

**Television's Next Generation: Technology /Interface Culture / Flow**

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Like many 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 a 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 40 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.<sup>1</sup> Simultaneity, I argued, was one of the long anticipated but ultimately suppressed or bypassed defining characteristics of a medium of "far seeing", a medium more dependant 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 connectivity, 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.<sup>2</sup> And it is this aspect that in my larger project I’ve been trying to trace through its many permutations to things like webcam sites or Nokia’s next generation mobile telephones.

But hotel television (and the sometimes late nights spent interacting with it) became 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 after his long transatlantic crossing and watching a heavy dose of defamiliarized (read ‘American’) television.<sup>3</sup> Williams was struck by the seamless flow of American programming, by the strategies that transformed diverse program elements in to a whole. This 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 this essay will exploit, 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 co-existed along with the more dominant idea of flow.<sup>4</sup> But the heuristic will dominate the pages that follow.

I would like 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 19th television conceptions and the Marriott's elaborate sequence of choices and near video on demand. The notion of flow, one of the most developed discursive strands in television studies, touches directly upon this point. Flow is obviously a loaded term. Closely associated with Raymond Williams's path-breaking contribution to the study of television (1974), 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"<sup>5</sup>). It has been used to describe the structure of textuality and programming on macro, meso, and micro levels (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 Curtain argues in this volume, it can describe the movement of transnational programming.

Williams's formulation and application of the concept was 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 Ellis (1982), Feuer (1983) Altman (1986), Fiske (1987), Winkler (1991), Hartley (1992), Dienst (1994), Jensen (1995), Gripsrud (1997), and most recently Corner (1999) have all in various ways challenged the operations which Williams sought to describe, in the process contributing to the formation of a discursive field. 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 about the implications of the changes in television's technology, programming, interfaces, expectations, etc., some of which this paper will touch upon. 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, as for its ephemeral present, as 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 which have until now driven the logics of television, but they have also transformed the medium's context and cultural place.<sup>6</sup> 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."<sup>7</sup>

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 which 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, 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 trans-generational medium remains. From this perspective, the relatively little attention directed towards 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 which 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 our entry point.

## **Flow**

Let us return to Williams, dazed after his transatlantic crossing and a strong dose of Miami television. By March of 1973, Williams was in San Francisco where he began a systematic study of his impressions of American television and flow in particular. What sort of television did he experience? Several measures of the period's television environment offer an insight. In 1973, the US had a total of 927

VHF and UHF television stations and meanwhile, cable subscriptions were relatively low (the first available data is for 1978, and indicates 13 million cable households, or 17.7% of the market). Yet both measures would enjoy rapid development in the years to come, with household cable subscriptions increasing by nearly 350% 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% of cable subscribers had fewer than 13 channels available – a number that dropped to 0% within ten years, by which point over 97% had over 30 channels. Video cassette recorders also changed the television environment. Four years after the publication of *Television: Technology and Cultural Form*, Nielsen estimated a VCR household penetration rate of 0.3% with 402,000 VCRs in place. By 1984, 10.6% of the market had been penetrated, and by 1994, well over 80% had been reached.<sup>8</sup>

The point is that in March 1973, Williams would have experienced a form of television largely dependent on limited VHF and UHF transmissions. While 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, no cable and no VCR. Moreover, it seems unlikely that he had access to a remote control device.<sup>9</sup> Williams experienced a historically specific form of television, and at least in the United States, he witnessed the final days of 'big-three' hegemony. 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 which, while protective of established interests, opened the door for a fundamental reordering of the

broadcasting environment which would take place shortly after William'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.<sup>10</sup> That same year, the Domestic Communication Satellite Rules allowed private satellite distribution, ending the monopoly of the Communications Satellite Corporation.<sup>11</sup> 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 which would expanded exponentially in the late 1970s and early 1980s, were spawned by these regulatory changes.

Appropriately, the discussion of flow in *Television: Technology and Cultural Form* falls within a chapter entitled "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 since they are so lucidly presented in *Television*. Here I wish to situate them, and point to the dynamic of their transformation.

Just as William'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 to time shift and zip through advertisements introduced by the VCR, or the ability to zap ads in real-time television thanks to the remote control, 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 or 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, since I can attribute many critical insights not only to the accumulated wisdom that we call 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 emblemizes 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, serving to facilitate mobility among the 'older' broadcast forms and the 'newer' programming sources, and enabling the viewer to move among program forms with considerable ease. And most importantly, it signals a shift away from the programming-based notion of flow that Williams documented, to a viewer-centered notion.

