]

Although Heath's observation can arguably be extended to other media systems, television does seem to have more than its share of identity problems. Caught between the "taken-for-granted-ness" associated with a long-domesticated audiovisual delivery system and the recurrent innovation and sometimes radical redefinition that seems emblematic of its technical and expressive capacities, television's identity is a highly unstable affair. This is not to deny that a certain coherence of object and understanding exists, but rather to suggest that it is the coherence of generation, of clustered expectations, technological capacities, and daily practices. While one would want to insist on the fullest sense of Heath's "regime of representation" and within it include technical expectations, institutional systems, and individual practices, the question of how to deal with a dynamic transgenerational medium remains. From this perspective, the relatively little attention directed toward television's history is not only remarkable but ultimately disempowering. It tends to reinforce the "taken-for-granted-ness" of generational coherence and elide the very dynamic that may in the end be a crucial component of the medium's identity and thus the terms and standards of its analysis.

In this sense, flow is a particularly useful term. Not only does the history of its deployment map the development of an academic field, but it also illuminates the clustered experiences of the medium, the generational vision of television. Thus the term will serve as my entry point.

FLOW

Let us return to Williams, dazed after his transatlantic crossing and a strong dose of Miami television. By March 1973, Williams was in San Francisco, where he began a systematic study of his impressions of American television and of flow in particular. What sort of television did he experience? Several measures of the period's television environment offer an insight. In 1973, the United States had a total of 927 VHF and UHF television stations, whereas cable subscriptions were relatively low (the first available data on cable are for 1978 and indicate 13 million cable households, or 17.7 percent of the market).[9] Yet both measures would enjoy rapid development in the years to come, with household cable subscriptions increasing by nearly 350 percent within the next ten years and VHF and UHF stations nearly doubling within the next twenty years. Not only did cable households grow, but so too did the number of channels provided on cable systems. In 1983, 22 percent of cable subscribers had fewer than thirteen channels available—a number that dropped to zero percent within ten years, by which point over 97 percent had over thirty channels. Video cassette recorders also changed the television environment. Four years *after* the publication in 1974 of Williams's *Television: Technology and Cultural Form,* Nielsen estimated a VCR household penetration rate of 0.3 percent with 402,000 VCRs in place. By 1984, 10.6 percent of the market had been penetrated, and by 1994 well over 80 percent had been reached.

Thus in March 1973, Williams would have experienced a form of television largely dependent on limited VHF and UHF transmissions. Although I have not checked the period's broadcast schedules for San Francisco or Miami, we can reasonably assume that he had something like five or possibly six channels available and no cable or VCR. Moreover, it seems unlikely that he had access to a remote control device.[10] Williams experienced a historically specific form of television that included the final days of the "Big Three" hegemony in the United States. In this sense, he was privileged to participate in (and thus write about) a particular generational experience, a distinct clustering of technologies and practices. Months before Williams's arrival, the Federal Communications Commission issued several important guidelines that, while protective of established interests, opened the door for a fundamental reordering of the broadcasting environment that would take place shortly after Williams's departure. New regulations for the diffusion of cable service in urban areas, coupled with guidelines for cable operators as distributors and producers of programming, transformed cable from a community service into a business. Moreover, these developments served as a testament to the cable industry's growing political influence.[11] In 1972, the Domestic Communication Satellite rules allowed private satellite distribution, thereby ending the monopoly of the Communications Satellite Corporation.[12] This change allowed the interconnection of distribution points and linkage with nationwide cable systems without the prohibitive expense of AT&T's land lines or Comsat's service. Time Incorporated's Home Box Office, Ted Turner's Atlanta independent WTCG, and Pat Robertson's Christian Broadcasting Network, to mention but three of the cable operators that would expanded exponentially in the late 1970s and early 1980s, were spawned by these regulatory changes.

Appropriately, the discussion of flow in Williams's *Television* falls within a chapter titled "Programming: Distribution and Flow," attesting to Williams's notion of the term as primarily textual. Flow as programming strategy, as the purposeful linkage of variously scaled textual units in order to avoid ruptures, is what Williams attempts to demonstrate in his long-range, medium-range, and close-range analysis of American and British television. But Williams's ideas need little elaboration here be-

cause they are so lucidly presented in his book. Here I wish to situate them and then point to the dynamic of their transformation.

Just as Williams's notion of flow needs to be situated within a particular technological, regulatory, and cultural moment, the changing status of the term, and particularly the criticism it generated, needs to be seen against the changing "regime of representations" of television offered by expanded broadcast channels, cable programming, and the VCR. The growing abundance of televisual material, the ability introduced by the VCR to time shift and zip through advertisements, and the ability through the remote control to zap ads in real-time television all inexorably altered the notion of the televisual, situating to some extent scholarly critiques of Williams's notion of flow. This is neither to trivialize nor undermine the important work of the scholars involved, but rather to situate it within a particular televisual order and to suggest that these perceptions owe something to the ongoing technological redefinition of the medium. This technological transformation, at any rate, is something that I am acutely aware of as I read Williams's words and those of his commentators, because I can attribute many critical insights not only to the accumulated wisdom that is our field but to the very different construction (or generations) of television that I take for granted.

