COMPRESSION AND THE INTENSIFICATION OF VISUAL INFORMATION IN FLASH AESTHETICS

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ABSTRACT

To date, most discussion about the aesthetics of Flash animation has taken place within the context of web usability and design debates, between, on the one hand standardization, simplification and the inherent deceit of the visual, and, on the other, the mannerist excessiveness of a design-driven Flash aesthetic on the other. This paper proposes that a more thorough investigation of Flash aesthetics is necessary; one that shifts its analysis towards the broader function and place of animation within contemporary on and offline contexts. It will be suggested that by situating Flash within the context of graphic narrative, networked culture and the post '89 debates over censorship and representation, we can see a rich set of media and mediated elements at work within its flattened space. Consequently, a Flash aesthetic is not synonymous with global design or high-tech information spaces but rather is a hybrid product of information exchange and meaning between cultures: low-tech, high-tech, Japanese, American, digital and analogue.

KEYWORDS

Flash, aesthetics, animation, web interface design, compression, flattened space, fan sites, *manga* and *anime,* bitmapped graphics vs. vector-graphics, topology, nonlinearity.

FLASH CULTURES: BEYOND THE USABILITY VS. DESIGN DEBATE

Much of the discussion about the aesthetics emerging from the use of Flash as an animation and web development tool has taken place within the context of website usability and design debates. Moving from the initial addition of eye-catching buttons and sometimes irritating attention-seeking animate areas of screen space to entire interfaces within web design, Flash has held out the promise of full multimedia environments and an aesthetic experience of navigation for the bandwidth impoverished regions of netspace. Filling the gap between the anticipation of broadband and rich media experience and the reality of end-user download conditions, Flash-based websites have offered themselves as expressions of carefully designed and animated immersive worlds. Not surprisingly the diatribe against Flash, and its consignment to an exemplification of over design in contemporary visual culture, has come from the usability gurus such as Jakob Nielsen1. The debate between, on the one hand standardization, simplification and the inherent deceit of the visual, and the innovative visuality of the design-driven Flash aesthetic on the other, has prevailed over other discussion about online cultures of design, animation and cultural exchange2. The focus on the poles of standardization and the excessive vicissitudes of visual culture has worked to situate Flash aesthetics primarily within the context of two-way oscillation between elite corporate design interests: one moving to consolidate the interests of cross-platform usability supporting the imposition of a top-down uniform web culture; the other endorsing a trajectory that leads in the direction of high-end online experience through the new Internet mecca of high-speed broadband connection.

That these two vectors only represent the minima and maxima of the same curve can be witnessed by their strategic merger in the recent alliance between Nielsen's corporate consultancy dedicated to maintaining web usability standards, and the Macromedia software firm. Commissioning the Nielsen Gorman group to conduct a usability study of Flash MX in 2002, Macromedia implicitly steered Flash software away from its association with superficial and superfluous presentation and content and married it to the common denominators of Nielsen's usability standards. These fundamentally revolve around the conception of the user as navigationally incompetent and unable to comprehend mutable, visual spaces, and the assumption that web space is governed by the primordial user desire of information consumption and so therefore should be designed to functionally satisfy (and optimize) this craving. With the release of Flash MX, the software has itself become less of an animation tool and more of an application builder; perhaps a step away from the slippery surface culture of adornment that marked both the highlights and low points of its late 1990s implementation. Its form now follows the stripped down functionality of the post dot.com crash economy of net space and time. In the hyped era of end of millennium technophilia, Flash as animation software was the Internet's futuristic index for the yet to be realized promise of fast-moving multimedia networked culture; now Flash MX heralds the move away from the visual space of desktop downloads to the staid use of the net as application hub for transaction and service.

This tells us little, however, about the development of Flash aesthetics through the late 1990s to produce new kinds of netspaces and networking, nor does it acknowledge a broader understanding of Flash as a cultural phenomenon that incorporates into an understanding of it the experimentation by artists and designers with a markedly different visual space, its debt to and imbrications with other animation histories and subcultures, and the role of Flash in the technical and social prefiguring of postcommunication effects such as its collapse of the distinction between signal and channel (or information and transmission). This paper will propose that a more thorough investigation of Flash aesthetics needs to be undertaken; one that shifts analysis towards the actual and potential place, effects and status of software within contemporary on and offline contexts. I will be using my investigation of Flash in two ways: first, as a case study of a particular technical-social-aesthetic trajectory that has been unfolding from the late 1990s, marking the drift of information away from its association with and production by the relations of consumption and production that characterize mass media cultures, a drift driven by the rise of a networked society. The argument has been forcefully made in a number of contexts that we are moving away from a model of one way media production and transmission to mass consumption,