This now ubiquitous device has a history that goes back to late-1920s radio applications, from which point it had a long evolution through cabled 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 infra-red devices.<sup>12</sup> 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 meter radius; or RCD equipped-pranksters roaming the streets and wreaking havoc on unsuspecting television viewers by unexpectedly changing their channels or volume level. Each new means of extending the viewer's control seemed to entail either unwanted side-effects, or to whet the appetite for new types of control. There is much to be said about the development of remote control -- about the various RCDs' construction of interaction (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 counter-text to the promises of enhanced control that inscribed the RCD in popular discourse and advertisements. RCDs, although having a somewhat marginalized presence in many of the advertisements that I've seen, nevertheless were associated with advances in tuning and control, and of course, given their extra cost, with luxury. 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 were positioned somewhere between space age ambitions and the mundane aspirations of an article in Family Handyman: "Let Electronic Slaves Do Your Bidding."<sup>13</sup>

Control, however, is rarely a widely agreed upon 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.<sup>14</sup> Indeed, some evidence suggests that the frustration levels are sufficiently high 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 to the industry thanks to 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”<sup>15</sup>, “Don’t just sit there! reach for the switch!”<sup>16</sup> and “TV commercial silencer”<sup>17</sup>. Indeed, in the first half of the 1960s, the popular press was as likely to call the RCD a ‘television silencer’ as anything else.<sup>18</sup> Such sentiments, at least in the United States, were nothing new, with Readers Digest offering tips on non-RCD ways of stopping objectionable television advertisements as early as 1953<sup>19</sup>; 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 one hand shed light on the particular concerns of the industry, but that on the other, was largely inconclusive thanks to disagreement about standards of RCD activity and research methodology.<sup>20</sup> Despite these extremely interesting attempts to pathologize ‘disruption’ (in this case, viewer control), as just noted, 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 which 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 also it 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 that Williams had called attention to resulted in something just short of a panic among broadcasters and advertisers since it directly challenged the logic of the ratings system so central to the American industry. Companies such as A.C.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 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', demonstrating from its start that viewers had the ability to disrupt program flow and 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 US trademark registration, was first used shortly after America's bicentennial fever had abated: 15 July 1976.<sup>21</sup> 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 1985-1986, by which point

nearly half the US households were cabled, 30% equipped with VCRs, and up to half with RCDs.<sup>22</sup> 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, armed with a television RCD, a VCR, 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 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 to 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 characteristic of the late 1980s. Whatever the reason, the larger point regards the subtle but important shift in the concept of flow away from programming strategies and instead to viewer determined experience.

### **The Present as Intermezzo**

Over the past decade, the televisual landscape has been gradually changing in ways that bear upon 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 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)<sup>23</sup>, the interface they provide remains conceptually linked to the RCD in the sense that both rely upon 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 already available in 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 500-2000 channels. What precisely this environment will look like is uncertain, but television executives like Ajit Davi's (Cox Cable) rather conservative 600-channel scenario suggests a process of segmentation which will 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 including the possibility for replays;
- A 50 channel pay-per-view (PPV) event zone;
- And a 250-channel near-video-on-demand (VOD) zone.<sup>24</sup>

While at least in Davi's forecast, personal messaging and billing are not part of television, his vision is 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, thus a battery of weapons have been developed to stabilize her or his viewing habits.<sup>25</sup> On one hand, 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 the reworking of end or opening credits (dropping of theme songs, superimposition of credits over the opening of the narrative, using outtakes or an epilogue to hold viewers to the end of the slot), in 'hot starts' where a new program begins without an advertising buffer between it and the preceding program, in the sharpening of program hooks before ad breaks by showing previews of the following sequence; 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. 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 as regards 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 the 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.<sup>26</sup> 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, points to a concept of flow that is fundamentally different from the two generations we have thus far considered. 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, the viewer, is 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 40s 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-grantedness' of existing media forms.<sup>27</sup> 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, 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 elaborated set of options than 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 importantly, the ability to code the television to search for one’s favorite programs.<sup>28</sup> 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. TiVo, like the Television Fairy, relies upon 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, which 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 2000 channel, 15,000-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 with one large difference: using an adaptive agent technology, it learns about its user's program interests by 'observing' 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) which 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 makes program suggestions accordingly. Both the 'jurors' and the 'umpire' are adoptive, learning from the viewer's response to predictions, factoring in such elements as time of day and day of the week, and self-correcting with each session.<sup>29</sup> To its credit, Philips has taken pains to protect the user profiles, which are thus generated, placing them on the local server (and for the record, the project is currently aimed not so much at developing a marketable product as testing concepts).<sup>30</sup>

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 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 which selectively respond to the metadata). Neither of these are neutral factors. Metadata protocols, much like a catalogue 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 both for producers and viewers in terms of precisely what will be labeled, how, and thus what will be seen.<sup>31</sup> 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 back-up, 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 the latest technological and cultural developments in the medium have gotten us in this regard, 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."<sup>32</sup> 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 left discourse helps to deepen flow's implications. 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 democracies. 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, and by his understanding of the medium's evocation of liveness and pseudo-liveness. But what are we to make of the development of interfaces such as metadata and adaptive agents in this light?