DISRUPTION

If there is any one apparatus that emblematizes the generation of televisual interface that would follow on Williams's heels, it is the remote control device (RCD). As I've indirectly suggested, it stands in synergetic relation to the increase in broadcast channels, the availability of cable service, and the introduction of the VCR by serving to facilitate mobility among the "older" broadcast forms and the "newer" programming sources and by enabling the viewer to move among program forms with considerable ease. Most important, it signals a shift away from the programming-based notion of flow that Williams documented to a viewer-centered notion.

The now ubiquitous RCD device has a history that goes back to late-1920s radio applications, from which point it had a long evolution through cable- and motor-driven connections (Tun-o-Magic, Remot-o-Matic, Zenith's Lazy-Bones) to light-driven models (Zenith's Flash-Matic) to the remarkable wireless and batteryless television RCDs of the 1950s (Zenith's Space Command) to radio-frequency driven and, finally, coded infrared devices.[13] The annals of RCD history are cluttered with anecdotes that help to account for this seemingly endless process of technological innovation. Consider the problem of radio-frequency RCDs inadvertently controlling televisions within a several-hundred-foot radius, or that of RCD-equipped pranksters roaming the streets and wreaking havoc on unsuspecting television viewers by changing their channels or volume level. Each new means of extending the viewer's control seemed to entail unwanted side effects or else whet the appetite for new types of control. There is much to be said about the development of remote control—about the various constructions of interaction of the RCD (from simple on/off commands to GE's "Homenet" device that could control lights, lock doors, and start the oven); about the magic of their names; and about their promotional strategies, promises, and visions of "future" television.

For the purposes of the argument at hand, what I find curious are the recurrent tales of disruption and their status as countertext to the promises of enhanced control that inscribed the RCD in popular discourse and advertisements. Although RCDs had a somewhat marginalized presence in many of the advertisements I've seen, they nevertheless were associated with advances in tuning and control and, of course, with luxury, given their extra cost. Their nominal and visual associations resonated with a larger discourse of remote control systems for warfare, airplanes, garage doors, and various home control systems, and they were positioned somewhere between space-age ambitions and the mundane aspirations expressed by an article in *Family Handyman:* "Let electronic slaves do your bidding."[14]

Control, however, is rarely a widely agreed-on concept: one person's control can be another's disruption. Indeed, a major strand of RCD research considers the implications of the device in collective-viewing situations, most often the family. The data suggest that "even in the mundane, joint, leisure activity of watching television," significant evidence of frustration and stereotypical notions of gender through the exercise of power can be found in RCD control and use.[15] Indeed, some evidence suggests that the frustration levels are sufficiently high such that rituals of domination and power routinely take form around RCD use, leading to predictable discord. Research in this vein resonates well with the previously mentioned notions of disruption to the home viewing environment, as families with radio-controlled RCDs and their neighbors discovered or as gangs of RCD-toting youth and their unwitting victims experienced. The social dynamics in each case differed, but disruption through a technology of control was the same.

But as troubling (or insight-giving) as these domestic cases might have been, the public battle over control and its evil twin, disruption, played

out with particular force over a different issue. The ability of the RCD to silence advertising by muting the sound, and ultimately its ability to switch away from it altogether by changing channels or turning off the set, was a site of enormous anxiety for the industry because of the implications for the logics of commercial television. But from the public's perspective, such uses were precisely the point of the new control promised by the RCD. By 1955, articles began to appear in the mainstream press with titles such as "Shoots the TV Commercial: Flashbeam to Turn the Set On or Off," "Don't Just Sit There! Reach for the Switch!," and "TV Commercial Silence."[16] Indeed, in the first half of the 1960s the popular press was as likely to call the RCD a "television silencer" as anything else.[17] Such sentiments, at least in the United States, were nothing new, with *Reader's Digest* offering tips as early as 1953 on non-RCD ways of stopping objectionable television advertisements;[18] but the RCD gave households a semblance of direct control over their viewing experience that terrified advertisers and the broadcasting industry. The result was a series of studies that on the one hand shed light on the particular concerns of the industry but on the other was largely inconclusive, owing to disagreement about standards of RCD activity and research methodology.[19] Despite these extremely interesting attempts to pathologize "disruption" (in this case, viewer control), even before the RCD became a widespread household item it was associated with the strategic interruption of programming, whether "silencing" advertisements, turning the set off, or switching to an alternate channel. Increased programming options only served to throw the weight to this latter option.