towards a culture oriented by irregular and distributed flows of information (2,6). New media theorist Lev Manovich has given this argument particular cogency in the area of information aesthetics by asserting that Flash signals the emergence of a new kind of postmedia software-based art and artist (17). Importantly Manovich has signaled how the generation of new artist-designers using not only Flash but other web development and application software such a s Shockwave, DHTML and php scripting are moving into a field in which they do not simply appropriate media material but produce information culture. Similarly, I will be referring to Flash culture as a broad descriptive term that encompasses a range of actual applications. Although Manovich's argument broadens the analysis of Flash to the wider cultural phenomenon of informationalism, I will suggest that the aesthetic tension he raises between mass media and information cultures' artifacts is already subsumed by a larger shift that traverses social, technical and cultural/aesthetic arenas. This is the shift from communicative to distributed socialities. The significance of Flash culture lies more in its status as a marker of postcommunication, networked visuality. The drift towards both this kind of sociality and aesthetic regime begins before the advent of Flash but there are significant ways in which the technical parameters of software that operates through vector-graphics and/or produces the image programmatically definitively marks our cultural space as distributed and noncommunicative.

Second, I will be developing a methodology for understanding these postcommunication aesthetics by addressing the importance of temporality in an analysis of current digital visual culture. We have been witnessing a seismic shift from image space to image time. Compressed new media forms such as Flash cannot be read within a postmodern aesthetic in which sociality, meaning–making and affect are disengaged or proceed from image space. Nor are the aesthetics they engender simple reiterations of the modernist obsession with abstraction, although there may be interesting comparisons to be made between the emphasis on colour, line and digital materiality in Flash aesthetics, with certain plateaus of modernism such as abstract expressionism and minimalism. But it is compression that will become a key term in helping us come to grips with Flash aesthetics. The combination of vector graphics utilizing algorithmic execution to describe image data (rather than stored pixels), and its compression codec has technically permitted the Flash project to operate successfully in low-bandwidth situations, providing the preconditions for cheap, accessible experimentation and distribution.

But compression as an operative concept for digital aesthetics has wider implications and can also be understood as an indicator that demarcates a shift towards an entirely different visual economy: one which no longer operates according to the logic of substitution – the translation of analogue to digital information - or even of simulation, in which space continues to matter, albeit space that is ultimately reducible to data. Rather the image becomes topological, underscoring the connections and intervals that produce the relations of images to each other within sequences. It is in this sense that the contours of the digital image have become deeply marked by temporality: that is to say, temporality as the rhythms of deformation, transformation and lag

that provide the pace of unfolding (play) and reception (download) in Flash animations and interfaces; and the temporality of a nonlinear encounter with time where image instants are no longer experienced successively but compressed and rearranged into nonsequential levels and layers, multi-accessible from any given single moment. Data compression is synecdochal for spatial compression and temporal intensification in distributed digital culture: both the technical and social compact, intensify and rearrange the processes involved in producing and consuming, making sense of, and being affected by visual information.

FLASH, ANIMATION AND FLATLANDERS

Although Flash animation technically fulfills the requirements of globalised information – ease of compression for swift delivery, reconfiguration across time and place (a result of carefully matching the FlashPlayer to browser development), seamless multimedia integration – its characteristically flattened aesthetic needs to be understood within the histories of the differential animation cultures of Japan and America. The aesthetic that characterizes many Flash web interfaces draws upon modernist design and reinvents this as a digital minimalism (17). This is evident in work that in effect turned Flash and online interfaces into experiments in minimal virtual environments such as Joshua Davis' "praystation", Future Farmers "theyrule.net" and the design group hi, Res!'s experimental website "soulbath.com" (8, 10, 23). But we should not dismiss the equally important visual relation that Flash draws with the flatlands of offline animation developed for television, experimental video and short film through the late twentieth century. Thus we can say that although Flash has developed into mainly a software and development environment, its genealogy is caught up with a visual culture that initially grew out of what we might now refer to as older media forms.

