Atms, Teleprompters And Photobooths: A Short History Of Neoliberal Optics

Mark Hayward

Abstract *This essay investigates three devices that were widely used beginning mid-twentieth century to explore the concept of 'neoliberal optics'. Through a discussion of the development of the teleprompter, self-portraiture in photobooths and automated teller machines (ATM), this paper outlines the role that optical technologies played in the development of forms of embodiment and selfhood the define neoliberal culture. This essay argues that, while the emergence of these optical technologies antedate the established chronologies of neoliberalism, they subsequently were integrated with the broader cultural project that defined has defined the neoliberal individual.*

Keywords Automated Teller Machines, optics, photobooths, neoliberalism, photography, self-portraits, teleprompter

INTRODUCTION

The term 'neoliberal optics' refers to the uses of light that contribute to forms of sociality and subjectivity that constitute neoliberal culture. In the discussion of neoliberal optics that follows, two tendencies in neoliberal culture are focused on: the distribution and extension of elements of the self and body by technological means and the appropriation of forms of direct, personal address in order to maintain and exploit affective engagement on the part of individuals towards institutions. This essay examines the role that optical technologies play in the above-mentioned components of neoliberal subjectivity and embodiment by means of an historical analysis of three technologies and their associated practices: the popular photographic self-portrait made possible via the photo booth, the teleprompter and the automated teller machine (ATM). These technologies are popular sites where the intersecting, and at times contradictory, tendencies of fragmentation and engagement common in neoliberal culture are enacted.

The essay is divided into two parts. In the first section, the discussions of the teleprompter and the self-portrait provide a general overview of some key characteristics of neoliberal optics, situating them within a broader cultural context. The discussion of the ATM in the second part of the paper contributes to the preceding discussion of neoliberal optics in a different manner, complicating and extending the claims made in the first part. Rather than simply providing more evidence of those aspects of neoliberal optics discussed in regard to the teleprompter and the self-portrait, the historical development of the ATM draws attention to the ways that, while neoliberal optics continue to be of considerable importance in neoliberal culture, these logics do not wholly define contemporary experience of visual phenomena. However, as much as the implementation of the ATM differed from the structures of neoliberal optics discussed in the first part of the paper, the dynamics of neoliberal optics have been repeatedly

 DOI:10.3898/NEWF.80/81.11.2013

invoked throughout the ATM's development as a way of overcoming anxieties surrounding the technology with regard to personal security and engagement.

While invented and introduced before neoliberalism became hegemonic, the technologies discussed here speak directly to the optical aspects of the present conjuncture. For this reason, before exploring these devices further, it is worth pausing to consider the nature of the 'neoliberal' in neoliberal optics. Several scholars have identified neoliberalism with the consolidation of a set of concepts and assumptions in economic theory and public policy in the 1960s and 1970s in various parts of the world with origins going back to the 1930s.[1] At the heart of this tradition of neoliberalism are claims regarding the perfect efficiency of market structures and the superiority of competition between individuals rather than other forms of social interaction. The technologies discussed here are not direct products of such beliefs. Yet recognition of this independence from the 'market fundamentalism' of neoliberalism should not be taken as an argument for the autonomous development of neoliberal culture. Rather, it is recognition that neoliberalism is a complex social formation that involves many different elements; it is more than simply a body of conceptual and theoretical arguments about the economy which has subsequently been implemented within various contexts, a process by which 'neoliberalism proper' fans out across society.[2] The technologies discussed here, and their analysis in light of neoliberal optics, draw our attention to the way that a number of pre-existing technologies and cultural practices have been enlisted in the service of the process of neoliberalization. And, by focusing the ways in which they contributed to forms of technologically-augmented subjectivity as well as the maintenance of affective engagement, they draw attention to the 'regime of individuation' that determine modes of existence and ways of living that define neoliberalism.[3]