The intrusion of the RCD threatened to disrupt more than advertisements. The program-based flow that Williams had experienced and that formed the original meaning of television flow was disrupted as well. Not only was it part of a constellation of technologies and practices that offered extensive program choice, but it also facilitated program change with the mere touch of a button. And, at its most fundamental, it signaled a shift from Williams's idea of flow to flow as a set of choices and actions initiated by the viewer. This shift had implications that went far beyond textual issues. As noted, the ease with which viewers could subvert the programming strategies to which Williams had called attention resulted in something just short of a panic among broadcasters and advertisers because it directly challenged the logic of the ratings system so central to the American industry. Companies such as Nielsen played a major role in studies of RCD distribution and use, but the company was (and continues to be) reluctant to take the "problem" of the zapper into its program ratings calculations, as evidenced by the continued reliance of its evaluation system on viewing numbers organized around programs and fixed-time increments. This framework is the outcome of decades of fine-tuning the balance between the divergent interests of advertisers and broadcasters, and it stands as a remarkable anachronism in an environment characterized by an ever-multiplying array of programming options and the twitchy finger of the zapper. But explicitly acknowledged or not, the RCD was a "subversive technology" that demonstrated from its start that viewers had the ability to disrupt program flow and thus the economic flow so central to commercial television. At the same time, a new conception of viewer-dominated flow took hold.

Curiously, a certain ambivalence pervades descriptions of the audiences who made the transition from programming-centered to viewer-activated notions of flow. Consider the term "couch potato," which, according to the U.S. trademark registration, was first used shortly after America's bicentennial, on July 15, 1976.[20] Deployed three years after Williams's visit to America, the term originally seemed to describe that segment of the population that regularly shared his Miami viewing experience, a public caught up in the program flow that the Big Three had refined to an art. But despite the date of its introduction, the term only entered widespread currency ten years later, between 1985 and 1986, by which point nearly half the U.S. households used cable, 30 percent were equipped with VCRs and up to half with RCDs.[21] This crucial span of ten years attests to the ambivalence between programming-centered and viewer-centered notions of flow, both covered by the term. On one hand seemingly passive, drawn from one time block to the next, the consummate *television* viewer, the couch potato seemed to be the perfect target of the program-driven notion of flow. On the other hand, armed with a television RCD, a VCR, a VCR RCD, a stack of tapes, and a cable television guide, the couch potato as active zapper and zipper engaged in viewing activities that were highly mobile and unpredictable, thus embodying a viewer-side notion of flow. The term thus seems to have fallen out of contemporary use, perhaps because of this ambivalence. Or perhaps it is due to a change in metaphors (the distinction between "sit back" technologies such as television and "lean forward" technologies such as the computer). Or perhaps it relates in some way to the penetration for the broader public of the active audience theories associated with cultural studies (theories themselves to an extent coincidental with the increase of RCD use). Or perhaps it is due to the qualitative increase in options for control that are characteristic of the late 1980s. Whatever the reason,

the larger point is about the subtle but important shift in the concept of flow away from programming strategies toward viewer-determined experience.

THE PRESENT AS INTERMEZZO

Over the past decade, the televisual landscape has been gradually changing in ways that bear on the medium's textuality and viewers' interface with it. Yet the most evident of these changes—for example, the interactivity introduced by video games or the explosion of television channels and services promised by digital compression technologies—may not be the most interesting or determining in terms of viewer-medium relations. I will argue, in fact, that the most fundamental transformation of that relationship can be found with the application of metadata systems and filtering technologies to the process of program selection. But first, the obvious developments.

Consider the dramatic changes to the idea of television—at least for a certain age cohort—introduced by Nintendo, Sony PlayStation, Microsoft, and other providers of video games. These program systems have established new patterns of interaction with the "device formerly known as television" along with a new constellation of cultural icons. While many of us might beg the question, pointing to divergent uses of video display (surveillance, medical applications) and distinguishing them from television, it's not clear that the users of home video games are so scrupulous or theoretically consequent. Indeed, the point is precisely that increasing user-side familiarity with "television" as a platform for interactive gaming necessarily transforms the same users' notions of "ordinary" television programming. As the game-playing cohort comes of age and enters the sights of mainstream program marketers, we will surely see the results in both technological and textual realms. And while the implications of this are bound to be profound (on the levels of program interactivity and textual uniqueness, thus posing new threats to the collective experience once entailed by the term "broadcasting"),[22] the interface they provide remains conceptually linked to the RCD in the sense that both rely on viewer-steered interactions. Viewers will continue to make conscious choices within certain fixed program parameters, and some sort of manual interface, be it a joystick or control module, will continue to provide the means for those choices.