In America, this visual culture, which begins by grabbing hold of moving image media and returning it to animation, marks the first stages of an attempt to come to terms with the potential that a compressed and flattened aesthetic offers for a rupture with conservative realist representation flooding the spheres of performative, digital and photographic aesthetic production in the post '89 era. From the 1990s onwards, animation narrative and form in America changed significantly, responding to both conservative hysteria about the decline of family values and the social change that charted the actual decline of the family unit. As a result of the NEA debates involving the exhibition and funding of sexually explicit work by Robert Mapplethorpe, Karen Finley and others, the sphere of representation and image making tightened around depiction of the body. Without providing direct empirical proof of how particular artists or areas of cultural production responded to these strictures, I would speculate that a number of quite different responses emerged from this hysterical atmosphere. In the arena of performance and photomedia, a number of artists upped the ante by producing increasingly abject and skeptical work that questioned cultural processes of sanitization and the reinforcement of nuclear family life. Here we might cite Cindy Sherman's work during this period, dealing with domestic interior landscapes of sexual debris and household garbage, and Paul McCarthy's

wry pedagogical sculptures and video performances of familial incest and bestiality. In the arena of commercial visual culture, digital effects were married equally to realism and the production of technological fantasy. The films that become synonymous with mainstream digital aesthetics such as *Terminator 2* (1992) and *Jurassic Park* (1993) used 3D modeling, compositing and morphing to achieve realistic visuals within fantastic narratives and settings. By shifting realist effects to the realm of fantastic representation, commercial digital culture averted the American gaze from actual abject bodies, urban conflict and decay, and the embarrassment of visual technologies that worked, in the case of the Rodney King video, to reveal the complicity of its regulatory organizations with the production of scenes of visual violence.

Yet another response can be gleaned by investigating the changes to animation throughout the 1990s that unleashed series such as *The Simpsons, Beavis and Butthead,* and *South Park* onto a hungry public. Within popular culture explicitly graphic animation assumed a critical and humorous place for dealing with the regulation and disciplining of the body back into the family unit. By stripping the volume away from animated characters' bodies, the organicism depreciated and direct abject confrontation with bodily functions could be avoided, returning animation to an emphasis on what Norman Klein has called 'graphic narrative' (14). Klein examines the early history of animation, exemplified by the *Felix the Cat* cartoon series of the 1920s, indicating the presence of an initial anti-realist aesthetics that leaned towards the flattened planes of the *x, y* axes of screen space, and sacrificed the illusion of character depth provided by perspectival space and the fully developed narrative, for the rhythm of line movement and the fracturing effect on plot development performed by the visual gag. The cartoons that produced a renaissance for animation during the 1990s took a dig at what narratives of family values had become in the hands of 1950s to 1980s television: the family sitcom from *I Love Lucy* through to *The Cosbys*. Repeating the televisual sitcom formula in a typically flattened space allowed *The Simpsons* et.al. to compact, into their vertically and horizontally planed worlds, an intensification of what the family had indeed become in premillenial America: a hollow and broken outline of its former self, good for gags alone. This flattened aesthetic intensifies through the 1990s reaching its televisual peak in *South Park,* which uses extremely flat visual planes, blocking of shape and miniaturization (the main characters are children with the traits of contemporary adults), to produce a disjunctive set of visual surfaces that disintegrate realist perspective. In direct proportion, the range of humorous attack in *South Park* amplifies so that no topic, from family values to political correctness, remains sacrosanct. It is precisely the stripping of visual illusion in the flat aesthetic and its disassociation from realism that allows the complete irreverence for any form of morality in *South Park* to operate and to evade the censorship that has increasingly pervaded film and photography.

Many examples of Flash animation produced by experimental animators and distributed online follow in the footsteps of the compressed and intensified information space achieved by joining flat aesthetic space and irreverent topical critique that marks *The Simpsons* and *South Park.* An entire online animation database 'Level 13' is devoted to showcasing quirky Flash experiments such as *Kuddlekins* and *Parkemon* that combine Flash's high contrast vector lines and vibrantly blocked colour, a post *South Park* sensibility, and nods towards the history of computer games and Japanese *manga* culture (15). Contrary to the critique of postmodern culture offered by Frederic Jameson in which the emergence of a culture obsessed with surface aesthetics signals a correlative deficit of affect, these type of Flash animations raise the possibility of compacting abject, visceral reaction and a childlike delight into the flat but disjunctively layered space of the anti-realist gag. Flash's aesthetic genealogy does not trace the contours of such a harsh a rupture between information aesthetics and media art as Manovich proposes (17). Instead it indicates the way in which the flattened aesthetics of both video and computer monitor screen space traversed and took hold of televisual and information contexts in the 1990s. Flash emerges through the return and reinvention of animation traditions, providing an aesthetic counterpoint to the mainstream articulation of digital visuality as realistic, organicist and seamless 3D animation.

During this period, the ease of working with vector graphics, the prototyping of graphic elements and the automation of vector animation sequences through programs such as Director and Flash and the development of downloadable players, allowed for a network of distributed animation cultures and styles to circulate through the Internet. Before discussing the way in which Flash begins to herald the collapse of the distinctions between information and the processes of work performed upon information (generation, packaging, transmission), growing to its current status as both content generator and application, we need to understand how Flash culture has also relied upon preceding subcultural formations of media consumption and production engendered by fans.

