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Image Flow: Photography on Tap

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Note: Words in [...] were omitted from the spoken paper.

World is crazier and more of it than we think,
Incorrigibly plural. I peel and portion
A tangerine and spit the pips and feel
The drunkenness of things being various.

- Louis MacNeice, from "Snow" (1935)

This paper is about the phenomenon of mass, mobile photographic images in a digital, networked context in relation to the close reading of singular images. I want to explore this through the concept of image flow, as it has been developed in relation to television and to robotics.

1. Images are not singular

Recently, Martin Lister pointed to the difficulties of sustaining approaches that presume a singular image in an era when images never appear individually (2016). Daniel Rubinstein and Katrina Sluis have also written about how digital images arrive in volleys or sequences, with no necessarily identifiable original. They raise the question of how we might analyse

images that are also carriers of ever-changing accumulations of metadata, much of which is tenuously connected, if at all, to the visible content of the image. As they write "it is not identity that the networked image delivers to the screen, but rather an image of the multiplicity engendered by the network" (2013).

So this paper is indebted to these approaches but I also want to emphasise that the singularity of an individual image was always a useful fiction: as art historians have argued, the discipline of art history itself was itself built on reproductions, even when it fetishized the "original" . Close reading of an individual image is a synchronic slicing of time, an artificial pause for the purposes of analysis. For the writers I have mentioned, the problem with such a fiction, when it comes to the digital image, is that it addresses only the surface manifestation, not the code or the data concealed beneath.

As Deleuze and Guattari suggested we need to think in terms of multiplicities: images are always multitudes (of marks, pixels, grains) and they multiply through their movement, splitting, duplicating, accumulating (1988). As an analogy think of the old friends theory of allergy according to which we collect bacteria [*actually microbiota - which include bacteria, but also fungi, viruses and other micro-organisms*] which are referred to as "old friends", from our historical habitat (grasslands) and carry them into our new technological habitats (Rook et al. 2004). These bacteria become part of us, in our gut, and facilitate our interaction (or digestion) with other materials. Technical images are like this, incorrigibly plural, they accumulate and change. To think about technical images, we need to start thinking in terms of multiplicity.

2. Images are mobile and their movement involves both technological networks and human bodies

I want to draw out the connections between this multiplicity and movement and the involvement of the human body in how images are constituted. Foucault offers us the idea of the image as promiscuous escape artist, mobile but not unidirectional (1999). The movement of images may be best thought not in terms of biographies or trajectories — these are concepts that Kopytoff and Appadurai (1986) introduced for thinking about the social lives of things — but in terms of what Foucault calls an "image frenzy" which he dated to the late nineteenth century and the circulation of reproductions amongst artists in that period.

We might also consider Hans Belting's concept of a circulation between what he terms endogenous and exogenous images: that is, embodied mental images and external technical images (2011). In these theories humans are part of the network through which images move. If we understand perception, imagination, interpretation and attention as embodied activities, and as intimately connected to the production of images, we are some way towards, like Belting, treating bodies as media and media as bodily.

So, I am arguing for a conception of images as mobile, multiple and embodied regardless of whether they are digital. This is not to say that the arrival of such images does not matter or has not dramatically changed photography. But I want to approach this development from a different angle: not from the perspective of data or digital manipulation, but from the point of view of image flow.

3. On the one hand the concept of image flow masks the real character of digital images...

 Rubinstein and Sluis are dismissive of the ways in which tech companies use the term "flow" and other liquid metaphors (cloud, surfing, photostream) — seeing it as an obfuscation that hides the reality of big data. Similarly Ghislain Thibault (2015) points out that liquid analogies applied to analogue media were technically correct insofar as analogue signals were continuous, but in a digital context they disguise the fact that digital media are discontinuous, transmitted in bits and through the use of packet-switching. As Thibault argues, the language also suggests a continuity of experience and freedom of choice, a sense of liveness that more properly belongs to older analogue broadcast media and an idealised image of a continuous signal and perfect connection which barely ever realised — in fact digital streaming is more often than not, interrupted and fragmented by poor connections, intermittent signal or overloaded bandwidth.