Digital television services will almost certainly include interactive games in their program packages (something readily available in many hotel television services). But continued advances on the compression

front and the increasing presence of optical fiber in the cable infrastructure have combined to open the way for a widely hyped environment of five hundred to two thousand channels. What precisely this environment will look like is uncertain, but as early as 1993 television executives like Ajit Davi (Cox Cable), who had a rather conservative six-hundred-channel scenario, suggested a process of segmentation that would include:

- A 100-channel grazing zone made up of present-day broadcast and cable feeds;
- A 200-channel quality zone offering two extra channels in support of the grazing zone and including the possibility for replays;
- A 50-channel pay-per-view (PPV) event zone;
- And a 250-channel near-video-on-demand (VOD) zone.[23]

While at least in Davi's forecast personal messaging and billing were not part of television, his vision was simply a quantitative extension of currently existing hotel television. To be sure, the quantitative enhancement of programming choices will intensify a series of strategies that analysts have already described in the medium's present-day organization under the rubric of "survival strategies." Especially at this historical moment, when the industry is embedded in a particular televisual order and seems to be about to break out of it in various ways, thinking about how best to cope with the new possibilities (and still maximize profits) seems to be conflicted. (Indeed, such discursive conflict is the allure of media in transition.)

In terms of programming strategies, the starting point is that increased program availability will only intensify the choices of the active zapper, and thus a battery of weapons have been developed to stabilize her or his viewing habits.[24] Producers, advertisers, and programmers seem to be redoubling their efforts to maximize something like Williams's notion of flow in its most literal sense, linking program units in such a way as to maximize continued viewing. Time-tested programming techniques such as a strong lead-in with a highly rated program at the start of a time block, or the hammock (packaging of a new or weak entry between two strong ones), or stacking series of the same or similar genre to minimize disruptions can all be expected to intensify. Indeed, stacking has become the channel identity strategy of many cable outlets, as evidenced by Animal Planet, the History Channel, and the Cartoon Network. Perhaps more interesting are the continuity strategies evident in techniques such as reworking end or opening credits (dropping theme songs, superimposing credits over the opening of the narrative, using outtakes or an epilogue to hold viewers to the end of the slot); using "hot

starts" (where a new program begins without an advertising buffer between it and the preceding program); sharpening program hooks before ad breaks by showing previews of the following sequence; using pre-grazed programs (sports summaries, for example); and local fine-tuning of the program mix.

Of course, larger issues such as a reworking of program economics through low-cost programming (reality television and game shows) and economic convergence (permitting a greater number of channels to fall under the interest of a smaller number of organizations) have obviously also been responses to the new television environment (and the perceived threats that it entails). In this latter case, the threats posed by an ever-more fragmented array of channel choices are countered by systematic investment in multiple channels (as embodied by Ted Turner's empire, ranging from various news channels to classic film channels to an array of highly specialized niche-market channels for airport lounges and doctors' waiting rooms), and in cross-media ownership (for example, the recent merger of Time-Warner-CNN and AOL). The point throughout is that these broadcast strategies are intensifying as the competition for steady viewers heats up.

The pressures of increased program availability seem likely to intensify the use of these strategies, and although textual transformations will doubtless continue to evolve, as suggested by the video game sector, the fundamental tensions we have thus far seen between program-based and viewer-based notions of flow remain unchanged. The present as intermezzo? At least regarding the well-hyped developments in interactivity and greatly increased program access, the interface between program and viewer remains conceptually within the horizon of expectations established by mid-1980s RCD culture. The next act is about to follow.

THE TELEVISION FAIRY AND ITS RELATIVES

A black-box technology for the family television set managed to spark controversy in several European countries thanks to its ability to perceive specific program forms (advertisements) and textual elements (sex and violence). The box, marketed under the name of the Television Fairy (the *Fernsehfee* in Germany and the *Televisiefee* in the Netherlands), automatically "zaps" to the next channel when coded to block offending elements. Despite the objections of the advertising industry, the Dutch courts found that the Television Fairy simply automated what the RCD-equipped viewer already had the capacity to do—zap.[25] Although I do not wish to challenge the wisdom of the courts, I would like to argue that the

technological family of which the Television Fairy is a member in fact operates on a very different conceptual principle. It speaks directly to a new type of interface between program and viewer, and in its more developed technological embodiments it points to a concept of flow that is fundamentally different from the two generations thus far considered here. At its core is a radical displacement of control. Control—which was once seen as the domain of the television programmer and, following the widespread use of the RCD, as the domain of the viewer—is now shifting to an independent sector composed of metadata programmers and filtering technology (variously constructed as search engines and adaptive interfaces).