Experientially, the new technologies promise to scan huge amounts of programming, in the process, packaging 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 be 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 15,000 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.

This paper's brief look at viewer-television interfaces has sketched a narrative of shifting agency. The agency of the television programmer has been displaced by the agency 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 Yahoo's success in the computer market as but 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.<sup>33</sup> 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 upon 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 one expects 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, with false consciousness. Over the intervening years, particularly in the context of cultural developments that have for better or worse been labeled post-modern, 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.<sup>34</sup> 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 the previous pages have argued, 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 a metadata and adaptive agent mediations of individual tastes. And we have seen a shift in the form of the viewer-television interface -- and particularly the notion of flow -- that has slowly transformed from programming-centered, to active audience-centered, to adaptive agent-centered.

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

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<sup>1</sup> William Uricchio, "Cinema als Omweg: Een nieuwe kijk op de geschiedenis van het bewegende beeld," *Skrien* 199: 54-57 (1994) and most recently, "Technologies of Time," in J. Olsson, ed., (Berkeley: University of California Press, forthcoming).

<sup>2</sup> Indeed, the term 'Fernseher,' which today means television in the German language, originally referred to the telescope that in a sense literalizes the meaning of the medium that I have been investigating.

<sup>3</sup> Raymond Williams, *Television: Technology and Cultural Form* (Hanover:

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Wesleyan University Press, 1992/1974) chapter 4.

<sup>4</sup> Williams, 83.

<sup>5</sup> Williams, 80.

<sup>6</sup> 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/>

<sup>7</sup> Stephen Heath, "Representing Television" in Patricia Mellencamp, ed., The Logics of Television (Bloomington: University of Indiana Press, 1990): 268

<sup>8</sup> The data in this section is drawn from various editions of the Electronics Industries Association, Electronic Market Data Book (Washington, DC: EIA) and the Television & Cable Factbook (Washington, DC: Television Digest). See also, Bruce C. Klopfenstein, "From Gadget to Necessity: The Diffusion of Remote Control Technology," in James Walker and Bellamy, Robert Jr., eds., The Remote Control in the New Age of Television (Westport: Praeger, 1993): 23-40.

<sup>9</sup> Contram/SRI's estimate of remote control market penetration begins 8 years later [1981], and puts remote control device (RCD) penetration rates at 16% 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% of American households had the device, compared with Contram/SRI's finding of 38% for the same year. (Broadcasting, 11 May 1992, 52)

<sup>10</sup> Cable Television Report and Order, 36 FCC2d 143 (1972). For a broader discussion of this point in the context of RCDs, see Robert Bellamy, jr. and Walker, James, Television and the Remote Control: Grazing on a Vast Wasteland (New York: Guilford Press, 1996): 20-21.

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<sup>11</sup> Domestic Communication Satellite Facilities, 35 FCC2d 844 (1972)

<sup>12</sup> 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, 15-22. For design implications, see Janet Abrams, "Hot Buttons," ID: The Magazine of International Design 42:56-9 (1995)

<sup>13</sup> J.. Stanley, "Let Electronic Slaves Do Your Bidding," Family Handyman 32: 86+ (1982); see also D.T.Friendly, "But Can This Thing Walk the Dog?," Newsweek, April 28, 1980: 71-2.

<sup>14</sup> Alexis J. Walker, Couples Watching Television: Gender, Power, and the Remote Control," Journal of Marriage and the Family 58 (1996): 813-823. These findings are supported by studies ranging from David Morley, Family Television: Cultural Power and Domestic Leisure (London: Comedia, 1986) to Gary Copeland and Schweitzer, Karla, "Domination of the Remote Control During Family Viewing," in Walker and Bellamy, 155-168. Walker and Bellamy's book contains several other studies and overviews relating to domestic RCD interactions.