Flash aesthetics, in both animation and interactive forms, owes a debt to the visual techniques of flattening space explored in the comics and cartoons of the post WWII generation of Japanese *manga* and *anime* artist/ illustrators. While American popular culture prefigured cyberspace in the '80s through the fiction of William Gibson and Bruce Sterling, the Japanese were cartooning their way into the cybersphere through long running *manga* series such as Katsuhiro Otomo's "Akira" (1982–89)*,* transformed into a feature length animation in 1989. The detail in background texture, lighting and figure animation in "Akira" are extraordinary but the characteristically flattened layering of pictorial planes to hint at depth through multiple surfaces and the use of blocked shading to give volume to face and expression are equally highlights. Takashi Murakami, a contemporary artist-designer and writer, argues that flattened visual space has become an overwhelming feature of both current Japanese popular culture and of many of Japan's artists and designers, all drawing upon the influence of *manga* and *anime* (21). Identifying its specificity and locating it within the history of popular image-production found in the woodblock prints of Japan's Edo period, Murakami links this aesthetic to a peculiarly Japanese pictorial space, favoring horizontal and vertical axes above all else, that earns it the epithet of 'superflatness'3.

Along with other commentators upon contemporary Japanese visual culture, Murakami has suggested that the spread of this aesthetic is supported by the activity of *anime* fans, whose devotion to character, storyline and visuality grew from the 1974 release of the movie *Uchusenkan Yamato* (Spaceship Yamato) through to today's webrings organized around particular character types in *anime* and *manga* (21, 3). Japanese *anime* subcultures, like most fan cultures, do not simply consume or slavishly follow their favourite movies, comics, heros and heroines. Rather they have, since the 1970s, actively contributed to the development of the *anime/manga* universe itself. Early on the began this process by making their own 8mm animations, swapping paraphernalia and merchandise, annotating and commenting upon character and narrative development, and, most recently, maintain websites that function as image, moving image and text databases facilitating the upload/download and global distribution of an entire visual culture. Indeed they have spawned their own kind of fan identity in the figure of the *otaku,* the Japanese corollary of the nerd or geek. Instead of immersing themselves in the relatively depopulated realms of cyberscapes, *otaku* surround themselves with comics and endless reproductions of *manga/anime* characters and merchandise. In fact the hyperactivity of collection and distribution that constitutes fan culture, particularly ones dedicated so completely to fantasy images in the case of those arising around *anime* and *manga*, prefigures the late twentieth century shift to what Arjun Appardurai has called consumption as '…the social discipline of the imagination…' (2,p.82). Online connectivity has obviously had an impact upon the global spread of *anime* subcultures. But it is also the case that a 'proto-networked' sociality took shape from the 1970s onwards, through work done at the margins of the social imagination, in the physical exchange of graphics, comics and merchandise, the fan events and meetings taking place in conjunction with screenings, as well as the move fans themselves made to become *manga* illustrators and *anime* producers. My point is that the networks of visual distribution that have formed through social practices of the imagination such as those performed by *anime* fans are the same kinds of networks, only amplified, through which Flash culture, a flatland aesthetic with both Japanese and American visual genealogies, now distributes itself.

The recent adoption and spread of Flash inspired design, what Manovich calls 'soft modernism', is accelerated by image, code and media access made possible through online networks (17). And yet innovators in Flash design and art such as Future Farmers pay direct visual tribute on the homepage of their website and in many of their design projects to the *kawai* images of Japanese *anime* and *manga* (10)4. The 'superflat' childish faces of Japanese popular culture meet American style Flash; Flash itself being a program that continues to leave the childish visual inheritance of its own inspiration – the Lego block – embedded in its current designs5. This form of cultural exchange and mimesis could, of course, be read as symptomatic of the work of the last fifteen years of globalization, sometimes perceived as synonymous with the rise of the Internet. And yet in spite of the Japanese genealogy to contemporary superflat aesthetics provided by Murakami, it is also clear that *anime* and *manga* owe much aesthetically, semiotically and socially to the complex relationship

with America following the military occupation of Japan immediately after WWII. Hiroki Azuma has argued against the purist strain of Japanese inheritance that characterizes Murakami's conception of superflatness, suggesting instead that the nerdishness of *otaku* culture develops as a hybridized legacy of both Japanese passivity resulting from war defeat and trauma, *and* the active Japanization of the cultural occupation sustained by American comics, cartoons and television from the 1950s onwards (3)6. The flow of animated images between popular American and Japanese culture predate the technologies of the Internet and indicate how cultures are already exchanging and transforming each other at a global scale within media societies.