Before going on, it may be useful to take a quick look at the position of this new development. Technological innovation has long had the effect of destabilizing the status quo, as television's own developmental history in the late 1930s and 1940s amply demonstrates. Seen variously as a form of radio, film, and telephone, television provoked a series of mini-ontological crises in existing media before finding its own identity, and in the process delimiting the identities of its fellow media. Today's digital technologies have had much the same effect, although their radical potential has tended to be masked by the "taken-for-granted-ness" of existing media forms.[26] One of the few overt contestations of media identity has been taking place between the computer and television, with each industry showing interest in the other's expressive forms and markets. Thanks to intensified convergence and the television medium's own shift from broadcasting to a variety of alternate carriers (cable, satellite, and video-on-demand systems), content has been loosened from any particular distribution form, thereby giving the Internet access to once-exclusive televisual domains. Digitalization technologies have also encouraged television providers to offer services that look very much like those associated with the Internet, showing that the knife cuts both ways. The results (from the television side of the equation) can be seen in relatively fast-growing developments that take advantage of computer technology and the Internet such as the Television Fairy, TiVo, and WebTV—systems that offer new kinds of interfaces between viewer and program.

TiVo offers its subscribers a far more elaborate set of options than does the Television Fairy, yet the underlying principles are related. Among its selling points are an extensive guide to programming, near effortless recording possibilities, time shifting even within "live" programs, and perhaps most important, the ability to code the television to search for one's favorite programs.[27] This last feature not only means that coded programs are faithfully recorded and displayed, but also that programs

considered "related" by TiVo will also be recorded. Like the Television Fairy, TiVo relies on an invisible part of each television program—an encoded information track with metadata on program genre, start and stop times, etc. The television technology in these cases is little more than a set of filters that receives certain types of data and triggers a certain type of response: ignore, recommend, record.

But TiVo is only the beginning. TiVo's parent company, Philips, has developed an advanced technology, now in the laboratory under the working title of Double Agent. Here, the management problem of the two-thousand-channel, fifteen-thousand program environment of the future is squarely on the agenda. Designed for a digital television environment, Double Agent essentially offers the same features as TiVo. Like TiVo, although with even more sophisticated adaptive agent learning capabilities, Double Agent learns about its user's program interests through its "observations" of viewing habits and, on the basis of these observations, makes predictive selections for the viewer. The technology involved draws first on the metadata accompanying each program, then processes it through several different filters (known as jurors) that test the program according to various taste criteria, at which point an "umpire" decides which combination of the jurors' reports is relevant for the viewer and then makes program suggestions accordingly. Both the jurors and the umpire are adaptive, learning from the viewer's response to predictions by factoring in such elements as time of day and day of the week and self-correcting with each session.[28] To its credit, Philips has taken pains to protect the user profiles thus generated, placing them on the local server (for the record, the project is currently aimed not so much at developing a marketable product as testing concepts).[29]

Double Agent's principles are familiar. Users of search engines are doubtless accustomed to interacting with metadata and filtering agents, and frequent customers of Amazon.com have probably experienced the uncanny accuracy of adaptive agents that learn from purchasing patterns and recommend books that are most likely of interest (or already read). Double Agent's main advance reflects the previously mentioned intensification of convergence, and it may be found in the extension of these computer-only technologies to the television selection process. Of relevance to the argument at hand, this technology signals a fundamental shift in viewer-program relations. Neither the viewer nor the television programmer dominate the notion of flow. Instead, a new factor enters the equation: the combination of applied metadata protocols (which code the program within certain limited parameters) and filters (search engines or adaptive agent systems that selectively respond to the metadata). Neither of these factors are neutral. Metadata protocols, much like a catalog in an archive or index in a book, determine how we conceptualize program categories and what texts we will be able to locate. Consequently, there is a great deal at stake for both producers and viewers in terms of precisely what will be labeled and how, and thus what will be seen.[30] And as users of the various Internet search engines know all too well, filters have very different sensitivities and capacities. Here, too, system requirements have great bearing on what links will be made and thus what will be seen.

The pas de deux between these two intermediaries, each partial and in its own way deforming, is thus designed to result in something approximating our individual taste formation. The task will not be easy, but the envisioned result would seem to be a prime case for flow—a steady stream of programming designed to stay in touch with our changing rhythms and moods, selected and accessible with no effort on our part, anticipating our every interest (thanks to extensive digital video backup), and nearly infinite in its capacities.

BEYOND FLOW

As we have seen, changes in television's technology and cultural form have brought with them changes to the idea of flow. Although it is fair to question the appropriateness of maintaining and reworking the concept from Williams's original meaning, failing to do this would seem to deprive our thinking about the medium of a vital element (as Williams himself suggests) and an element of discursive continuity. In order to see where we have reached in this regard, with the latest technological and cultural developments in the medium, it is useful to recall Williams's own language. Williams defined flow as "the replacement of a programme series of timed sequential units by a flow series of differently related units in which the timing, though real, is undeclared, and in which the real internal organization is something other than the declared organization."[31] This definition, particularly in retrospect, resonates with the notion of ideology as false consciousness still in circulation in the early 1970s: the timing of program elements and their organization are something other than they are declared to be, just as the world of appearances belies its real material contradictions.