In the discussion that follows, the popular self-photography and the optical teleprompter are used as examples because both inventions separate the subject as the source of intentional perception from the site of presence. The teleprompter calls into question the idea of the public figure as a unified, intentional subject and positions them as puppet or actor in their public remarks at the same time as it produces forms of direct, albeit mediated, forms of address through screen. Along related lines, and following numerous historians of the self-portrait, the optical relations of self-photography (particularly in the popular version to which the photobooth would contribute) fundamentally transform the relationship between the object and subject of photography. The gaze of the television presenter is only 'natural' when looking through the glass of the teleprompter; and you are only yourself on film when looking through the mirrored aperture of the photobooth. By looking at the role of Luther George Simjian in the development of these inventions, this essay will explore the institutional, cultural and technological formations that would come to determine some key characteristics of the distributed self and body that constitute the individual in neoliberalism, from neoclassical economics to contemporary art practices.[4]

In this way, developing the concept of neoliberal optics by means of an historical analysis of these technologies compliments, rather than contradicts, both research analyzing subjectivity in age of distributed, or networked, technology as well as the ways in which various technologies have been used to produce forms of intimacy necessary for the exploitation of affective and immaterial labour that are central to neoliberal capitalism. The focus on the *optical* serves as a necessary compliment to the study of *representations* that serve to create, constrain and manage

forms of subjectivity conducive to neoliberal governance, on the one hand, and *technologies* of subjective affective engagement and subjective extension fragmentation such as those found in discussions of mobile technologies. (It is worth noting here, although only in passing, that Simjian also made significant contributions to the development of the flight simulator, certainly a privileged site of the distributed militarised body, as founder of the Reflectone corporation that continues to build commercial and military simulators as CAE Incorporated.)

LUTHER GEORGE SIMJIAN AND NEOLIBERAL OPTICS

Luther George Simjian's self-published *Portions of an Autobiography* offers a suggestive, if unintentional, entry point into material configurations that constitute neoliberal optics.[5] An Armenian born in Turkey, Simjian emigrated to the United States in 1920 where he found employment as a technician and later administrator in the photography labs of the medical school of Yale University. Bored with medical photography after a few years, Simjian recounts how he turned his attention towards other projects, eventually becoming a professional inventor and entrepreneur. The owner of dozens of patents, three of these inventions in particular stand out in relation to the subsequent role of the optical within neoliberal culture: the optical teleprompter, a camera designed for photographing oneself (marketed as the PhotoReflex), and an early version of automated teller machines.[6] Simjian's significance to the analysis of neoliberal culture is not as the inventor of the photographic self-portrait, just as he was not the sole inventor of the teleprompter. Rather, Simjian's contributions involve the development of optical innovations which extended and transformed already existing socio-technical assemblages. The biographical link that binds them together often goes unremarked, and does not, on its own, constitute the field of neoliberal optics. However, Simjian's role in the invention and development of these technologies draws attention to their shared relationship to the uses of light in the second half of the twentieth century.

The purpose of presenting the origins of these three optical devices is two-fold: first, to make an argument that Simjian's career as an inventor highlights the extent to which the optical retains significance in the contemporary era; second, to demonstrate that they are sites which contribute to the form that the individual takes under neoliberal hegemony. Jonathan Crary's seminal work on the place of optical sciences within nineteenth century culture is helpful for contextualising these inventions in relation to broader shifts in the practices and technologies of neoliberal culture. In *Techniques of the Observer*, Crary describes the ways in which optical science, as well as photographic and proto-filmic media, mirror and complicate theories of the subject emerging in medical sciences and psychoanalysis. He writes,

> From the beginning of the nineteenth century a science of vision will tend to mean increasingly an interrogation of the makeup of the human subject, rather than of the mechanics of light and optical transmission. It is a moment when the visible escapes from the timeless incorporeal order of the camera obscura and becomes lodged in another apparatus, within the unstable physiology and temporality of the human body.[7]

For Crary, this shift is part of what he calls, borrowing a phrase from Foucault, 'the threshold

of our modernity.' Yet, in turning to the field of optics as traced in Simjian's autobiography, one notes a different thematic from that which Crary draws from his study of optics in the nineteenth century. The function of the optical is no longer the embedding of vision within the unstable human body, but the fragmentation and distribution of the perceiving subject, even in relation to one's 'own' body, by means of technology. Yet the distribution of the self is not an experience of attenuation of experience or alienation. Rather, it serves to produce greater intimacy and engagement.