<sup>15</sup> Science Digest 38:94 (1955)

<sup>16</sup> L. Rosten, Readers Digest 80: 197-8 (1962)

<sup>17</sup> R.J.Mack, Electronics World 65:48-9 (1961)

<sup>18</sup> Typical is "Refinement for TV Silencers: Remote Control Devices," Consumer Reports 30: 475 (1965)

<sup>19</sup> C. L. Walker, "Blab-Off: How to Stop Objectionable TV Commercials," Readers Digest 63: 71-2 (1953).

<sup>20</sup> For a summary of trends in RCD research see, Nancy Cornwell, Shu-Ling

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Everett, et. al., "Measuring RCD Use: Method Matters" in Walker and Bellamy, 43-56.

<sup>21</sup> J.E.Lichter, ed., Random House Historical Dictionary of American Slang (New York: Random House, 1994): 492.

<sup>22</sup> The data in this section is drawn from various editions of the Electronics Industries Association, Electronic Market Data Book (Washington, DC: EIA) and the Television & Cable Factbook (Washington, DC: Television Digest).

<sup>23</sup> The most profound implications may be those faced by the theorist, since interactive games pose fundamental questions about the ontological status of the text.

<sup>24</sup> K. Maddox, "The Big Picture," Electronic Media, November 9, 1993: 1, 23, 31.

<sup>25</sup> 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 anti-zapping strategies, see See Bellamy and Walker, chapter 4 "A Tool for the Second Generation: Changing Patterns of Television Programming and Promotion."

<sup>26</sup> "Commerciele tv-zenders vrezen censuurkastje," de Volkskrant, 27 October 1999, 7.

<sup>27</sup> 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.'

<sup>28</sup> For more on TIVO, see the company site at [www.tivo.com](http://www.tivo.com)

<sup>29</sup> Adaptive agents have also been applied to interactive narratives, doing away

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with the 'need' for active choice, and instead appearing as a seamless narrative that happens to be differently configured for different viewer profiles.

<sup>30</sup> "Help! The Couch Potato is Drowning!" Philips Research Password 1 (1999): 10-13

<sup>31</sup> Current prototypes, for example, fail to distinguish between the horror genre and science fiction; a western bias fails to account for non-western program genres; it is unclear if information regarding the production staff will be included; etc.

<sup>32</sup> Williams, 87.

<sup>33</sup> AOL's recent merger with Time-Warner demonstrates the vitality of this sector, as does the fact that Yahoo, after a mere ten years existence but before the dot.com collapse, attained greater value than the Disney empire.

<sup>34</sup> 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).

With next-generation communications, we aim to contribute towards the rise of Samsung as the premier telecommunications company in the world through various researches in core telecommunications technologies, distinct technologies in products and services, and MEC-based new business solutions. We are also working to secure core technologies in AI, as its importance has continued to grow in the field of telecommunications, and use these for automation and intelligence in 5G devices. Next-Generation Digital Television Functions. The big question for digital television is, "What is the next break-out technology?" Technical — Current display interfaces connecting subsystems running out of bandwidth (i.e., LVDS) — Choosing the best architecture for internal/external video connection; HDMI, DVI or other — Higher frame rates + higher resolution = faster data rates, requiring more video processing power and higher bandwidth to transfer data between subsystems — Lowering power. No matter what technology standards are adopted (or become de facto standards), they all share one common characteristic: their technology and business models are best solved by Altera FPGA-based solutions. References. Uricchio, W.: Television's next generation: technology/interface, culture/flow. In: Spigel, L., Olsson, J. (eds.) *Television After TV: Essays on a Medium in Transition*, pp. 171–172, 179. Duke University Press, Durham (2004) Google Scholar. 54. Uricchio, W.: Television's next generation: technology/interface, culture/flow. In: Spigel, L., Olsson, J. (eds.) *Television After TV: Essays on a Medium in Transition*, p. 175. Duke University Press, Durham (2004) Google Scholar. 55. Van House, N., Churchill, E.F.: Technologies of memory: key issues and critical perspectives. *Mem. Stud.* Next Generation Advanced TCA Solutions. Accelerating Network Platform Evolution with ATCA Blades, Systems and Services. RoHS. In concert with our ecosystem partners we enable our customers with early access to the latest technology which accelerates their next generation product designs. It allows them to apply new technology sooner to gain first mover advantage and leapfrog competition. For some OEMs, we are an integrated extension of their R&D team. For others we actually are their R&D team. Nokia's next generation mobile telephones. But hotel television (and the sometimes late nights spent interacting with it). became something of a devil's advocate, provoking reconsideration of my research. Appropriately, the discussion of flow in *Television: Technology and Cultural*. Form falls within a chapter entitled "Programming: Distribution and Flow," attesting to Williams's notion of the term as primarily textual.