Locating Williams's notion within the period's leftist discourse helps to deepen the implications of flow. The choice of the term may have been linked with the period's dominant (capitalist) cultural insistence on "the free flow of goods" or "the flow of ideas" associated with Western democ-

racies. Seen on a global level, such patterns of flow were anything but free or reciprocal. And the resonance with the notion of false consciousness was almost certainly inspired by Williams's reading of television's economies of time and sequence, as well as by his understanding of the medium's evocation of liveness and pseudo-liveness. But what are we to make in this light of the development of interfaces such as metadata and adaptive agents?

Experientially, the new technologies promise to scan huge amounts of programming and in the process package relevant programs into a never-ending stream of custom-tailored pleasure. Never has the prospect of flow been rendered so effortless for viewers and programmers alike. But to what extent do the three main components of Williams's definition of flow—differently related units; timing that is real but undeclared; and internal organization that is other than the declared organization—relate to this vision of the medium? As should by now by clear, all three conditions are met and indeed intensified by the new technological and cultural organization of the medium. Near-future scenarios promise that our televisions will be programmed from a potential pool of fifteen-thousand programs per day and will be capable of storing weeks' worth of material. Program diversity, limited only by our taste profiles, is guaranteed, as is complete program availability in a virtual present. The status of internal organization can only be other than what it is declared to be to the extent that it does not accurately mirror and predict our individual interests, tastes, and lifestyles (raising powerful questions about the interplay of structure, agency, and the formation of identity). Williams's conditions are certainly fulfilled, but they are also fundamentally transformed.

My brief look here at viewer-television interfaces has sketched a narrative of shifting agency. The agency of the television programmer has been displaced by that of the RCD-equipped viewer, which in turn has been displaced by metadata programmers and adaptive agent designers. Although by no means as concrete in the popular imaginary as traditional television programmers and zapper-equipped viewers, this new interface industry will quickly make itself felt (consider Google's success in the Internet market as simply the tip of the iceberg). As agency shifts to this new constellation in the television/computer world, we can expect a rapid growth in the power and presence of as-yet unheard of industries.[32] And concomitant with this shift, we can perhaps expect a displacement of the perceived need for overt viewer control, much as the endeavors of television programmers have themselves been displaced.

Although crystal gazing is not the point of this paper, the transformation of the viewer-television interface entails other sorts of change that merit mention. The disruption, which characterizes contemporary commercial television in the form of advertising, breaks, and viewer-zapping activity will most likely be minimized by economic strategies more appropriate for a fragmented channel environment and by new selection mechanisms (the possibilities are many: product placement, pay-per-view, near-video-on-demand). And the diverse appeals and programs currently associated with broadcasting will inevitably be exchanged for the logics of taste profiles and the continuities of the familiar, both of which will be guaranteed by adaptive agent technologies. In the process, the textures of televisual flow will likely be more homogenized than not. One might also reasonably expect that the liveness and pseudo-liveness that Williams described as a characteristic of the medium will be dropped for the virtuality and omnipresence offered by filters and adaptive agents in combination with digital video recorders (as can be seen in the examples of TiVo and Double Agent). Again, such changes have centrally to do with this new, technologically ordered concept of flow.

And the consequences? These developments will obviously draw on television's continued convergence with the computer and will empower new commercial sectors specializing in viewer-program interfaces. As this happens, the importance of discursive control over television programming will be a central issue: Who will determine metadata protocols? How will program forms be conceptualized, categorized, and articulated? How will information and access be structured? Related concerns apply as well to filtering devices. The ability to locate and sort particular types of programming, the capacity to respond to certain adaptive cues, and the position of promoting certain program choices all suggest a powerful alliance of attributes. While we can expect public concerns about the privacy and use of the lifestyle/consumer profiles that will be gathered by television's adaptive agents, the less visible issue of what constitutes our "personalized" program package has the power to be far more determining and far less central to the public agenda.

Raymond Williams's notion of flow as both an instance of and a metaphor for ideology was primarily concerned with the "undeclared," with the deceptive presentation of program timing and organization, and with false consciousness. Over the intervening years, particularly in the context of cultural developments that have for better or worse been labeled postmodern, the understanding of ideology has changed. In the place of epistemological theories like those deployed by Williams, a more sociological and in some senses more "neutral" notion of ideology has taken hold, one more concerned with beliefs, values, and ideas.[33] Along

the way, the various metaphors used for ideology have also changed. "Filters," for example, have been invoked as appropriate metaphors for ideology because they suggest not so much distortion and false consciousness as they do the partiality and selection implicit in any encounter with reality. But as I have argued above, other metaphors—such as flow—have maintained their relevance by changing their meaning. In the case of flow, we have seen the process by which this occurred by looking at the interaction of changes in television's infrastructure and at the transformation of the viewer-television interface. We have seen a shift in the televisual environment from broadcasting as an activity associated with the public sphere to narrowcasting via metadata and adaptive agent mediations of individual tastes. And we have seen a shift in the form of the viewer-television interface—particularly in the notion of flow—that has slowly transformed from being centered on programming to active audience to adaptive agent.