In histories of the teleprompter, the claim for the invention of an automatic cueing device is often credited to Hubert Schlafly, an engineer working with the CBS television network, and Fred Barton, an actor, in the 1950s.[8] However, the mechanical cueing device developed by Schlafly and Barton was quickly improved upon and replaced by the optical teleprompter proposed almost simultaneously by Simjian and Jess Oppenheimer, best known as the creator and producer of the classic American sitcom, *I Love Lucy*. The advantage of the optical teleprompter proposed by Simjian and Oppenheimer was its ability to break down the division between the viewer and person on camera by allowing for direct eye contact on the part of the presenter with the camera aperture (see figure 1). In his patent application, Simjian explains the improvements the optical system made to existing technologies, writing that the older methods of prompting have proved insufficient for a variety of reasons because

> The speaker may look at the placards so intensely for help that the use of such prompting becomes very obvious due to the aversion of the speaker's eyes from the aperture of the camera ... Furthermore, if the speaker focuses his eyes on a screen located in a place materially beyond the camera, the personal 'touch' between the speaker and the viewing audience is lost.[9]

Oppenheimer, in his patent application for a similar optical prompting system, notes that the advantage of this system is not simply improving the ability of actors and news presenters to 'look' their audiences in the eye, but also has 'psychological value ... since even accomplished speakers and actors are given a feeling of confidence by the availability of script material'.[10]

Given his extensive examination of the relationship between writing and presence, it is

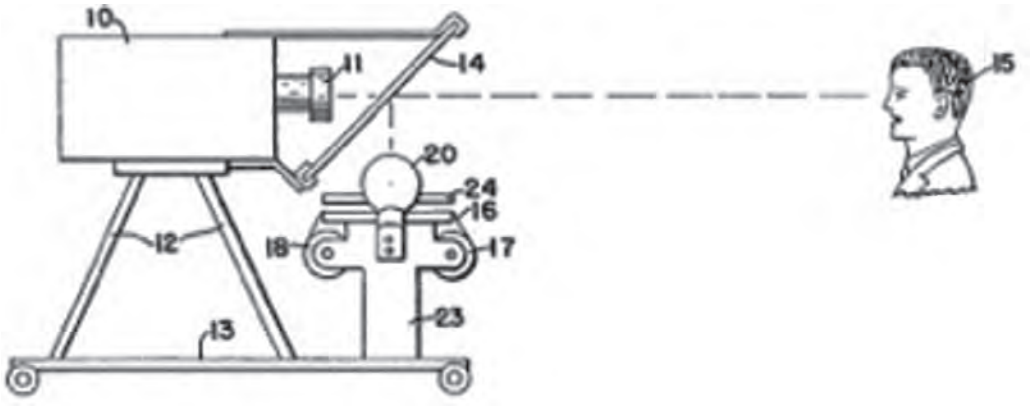

Figure 1, Simjian's prompting device, showing the line of sight towards both the camera's aperture and the script (US Patent #2,796,801 – 'Prompting Device').

not surprising that Jacques Derrida turns to the teleprompter on several occasions when reflecting on the forms that subjectivity and agency take under televisual hegemony. For Derrida, the teleprompter is central to the production of artifactuality, that set of material and representational relations in which what is 'actual' is 'not given but actively produced, sifted, invested, performatively interpreted by numerous apparatuses which are factitious or artificial, hierarchizing and selective, always in the service of forces and interests to which 'subjects' and agents (producers and consumers of actuality - sometimes they are "philosophers" and always interpreters, too) are never sensitive enough'.[11] His primary example of the infrastructure of artifactuality or actufactuality is 'when a journalist or politician seems to be speaking to us, in our homes, while looking us straight in the eye, he (or she) is in the process of reading, on screen, at the dictation of a 'prompter,' a text composed somewhere else, at some other time, sometimes by others, or even a whole network of anonymous authors'.[12] For Derrida, the introduction of such technologies is cause for suspicion regarding the structure of scopic relations between the televisual subject and the audience (as is evident in Derrida's neologism 'artifactuality'). Echoes of this position can be heard in popular anxieties about the teleprompter and its status as one of the focal points for interrogating the nature of mediated authenticity in public life (with Barack Obama's use of the technology serving as a consistent talking point for critics and satirists alike.)