FROM GRID TO VECTOR: FLASH AND THE MOVE FROM COMMUNICATION TO INFORMATION

My argument so far has placed Flash aesthetics and culture in relations of continuity to forms of visuality that, strictly speaking, belong to older, nondigital media, to practices of cultural consumption and production that may be prefigured by the socialities that form around these older media, and to networks that operate in offline mode. It has been important to underline how software that optimises its product for online distributed information conditions such as Flash requires not simply a technical innovation to become a formative cultural phenomenon but must operate within an entire socio-technical-aesthetic ensemble in order to curry such widespread favour. But it is time to turn now to the significance of the digital technologies it combines - vector graphics with its own compression codec – in order to understand how Flash and its culture also mark a change in image constitution, production and consumption and ultimately disclose a new aesthetic regime for the image within digital culture.

In Claude Shannon and Warren Weaver's classic 1949 model of information transmission, a signal is encoded at a source and sent through a channel to a receiver, which decodes it (22). Katherine Hayles has outlined the way in which the Shannon/Weaver model was immediately taken up as a general template, applicable to the transmission of any kind of communication including linguistic, biological and social messages (12,pp.50-5). Indeed it has informed an understanding of the social relations of media cultures as single broadcaster information encoding for transmission to mass audience reception and decoding. Post McLuhan we have become used to thinking about the inseparability of communication from the medium and cultural matrix to which it belongs, placing an emphasis upon the perceptual and cultural effects of the spatial and temporal conditions for transmission to which communication is subjected by particular media. However the concept of the message and the later analysis of image as sign in mass media culture assumes that although inflected by medium and subjected to interpretation, misinterpretation or multiple interpretation, information contains some quantity and type of content to be communicated. Initial analyses of digital images such as Mitchell's, were inspired by the translation of analogue content to digital pixels which, supposedly subject to undetectable manipulation within isolated computer space, appeared to render claims to authenticity unverifiable (20). The digital medium thus upset the representational status that other media may have claimed, but in this analysis

retained the schemata of communicative medium. In some ways this also consolidated the impact of medium upon message, insofar as the information available for digital communication (that is, communication both produced and received in a digital environment), was now locatable as stored finite quantities of encoded pixels while its reception depended on the often different conditions of the device displaying or outputting it. Pixels as bitmapped information are resolution, and thus also reception dependent. Early analyses of digital information could therefore, if somewhat awkwardly, maintain some of the underlying distinctions and relations raised by the communication model; that is, the difference between encoding (analogue to digital translation or internal generation of pixels), that takes place in the 'sending' device, the necessity of keeping this information uncorrupted in the 'transmission' process (raising the compromises involved in lossy compression of digital images), and the 'receiving' device that decodes the pixel information according to its own resolution parameters or outputs it back to analogue form. The promise of digital media, through many a corporate advertising campaign in the telecommunications industry, has been the 'transparency' of signal transmission from sender to receiver: think mobile phones and surround sound. It is as if digital information is still stuck with the mathematical problem of communication: how to ensure that the signal experiences minimal corruption. From this persistence of the model of communication flows the attribution of medium to the digital7.

What is of primary significance here for my discussion of Flash is that in a majority of analyses of the digital image to date, bitmapped graphics have formed the default layer for an understanding of how new forms of digital visual culture might operate. Bitmapped graphics fix the data describing the location and value of the pixels that constitute an image to a grid of a particular size. Digital images comprised of pixels are thus imbricated with and depend upon a form of spatiality external and independent to them: that of the Cartesian coordinate system. The variable and continuing relations between lines and curves, on the other hand, constitute vector graphics; the description accompanying the Flash program's "Help" section on "Vector Graphics" provides a good description:

> …the image of a leaf is described by points through which lines pass, creating the shape of the leaf's outline. The color of the leaf is determined by the color of the outline and the color of the area enclosed by the outline. When you edit a vector graphic, you modify the properties of the lines and curves that describe its shape. You can move, resize, reshape, and change the color of a vector graphic without changing the quality of its appearance.

The spatial information in the image, which places it at a precise location on the screen, is generated intrinsically through the differential relations between points. Moreover, in Flash's moving images (whether in edit or playback mode), movement itself is not a function of the actual *spatial* relation between image instants across time as it is in analogue animation. Nor is it generated by the changing value of pixel information in relation to a grid as it is in bitmapped animation.