From its start, the concept of flow has been centrally concerned with content management and with viewer attraction. It has been used to describe economies of time and consciousness in the form of the viewer's encounter with programming. As we have seen, generational clusters of television technology and cultural practice have each been bound up in particular power dynamics and discursive strategies. Thanks to Williams, the concept of flow, as a repository for thinking about changing strategies for content management, can also serve as a metaphor for our changing notions of ideology. Although its meaning is different, this metaphor remains vital to a critical understanding and evaluation of our interface with the television medium.

NOTES

1. William Uricchio, "Cinema als Omweg: Een nieuwe kijk op de geschiedenis van het bewegende beeld," *Skrien* 199 (1994): 54–57; and most recently, "Technologies of Time," in *Allegories of Communication*, ed. John Fullerton and Jan Olsson (London: John Libbey Ltd., 2004).

2. Indeed, the term *Fernseher* originally referred to the telescope that in a sense literalizes the meaning of the medium that I have been investigating.

3. Raymond Williams, *Television: Technology and Cultural Form* (1974; Hanover, N.H.: Wesleyan University Press, 1992), chapter 4.

4. Ibid., 83.

5. Ibid., Williams, 80.

6. John Ellis, *Visible Fictions: Cinema, Television, Video* (London: Routledge and Kegan Paul, 1982); Jane Feuer, "The Concept of Live Television: Ontology as Ideology," in *Regarding Television: Cultural Approaches—An Anthology*, ed. E. Ann Kaplan (Los Angeles: American Film Institute, 1983), pp. 12–22; Rick Altman, "Television/Sound," in *Studies in Entertainment: Critical Approaches to Mass Culture*, ed. Tania Modleski (Bloomington: Indiana University Press, 1986), pp. 39–54; John Fiske, *Television Culture* (London: Methuen, 1987); John Hartley, *Teleology: Studies in Television* (London: Routledge, 1992); Richard Dienst, *Still Life in Real Time: Theory after Television* (Durham, NC: Duke University Press, 1994); Klaus Bruhn Jensen, *The Social Semiotics of Mass Communication* (London: Sage, 1995); Jostein Gripsrud, "Television, Broadcasting, Flow: Key Metaphors in TV Theory," in *The Television Studies Book*, ed. Christine Geraghty and David Lusted (London: Arnold, 1998), pp. 1998; John Corner, *Critical Ideas in Television Studies* (London: Oxford, 1999).

7. For more on this transformation, see William Uricchio, "The Trouble with Television," *Screening the Past: An International Electronic Journal of Visual Media and History* 4 (1998), http://www.latrobe.edu.au/www/screeningthepast/.

8. Stephen Heath, "Representing Television," in *The Logics of Television*, ed. Patricia Mellencamp (Bloomington: Indiana University Press, 1990), p. 268.

9. The data in this section are drawn from various editions of the Electronics Industries Association's *Electronic Market Data Book* (Washington, D.C.: EIA, 1973–79), and from the *Television and Cable Factbook* (Washington, D.C.: Television Digest, 1978–80). See also Bruce C. Klopfenstein, "From Gadget to Necessity: The Diffusion of Remote Control Technology," in *The Remote Control in the New Age of Television*, ed. James Walker and Robert Bellamy Jr. (Westport, Conn.: Praeger, 1993), pp. 23–40.

10. Contram/SRI's estimate of remote control market penetration begins 8 years later [1981] and puts remote control device (RCD) penetration rates at 16 percent of the market, a percentage that is possibly inflated. Nielsen, which included RCDs for the first time in its studies in 1985, found that only 29 percent of American households had the device, compared with Contram/SRI's finding of 38 percent for the same year (*Broadcasting*, May 11, 1992, p. 52).

11. *Cable Television Report and Order*, 36 FCC2d 143 (1971). For a broader discussion of this point in the context of remote control devices, see *Television and the Remote Control: Grazing on a Vast Wasteland*, ed. Robert Bellamy Jr. and James Walker (New York: Guilford Press, 1996), pp. 20–21.

12. *Domestic Communication Satellite Facilities*, 35 FCC2d 844 (1972).

13. For an overview of this fascinating chapter in technological history, see Louise Benjamin, "At the Touch of a Button: A Brief History of Remote Control Devices," in Walker and Bellamy, eds., *Remote Control*, pp. 15–22. For design implications, see Janet Abrams, "Hot Buttons," *ID: The Magazine of International Design* 42 (1995): 56–59.