However, such an approach runs the risk of overstating the pre-televisual as outside of these relations of reality production. This is a point that Paddy Scannell has recently addressed, noting that the question is not the extent to which television distorted 'reality' (and produces forms of 'actufactuality'), but the ways in which devices like the teleprompter were 'contributive to the overall communicative ethos of television as talk-as-conversation and its implicit normative underpinnings'.[13] The broader significance of the teleprompter, then, is the production of a form of public intersubjectivity which is personalised rather than distant, formal and institutional in its modes of address. As Scannell explains, building on his analysis of the teleprompter, 'Radio and television did not invent conversation, but they have made it the dominant, preferred style of talk in public since they entered into general social life'.[14]

In this way, Simjian's contribution must be interpreted as more than simply a contribution to the technological infrastructure of television, but a material shift in those techniques which structure norms about how to present oneself while on screen as natural and comfortable before physically absent audiences. There are a variety of venues in which the modes of address made possible by the teleprompter have been operationalised including, as will be discussed below, the ATM. Common across all of these areas, and already referred to in the discussions of the optical teleprompter's uses presented by Simjian and Oppenheimer, is the relationship that the modes of address have to engagement, trust as well as the more ephemeral forms of affective connection connoted by the idea of the 'personal touch.' In this way, the contribution that the teleprompter made to the production of televisual intimacy starting in the 1950s must be situated as an enabling support for the increasingly important role that affect plays, whether as part of a process for identity formation or as productive labour itself, within the reconfiguration of the division between personal and public life and the distinction between cognitive and physical activity that defines the regime of exploitation of expropriation under neoliberalism.

Turning to Simjian's account of the development of the PhotoReflex - an apparatus for seeing oneself while taking one's own picture - one finds a similar blending of the personal and

the public in the transformation the device effected in the practice of taking photographic self-portraits. The invention of the PhotoReflex was, according to Simjian, the pivotal experience that transformed him from technician to inventor. His inspiration for the device, he recounts in his autobiography, was his unhappiness with the repetitive nature of portraits in Yale's student yearbook. In his telling of the story:

> I noticed that every student in the book looked alike in his or her expression. I couldn't believe that they had all gone through four years of learning and come out with the same expression on their faces. There was something funny about this ... I went one afternoon [to the studio]. And I noticed that he [the photographer] told every student, 'Pose this way, look this way, smile this way', and he directed them in exactly what they should do ... Well, I said, this is where the problem is. These people are made to pose according to this man's direction. They go for four years of education, and in the end they're all made to look alike.[15]

The purpose of the 'pose-reflecting system for photographic apparatus' he designed was a democratisation of self-representation in photography. Simjian sums up this break with the traditional portrait declaring: 'These people have to be their own photographers, so they can pose themselves as they would like to be'.[16]

In Simjian's telling, this democratisation of photographic self-representation - 'posing themselves as they would like to be' - is one that cannot be separated from the institutions of the upper middle class of the eastern United States (as evident in the repeated invocations of 'four years of education'). Yet its eventual use in photobooths link it to the practices of popular personal photography that were foundational to the expansion of photographic self-portraiture (see figure 2). Richard Hornsey observes the importance of this mode of self-expression that followed the introduction of the *Photomaton* in Britain:

> What they saw in the reflection of their face (and later reproduced on the strip of printed photographs) was the visualisation of their own free sovereignty and ontological security as a unique individual. The photobooth, therefore, offered the mass urban populace a new process of individuation, not just by expanding the number of people who sat for their portrait, but by implicating them, pictorially and architecturally, within a specific articulation of their own personal sovereignty.[17]

Hornsey's discussion of the photobooth draws particular attention to its architectural form, at once a 'degraded evocation' of the camera obscura and intimate private space within the flow of urban traffic. However, at the centre of the social and spatial relations that resulted from its use, the practice of photobooth photography entailed a popular form of self-representation. Echoing Simjian's statement about posing 'as they would like to be', Hornsey writes that 'The booth became an enclosure in which one could playfully try out multiple presentations of self as fleeting and inconsequential as the apparatus and its output, and a rehearsal space for a diverse set of performances in an increasingly mediated city'.[18] In the photobooth, in which the reflective image of the subject is incorporated into photographic practice (in other words, the PhotoReflex), appears the reflexive production of images of the self in real time.