Instead movement results from the deformations and transformations that the image information undergoes in *time* itself. In Gilles Deleuze's concluding analysis of the shift of an aesthetic cinematic regime from movement-image (classical cinema) to time-image (modern cinema), he prefigures the ways in which information images may come to have very different effects upon the flow of images in time, cutting into, sliding over and producing an 'incessant stream of images' (9, p.267). Moreover, he remarks upon the loss of a system of space that would externally orient the image:

> The new images no longer have any outside (out-of-field), any more than they are internalized in a whole: rather they have a right side and a reverse, reversible and non-super imposable, like a power to turn back on themselves. They are the object of a perceptual reorganization, in which a new image can arise from any point whatever of the preceding image. The organization of space here loses its privileged directions, and first of all the privilege of the vertical which the position of the screen still displays, in favour of an omni-directional space which constantly varies its angles and co-ordinates, to exchange the vertical and the horizontal (9, p.265)

Of course this sense of space as everywhere but nowhere has provided an analytic and speculative theme in the exploration of cyberspace generally and virtual environments specifically. But it is not so much how omni-directionality affects and transforms a phenomenological experience of space that concerns me here; rather it is the way in which sequential and nonsequential variation (chronological and nonlinear time) begin to function as the new co-ordinates for image production.

Experiments in the topology of the digital image predate software such as Flash. During the early 1990s, with the ready availability of CAAD software in design and architecture contexts, a number of architects began to shift their focus from an emphasis on the space of volume and enclosure to that of the transformation of surfaces (16). This became more pronounced as architects such as Greg Lynn began to use the vector capabilities of 3D modeling software such as FormZ, Maya and Alias. These programs operate within the usual Cartesian gridded space of the *x, y, z* coordinate axes, but also allow for surface manipulation and deformation of models through Bezier curve formation and drawing tools, making the generation of volumetric models as enclosures (or openings) of surfaces possible. By selecting a series of weighted or 'spline' points around which the mesh of the form is built or calculated, the model's geometry is tied to a grid but can also be transformed in relation to pure surface manipulation by the operator. We begin to see the flattened contours of another kind of space emerge embedded within the unifying and extensive space of the Cartesian system: an immanent space produced through differential variations made upon the surface. Although topology and its complex geometries precede computation by a good century, the visualization of three-dimensional non-Euclidean spaces in which curvatures cut across, fold back upon, twist around and stack upon each other has been accelerated, and in some cases made possible, by these digital modeling processes1. During the early

1990s, much of the deformation of form in architecture took place only within computer space producing sequences of images through topological transformations that could not be realized in built form. They were often visually accessible only at dedicated computer terminals or as printed image sequences. The networked environment in which Flash operates fleshes out these earlier experiments in the topology of the image by bringing the expanded possibilities of the vector-based web interface into the mix. The interface becomes less a spatial environment and more a series of movements through and across unfolding surfaces; a combination of the navigational levels of computer games and the graphic narrative of rhythm and line in anti-realist animation.

Some of the more abstract and experimental Flash web interfaces, such as design firm "Yugop"'s site, (http://surface.yugop.com), draw attention to this new topological organization of the image by providing a user experience in which the cursor's movement 'draws', across the monitor's surface, varied series of undulating and deforming shapes and outlines changing in time yet retaining image quality. Here we have the image generating a topological terrain, which has preassigned parameters but is unpredictable and responds to the vicissitudes of user movement. Although there are resonances here with minimalist and abstract aesthetics, the fundamental difference between modernism and postcommunication Flash aesthetics lies in the latter's abandonment of an obsession with predetermined spatial configuration (particularly with the space enclosed or excluded by the image), and the reflexive relation to the material impact of the medium. Brian Massumi has noted this important difference between computational space and modernist space, despite of the former's historical and aesthetic debt to the latter:

> The computer becomes a tool of indeterminacy. Abstract spaces are no longer neutral screens for imaging what has already been seen in the mind's eye. They must be actively designed to integrate a measure of indeterminacy. As a consequence, the space of abstraction itself becomes active, no longer merely prefiguring. (18, p. 17).

Flash aesthetics moves into a regime in which temporality figures as the mark that conjoins across and between image planes. We are now in a position to further annotate the relation of flattened visuality to Flash aesthetics. Flattened space, such as we find in *anime,* Japanese post *anime* art and design, *The Simpsons* and *South Park,* and in the tracing of vector outlines and colour to substitute for photographic depth of field in current advertising campaigns, prefigures the compression and eventual disposal of externally referenced volumetric space within the image 8. It is as if images can no longer be located as distinct sets of co-ordinates upon a grid providing them with place and context in an overall system. They are now laid out on a plane, to be organized principally by directions and speeds in time: backwards, forwards, fast, and slow.