Indeed, the liquid metaphors used by technology companies invite us to imagine seamless activity, without glitches and buffering. They create imaginary topographies: landscapes of clouds and streams, and an imaginary cyclical time linked to the natural processes by which water is exchanged between earth and sky. This is an image of nature as something in constant and inexorable flux.

Through analogies of flow, we are also being offered a specific model of time and of the passage through time. Think of the way platforms like Facebook and Snapchat offer our own images back to us labelled as "memories", prompting us to recirculate images selected by algorithm. This technological involuntary memory has lost the sensuality of Proustian version in which the past comes flooding back at the bite of a tea-soaked madeleine cake. Instead, we are invited to think of time as a stream flowing in one direction — we can dip into it at any time, to retrieve moments of the past photographically, and sometimes it throws these fragments of previous experience back to us, unprompted.

 On the one hand this is a flattening of history, with everything experienced as a simultaneous present, on the other it is a complete capitulation to the tyranny of linear time.

4. On the other hand, this idea of "flow" might also be useful for understanding digital images

In other words, all these writers are correct that the concept of flow (and related watery analogies) are ideological. However, I also want to take the notion of flow seriously as a means for thinking about how we approach digital images.

There are four contexts in which ideas of flow are used that are worth bearing in mind here [*in this paper I deal only with the last two, but my forthcoming book Photography: The Unfettered Image will discuss the others a little too*]. The first is the context of electricity, [*where flow was originally an analogy taken from hydromechanics to help people visualise the movement of electricity*]. The second is psychology, where flow is used to explain consciousness and human perception, [*an idea usually traced back to William James in the late nineteenth century, but given a new twist by Czikszentmihalyi in the mid-twentieth*]. The third is in robotics and machine vision, where ideas of image or optical flow, derived partly from studies of animal perception, are used to explain how robots might navigate an environment (incidentally this is the origins of forms of optical flow used in video editing software). The fifth context, is that of television, and in particular Raymond Williams' concept of televisual flow.

5. Implicit in the idea of flow is the idea of overflow, of the flood...

Flow always risks overflow: there is always the sense of only just managing, of the risk of too much, of flooding. The software through which we make, view and exchange images use models for managing and retreiving data, and for capturing and sustaining attention. The specific techniques developed to make images available, searchable, viewable — such as, the slideshow, the stream, the thumbnail image, and so on — are all ways of attempting to control or program what might otherwise be experienced as an unmanageable and inassimilable onslaught or flood of images.

Ideas of information overload or image saturation are particularly associated with moving image media such as television, but they are also familiar tropes in writing about contemporary visual culture in general : too much information, too many images, an attack of visual stimuli that produce an immobilised, passive observer. These notions have much older roots too: in the nineteenth century image of the neuraesthenic incapacitated by modern urban life, for example.

6. And image flow is directly connected to the idea of the mobility of the observer...

One way to demonstrate this is through the development in robotics of robot-crawlers that had a kind of machine vision based on what is known as time-varying imagery. These robot crawlers "see" the world by analysing optical flow, which in early experiments with machine vision in the 1980s, meant a live electromagnetic feed of images (along the lines of television) (Waxman 1987; Waxman and Wohn 1988). These self-navigating unmanned devices were designed to move through an environment by mapping the place of objects or obstacles as they moved, and measuring the velocity of the image flow. This allowed the robot-crawler to perceive depth and to recognise other objects as moving.

For a robot, the readability of an image is not contained in the individual image but the relation to the next image in the flow (and in fact the idea of image is a problem here because that seems to imply that the flow stops independently of the robot). The pace at which it can make these calculations determines its own pace of movement and its ability to react to the movement of other bodies in space. The concept of image flow or optical flow in robotics is derived from studies of how animals, including humans, see and navigate space. There are

three key points for my purposes here: First, that the image is the product of a "cut" made by the observer; second, that images that appear in sequences, volleys etc. are also a means of navigation and third, that the machine-readability of images (their capacity to be translated into data) has nothing necessarily to do with their being digital.