While such forms of reflexivity in representations were not new in the twentieth century, their

transformation into a mass practice should be seen, as Hornsey argues, as a visual complement to the shifting horizon of the modern subject. The idea of personal sovereignty found in photobooth photography is echoed in Simjian's descriptions of the PhotoReflex from the 1920s, where it is described as a way of letting the photographic subject appear as their true selves, freed from the constraints of being laid out on display before the camera by the photographer or feelings of being 'self-conscious'. 'It is claimed', a profile in the Yale College newspaper describing the invention from 1929 explains, 'that all self consciousness will be taken out of the art of photography by the invention of a camera in which the subject is his own photographer'.[19]

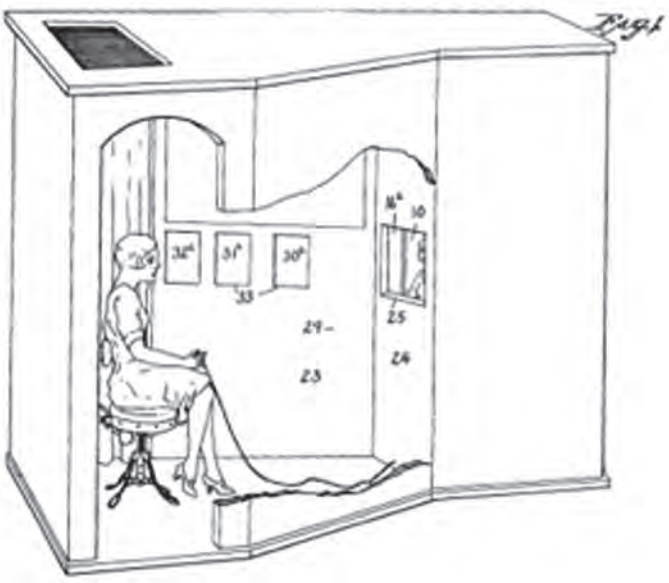

Figure 2, Image of Simjian's PhotoReflex Booth with mirrors for multiple perspectives from the patent application (US Patent #1,830,770 – 'Pose-Reflecting System for Photographic Apparatus').

The idea of the photobooth as potential resource for self-realisation and transformation, which resonates with the notion of commodities as tools for both consumption and cultural resistance, is much closer to the practices and critical discourses that precede the hegemony of neoliberal logics (a moment capably and extensively analysed by cultural studies in the 1960s and 1970s.) Yet, by underestimating the extent to which these photos, self-posed or not, continued to serve a number of institutional purposes - such as on a variety of forms of official identification - such approaches to popular portraiture are insufficient for analysing their status within neoliberal culture. The narrative of the PhotoReflex's invention dramatises the break between mass portraiture and the tradition of bureaucratic portraits. This older tradition of bureaucratic portraiture was, in the words of John Tagg, a process involving the accumulation of 'a vast and repetitive archive of images ... in which the smallest deviations may be noted, classified and filed'.[20] The contribution of the PhotoReflex to the formation of the neoliberal individual is the naturalisation and internalisation of the technique and technologies of visual surveillance. In the present moment, the circulation of the photographic self-portrait is increasingly managed and monitored as part of flexible structures of data. A precursor to the proliferation of 'selfies' and their centrality to the mode of generalised surveillance that structure social media, this device spans the personal and official uses of portrait photography.

In tracing the invention of the teleprompter and the PhotoReflex and its eventual integration into neoliberal modes of individuation, it cannot escape notice that the emergence of neoliberal optics covers similar territory to that found in the discussions about the transformation of modes and models of visualisation that have resulted from the rise of digital media. The effects of the emergent digital ontology of images is a transformation noted by Crary as well, arguing

that this has lead to the eclipse of the observer as figured in discourses of the visual in the late nineteenth and early twentieth centuries. He explains:

> Most of the historically important functions of the human eye are being supplanted by practices in which visual images no longer have any reference to the position of an observer in a 'real', optically perceived world. If these images can be said to refer to anything, it is to millions of bits of electronic mathematical data.[21]

Mark Hansen, who quotes the above passage in *New Philosophy for New Media*, takes up the theme of the digitalisation of the visual to argue that, although the nineteenth century subject may no longer ground visual experience, vision remains an embodied, 'haptic' means of sensing the world. According to Hansen, the body does not disappear into a stream of digital information. On the contrary, new forms of representation draw on practices of viewing deeper into forms of affective, embodied experience of space or, as Hansen writes, 'a modality of spacing that has been wholly detached from vision, that has become affective'.[22]