Of course the actual conditions in which most Flash work eventually operates, that of networked distribution of packaged information across nonstandardised connections – the Internet – means that the parameters of location effectively matter and work to impinge upon and change the intrinsic unfolding of visual information. But location itself within informatic networked socialities comes to be measured in terms of the effects of differential speeds; the time it takes for information to download, the connection speed of terminal to network, the routing of information due to a variety of technical and social factors from net infrastructure through to censorship avoidance, the flows and blockages of online traffic, and so forth. The expansion of Flash aesthetics into the interface environment has seen an investigation into this temporal topography. "Praystation" itself has been an encounter with digital timekeeping, a gathering together, layering and expansion of artist Davis' activities in the on and offline worlds (8) Its evolving interface has, for example, used an interactive calendar to archive, update and annotate the artist's movements in information space and can be seen as an elaborate experiment in weblogging, itself a kind of filtering experiment in managing, cutting into and rearranging the temporal flows of information.

Other online interfaces that play with the temporal dimension of postcommunication visual culture stretch layer and compress the image so that it sometimes seems closer to an experimental sound piece. This should come as no surprise if we take into account the hypothesis I have been proposing about the transformation of image space into image time in information aesthetics. Sound, after all, is the medium of temporality, *par excellence.* One of the appealing features of Flash for artists and designers has indeed been its relatively good quality compression codec for digital sound. This has allowed artists to produce sophisticated sonic dimensions for their web interfaces without major sacrifices to download speed. As a scripting application, Flash also allows for sound to be triggered nonsynchronously from the image, often as a result of user-activated events such as a mouse click or rollover. Although this has lead commercially to the irritating occurrence of sound effects looping continuously through interfaces, in the "soulbath" site short, multiple event sounds at different levels of the interface have been used both synchronously and autonomously from the image to build a layered, sonic environment. The London web design group behind the site, "hi, Res!" in fact draw the explicit relation between the design of the interface and sound, aligning it with contemporary DJ and sound culture:

> soulbath.com is an experimental website and focuses on a different subject with every volume. It will completely change its appearance 3 - 4 times a year to match the new subject. vol.01 is dedicated to the beauty of grayscale. as you will see, there is a strong audio visual link between the different elements and if you leave some windows open, you can almost play it like an instrument (23)

In Simon Bigg's "Great Wall of China", different rhythms animate the movement of visual information, and work to disturb the conception of user control that mouse driven events often bring to digital interfaces (5). The web aspect of Biggs' work predates the Flash environment; it was made from 1995-6. But its visual and textual display is all produced through programming that uses executed algorithms to draw interactively in realtime on the end-user's terminal. The piece deals

both formally and semantically with the generation of and relation between humanly linguistic comprehension and incomprehensible machine languages. The visual aesthetics of the "Great Wall of China" provide an ongoing interface in which human and machine rhythms and systems intersect to produce the multiple surfaces of elision and contact. The screen is split, divided by Chinese characters: on one side sits a dissolving and layered set of visually filtered architectural images which are activated to run at different speeds through rollover hotspots in the text directly beneath them. The closer one moves into this text with the cursor, the faster words within the text and the layers within the images, becoming increasingly incomprehensible. At the edge of the event space, one can just make sense of the information. While being visually drawn to this side of the screen through the whirl of animation, the other side of the screen remains motionless. Yet one's visual attention hardly partakes in the stillness. As soon as the cursor moves to this area the space frantically transforms into a fast-moving torrent of graphic textual information, changing in relation to both randomly programmed and event driven movement. But the changes are too rapid and random to make sense of the text; it becomes instead a visual plane shot through, fragmented and intersected by slices of rhythm coming at it from angles that roll up from yet also seem perpendicular to the screen space. Only by carefully tracing the cursor slowly over the Chinese characters that divide the screen can one slow the textual flows to the pace of comprehension. Biggs produced the piece as a '…language machine…capable of creating an endless stream of ever evolving and changing texts' (4). At the time of its production, web delivery of images was still tied to bitmapped graphics. In order to compact the visual space and highlight the varying and converging speeds of sense and nonsense generation, Biggs produced a piece that dispensed with the bitmapped image altogether, subjecting vision entirely to the times of the computational machine:

> One way to achieve this degree of compactness was to not use images. Everything you see is created during runtime using the available drawing and typography tools on your own computer. When you download a component of the Great Wall of China all you are downloading is a program. (4)

"The Great Wall of China" loses the space of the image as its text loses information content; the different locations of sending and receiving communication are no longer important in connecting and disconnecting from the aesthetics of the image. Instead everything becomes pure movement, pure transmission as communication gives way to being in the middle, as it were, of meaning-making and affective flows.