7. Image flow is also connected the mobile character of capitalism ....

Raymond Williams' 1974 analysis of televisual flow brings in another kind of mobility. He read American commercial television as a means to connect the movement of images through a network, the movement of bodies in a living room, and other movements and flows: the commute from the suburb to the city, the flow of capital, even the global movement of peoples.

Williams' concept of flow developed his 1960s idea of "mobile privatisation": television and radio were synchronized with the automobile and the suburb, scheduled around the suburban lifestyle and the commute to and from work. Broadcasting organised space and time to ensure the flow of capital, turning spectatorship in the home into a form of work, linking capitalism's tendency toward increased mobility to its inverse tendency toward the static sphere of the home and the nuclear family.

Williams later used the analogy of cars on a motorway, individual shells or pods of privacy, each moving with their own purpose, unconscious of being part of a larger determined and dehumanising system (1983). Similar to the exchange of personal photographs across online networks, what is locally meaningful, rich and singular is (at one and the same time) co-opted into a more insidious general purpose (big data for example) which is not necessarily visible from the ground.

8. One way of approaching digital-photographic images is through a kind of flow analysis...

In some ways the model Williams was describing has broken down (work and consumption now happen inside the home as well as outside it and we use platforms such as Twitter to broadcast beyond the private sphere — and such platforms reveal the complicated and blurred ways in which people navigate ideas of publicity and privacy. At the same time what

some recent theorists of the digital image have been proposing, such as Rubinstein and Sluis, is to move away from a visual analysis to address instead relations between data and to map the movements of images and of the user: this is actually quite close to the kind of flow analysis Williams proposed.

Williams book *Television* set out scaleable methods of analysis that can move from smaller to larger units - the single image, the sequence, the programme, segment, schedule - across a few minutes, a day or a week. Kathleen Oswald and Jeremy Packer have updated the idea: arguing that now flow in a mobile media environment happens *across* media technologies, platforms and different kinds of screen, the multiple little screens of mobile phones, tablets, televisions and computer monitors but also increasingly embedded into the environment: in cars, shopping centres, bus stops, aeroplane seats, fridges (2012). Since advertising deals in attention, it must , they suggest, follow the "flow of the user in time and space across devices", while on-demand media transfers the responsibility for the "management of flow" to users or spectators .

9. But we actually need approaches that recognise that image flow as also a kind of choreography of the body which is not necessarily "flowing" ...

Williams theory of flow is about the way American commercial television allowed disconnected imagery to vie for attention, not about the use of televisual techniques for naturalising or smoothing ruptures (as in continuity editing).

For Williams, flow meant a tumultuous, unstoppable sequence of rapidly changing sound and imagery that was characterised by sudden and surprising juxtapositions, particularly at the opening moments of programmes and ads, which were deliberately "violent or bizarre". Flow here is not smooth and seamless or soporific, it is jarring, jagged, disruptive, and exciting. This is all about the rhythm and pace of perception and interpretation and attention.

There is an evident connection here with Walter Benjamin's concept of shock (2003). Williams saw American commercial television in terms of a kind of training of the senses, its sudden disjunctures and rapid stimuli not as overwhelming or even just as hooking the viewer in, but as part of a larger mobile capitalist culture to which Americans were becoming rapidly acclimatised.

Images choreograph the crawler and they choreograph us. Indeed photographs have always articulated bodies, producing new choreographies of both photographer and subject: think of writings about how people arrange themselves for the camera, or the many descriptions of Cartier-Bresson in the act of taking a photograph as a kind of strung-up dancer, a cat, a humming-bird or insect or Paul Frosh's writing on selfies as gestural and performative, bodily images (2015).

Conclusion: to find in every image a collective...

So how might theories of "flow" help us to think the photographic image as an accumulation, a multitude, as mobile, frenzied, and as embodied. One way is to track the frenzied movement of images at different scales and temporalities not just across the technical network, but across the broader society. At the same time, it becomes ever more necessary to read closely and to write about specific images, whose local meaning is not reducible to big data, and to find ways that unhook them from the fiction of their isolation, that find in every image a collective. This means pulling in the suburbs and the living room, talking about dreams and screens and the temporality of images, seeing images as part of our own sensorium, seeing technical images as inseparable from ourselves .

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