14. J. Stanley, "Let Electronic Slaves Do Your Bidding," *Family Handyman* 32 (1982): 86. See also D. T. Friendly, "But Can This Thing Walk the Dog?" *Newsweek*, April 28, 1980, pp. 71–72.

15. Alexis J. Walker, "Couples Watching Television: Gender, Power, and the Remote Control," *Journal of Marriage and the Family* 58 (1996): 813–23. These findings are supported by studies ranging from David Morley, *Family Television: Cultural Power and Domestic Leisure* (London: Comedia, 1986) to Gary Copeland and Karla Schweitzer, "Domination of the Remote Control during Family Viewing," in Walker and

Bellamy, eds., *Remote Control*, pp. 155–68. Walker and Bellamy's book contains several other studies and overviews relating to domestic RCD interactions.

16. Titles from, respectively, *Science Digest* 38 (1955): 94; *Reader's Digest* 80 (1962): 197–98; and *Electronics World* 65 (1961): 48–49.

17. Typical is "Refinement for TV Silencers: Remote Control Devices," *Consumer Reports* 30 (1965): 475.

18. C. L. Walker, "Blab-Off: How to Stop Objectionable TV Commercials," *Reader's Digest* 63 (1953): 71–72.

19. For a summary of trends in RCD research, see Nancy Cornwell et al., "Measuring RCD Use: Method Matters," in Walker and Bellamy, eds., *Remote Control*, pp. 43–56.

20. J. E. Lighter, ed., *Random House Historical Dictionary of American Slang* (New York: Random House, 1994), p. 492.

21. The data in this section is drawn from various editions of the *Electronic Market Data Book* and *The Television and Cable Fact Book*.

22. The most profound implications may be those faced by the theorist, because interactive games pose fundamental questions about the ontological status of the text.

23. K. Maddox, "The Big Picture," *Electronic Media*, November 9, 1993, pp. 1, 23, 31.

24. Not all advertising and broadcasting executives agree on this point, and some evidence suggests that increased program supply encourages viewers to fall back to restricted program encounters. For more on changes in the industry's antizapping strategies, see Bellamy and Walker, "A Tool for the Second Generation: Changing Patterns of Television Programming and Promotion" in Bellamy and Walker, eds., *Remote Control*.

25. "Commerciele tv-zenders vrezen censuurkastje," *Volkskrant*, October 27, 1997, p. 7.

26. Consider, for instance, the increasing reliance of the film medium on digital special effects and color correction, video editing, exhibition using CD sound tracks, and distribution in the form of video and DVD. Through it all, the medium remains unproblematically regarded as film.

27. For more on TiVo, see the company site at www.tivo.com.

28. Adaptive agents have also been applied to interactive narratives, doing away with the "need" for active choice and instead appearing as a seamless narrative that happens to be differently configured for different viewer profiles.

29. "Help! The Couch Potato Is Drowning!" *Philips Research Password* 1 (1999): 10–13.

30. Among other issues, current prototypes fail to distinguish between the horror genre and science fiction, a Western bias fails to account for non-Western program genres, and it is unclear if information regarding the production staff will be included.

31. Williams, *Television*, p. 87.

32. The merger of AOL with Time Warner demonstrates the vitality of this sector, as does the fact that Yahoo, after a mere ten years of existence but before the dot-com collapse, attained greater value than the Disney empire.

33. Foucault's notion of discourse is but one instance of the change. For an overview of this developmental view of ideology, see Terry Eagleton, *Ideology: An Introduction* (London: Verso, 1991).

ANNA MCCARTHY

THE RHYTHMS OF THE RECEPTION AREA: CRISIS, CAPITALISM, AND THE WAITING ROOM TV

For several years I took photographs of TV screens in public settings, using a slow-shutter 35mm camera and some 1000 ASA film, in order to document how the screen is installed, decorated, and integrated from place to place. I visited a variety of institutional and not-so-institutional places of commerce and transit and labor and leisure that define everyday life outside the home: delicatessens, theme restaurants, railway stations, bars, shops, malls, and waiting rooms, to name just a few. Some were establishments I visited or passed by regularly; others were places I had read about and visited for the express purpose of photographing and observing their TV activity. Still others were places I happened to encounter once, by chance, while passing through a town or visiting a highway rest stop. The process made me look very closely and carefully at how the material practices of using (or neglecting) and viewing (or ignoring) TV sets change from place to place. During the same period, I read all the articles I could find in the press and in more specialized publications that provided some clues to the significance of TV's flickering, blurting presence in such places. Articles on topics as diverse as the legal load-bearing requirements for overhead TV mounts on walls and the relationship between traffic flow and viewer attentiveness at the airport gate can be found in a vast array of professional and popular literatures. Trade journals as unrelated as *Medical Economics* and *Foot-*