More recently the expansive temporal environment that Flash aesthetics produces through the compression and intensification of information has allowed a broaching of potential forms for online cinematic space. Interestingly these have been signaled not through image spaces *per se* but through the minimal graphics of Flash design in combination with layered and textured sonic environments. Although there is not space to do the work justice here, Mark Amerika's recent "FILMTEXT 2.0" deserves mention (1). In collaboration with Flash animator John Vega and sound design by Twine, the online and offline versions of the piece compress digital forms such as gaming, web design, digital writing and digital music into ambient information that is sculpted and textured through layers of sound triggered by user interaction. Rather than information being at the behest of user control or responding in a meaning- laden way to user events, the soundscapes that emerge suspend the user at any moment in time within "FILMTEXT 2.0"'s nonlinear game development. Small sound sequences merge to produce richly textured sonic environments that expand one moment of the game into an exploration of a time in which nothing much happens at all apart from the game's elusive atmosphere.

On the other hand, Amerika himself builds sequences of meaning through a mélange of cultural commentary, fragments of scripting syntax appropriated from Action Script (Flash's scripting language) and literary texts. These sequences spew forth across the screen and move the sense of the piece along in fits, starts, stutters and cycles. Completed cycles of text sequences initiate the user to new levels of the 'game'. To pass through the gameplay then, one must release oneself into neither the clutches of the text's writing spaces with neither the promise nor denial of comprehension or communication, or where a particular sentence or segment of information may be heading. Two kinds of rhythms then compete for the user's attention and participation, making the experience of playing "FILMTEXT 2.0" both lingering and propulsive but reducible to neither.

There has been considerable hype surrounding the compression of space resulting from the spread of global telecommunications systems such as the Internet. Although emphasis has also shifted to an analysis of the ways in which temporality has been similarly affected, it is most often the absolute speed of digital transmission that is seized upon as indicative of information culture. By suggesting that we are experiencing a major shift in the aesthetic, technical and social production of images towards a regime in which temporal flows become the key issue, I have not proposed that digital aesthetics is synonymous with this kind of cultural acceleration. Flash aesthetics can be used as a case study for the complex development of the digital image from the impact of other 'older' media upon it, and their associated relations of production and consumption, through to shaking off the digital image's dependencies upon obsolete grid geometries and the insertion of the image into temporal and topological space. In this movement we can begin to see how temporality itself becomes the force that takes hold of the flattened image in late twentieth century visual culture moving it away from communicative spaces to informative vectors. This flattening, that is already at work in animation and cartooning and so therefore cannot be attributed to the influence of digital imaging technologies alone, deadens space but lets time fly, as it were. Within the flattened space of Flash aesthetics there is plenty of room for rhythmic complexity, texturing and layering, room for time to become multiplicitous, differential and for encounters with temporality in nonlinear modes. The conception of information cultures as speed obsessed has spawned the subsequent deduction that we are running out of time to deal with the deluge of images. Instead we are inventing ways to multiply time and open its dimensions. There is not too much information and too little time, but many times in which to pursue the

intensification of visual information.

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ENDNOTES

1. See Jakob Nielsen's weekly 'Alertbox' segments from his website, for unpaid access to his diatribe against Flash: "Flash: 99% Bad", October 29, 2000, http://www.useit.com/alertbox/20001029.html and "Flash and Web-Based Applications" November 25, 2002, http://www.useit.com/alertbox/20021125.html

2 For an example of a defence of Flash as a design tool, see (6).

3 In 2000 Murakami curated an exhibition of contemporary Japanese artists, illustrators and designers who worked across the art and *manga/anime* contexts. The exhibition, titled 'Superflat', toured America during 2001 and was installed at the Museum of Contemporary Art, Los Angeles. An archive of some of the work exhibited can be viewed online at http://moca-la.org/museum/exhibitiondetail.php?id=3

4 The word *kawai* translates rather badly to the English word 'cute'. However one does not get the full sense of the word until a visit to a Japanese shop stocked with merchandise inspired by *anime* characters for all ages. Hordes of Japanese girls and women roam these shops, gasping over every reproduction of the typically wide-eyed childlike *anime,* and uttering over and over the word *kawai.*

5 Jonathon Gay, the original developer of Flash software cites his childhood fascination with Lego as the basis of Flash's architecture. (10)

6 Others have argued that the domestic growth of Japan's economy was directly fuelled by the domination of American television in Japan after WWII, particularly the running of sitcoms. See (12)

7 For an excellent discussion of the concept of the medium in analyses of the digital and a reworking of the idea of medium that does not buy into the communication model, see (18)

1 For a relatively easy discussion of the nineteenth
century development of topology as new kind
of geometry, see Mankeiwicz, R. The Story of
Mathematics, Cassell Paperbacks, UK, 2000, pp.126-32
8 For example, the 2002 instore advertising campaign
for the clothing brand 'Mooks' used vector outlines and
blocked colour to trace clothes on human figures.