Crary and Hansen offer two different understandings of visuality in the age of digital media (or, as Hansen calls it, post-photography), yet both are in agreement regarding the reconfiguration of the optical's relationship to experience and the formation of subjectivity. For both, the homology between the optical and the visual experience is that which is disrupted by contemporary digital technologies. Simjian's contributions remind us that the optical register remains an important site for understanding the structures of visuality in the contemporary moment, particularly as a way in which structural shifts in the ontology of information relate to the lived realities of daily life. This is not to suggest that the optical is the determinant factor in the contemporary period, and that consequently it holds the key to understanding the visual structures of contemporary culture. Rather, it is to argue that the significance of the optical has not wholly been subsumed by the logic of digital networks.

Simjian's autobiography is useful because it traces the outlines of neoliberal optics, even though much of it unfolds separately from (if not prior to) the adoption of computational systems for the handling of information. Laying out neoliberal optics as a heuristic for highlighting the ways in which a series of problems and resolutions were put forward that, while linked to elements of visualisation in the digital age, are not entirely coherent or consistent with its elements. The optical register of materiality remains a space in which certain problems within the organisation of the visualisation of space, the disposition of bodies and attention are worked upon. Echoing (but also extending) Hansen's discussions of agency and action in the age of ubiquitous computing, the inventions developed by Simjian similarly speak to the separation of presence from intention. For this reason, neoliberal optics should be understood as an important contributing factor in the transformation of media technologies and visual culture that has taken place over the past fifty years, the period that witnessed the development and triumph of neoliberalism as a cultural, economic and political logic.

THE ATM

In order to make sense of the ATM's relationship to neoliberal optics, it is necessary to situate its development within the longer history of attempts to introduce remote banking to the

public. In the context of this history, it is necessary to analyse the development of the ATM's interface rather than position it as a mere support for the automation and digitalisation of the banking industry in the 1960s and 1970s.[23] Such a perspective on the ATM draws attention to the extent to which the important aspects of the ATM's development emerge directly from the forms of subjectivity and material configurations that were characterised as neoliberal optics above. However, the ATM's history is instructive not simply because it provides another example of the tendencies already discussed. Rather, it requires attention because of the way it breaks with and negotiates its place within the technologies and practices of neoliberal optics.

By expanding the history of the ATM to include a broader analysis of the interface in the development of remote banking, we return to the work of Luther Simjian. While Simjian's role in the invention of the ATM is contested, he is recognised as the inventor of a photo-mechanical automated banking terminal patented in 1961 as a 'depository machine', but popularly known as the *Bankograph*.[24] In Simjian's telling, it was a response to changing payroll laws in New York State that required certain workers to be paid in cash at the end of the week in order to prevent companies from defaulting on their payroll obligations. An alternative mode of depositing was necessary because this left thousands of people carrying around their entire weekly salaries in cash, often after the end of banking hours. Unlike the modern ATM, Simjian's *Bankograph* did not update accounts or give access to cash. As he explains, 'I decided I would use microfilm and take films of whatever cash or checks were deposited ... The machine would take a microfilm of the money and the deposit slip, and give a copy to the customer as a receipt. It also took a picture of the person depositing the money as they deposited it'.[25]

Simjian's ATM was ultimately a failure because very few patrons felt comfortable depositing money into a 'hole-in-the-wall' bank. Given the other inventions he worked on, and their grounding in an understanding of the relationship between vision, identity and intersubjectivity, we might speculate that the depository machine developed by Simjian failed precisely because of its evasion of established norms of visuality associated with banking at the time. (Although this absence was exploited by those individuals whose professions preferred to avoid the bureaucratic gaze of institutions, such as the street hoods and prostitutes mentioned by Simjian in his retelling of the depository machine's introduction.) Such conjecture seems more likely given that the development of the ATM, as part of the history of remote banking, was initially situated clearly within the visual and mechanical structures of neoliberal optics outlined in the previous section.

There is a history of experiments that sought to bring the private space of the bank into public spaces beginning in the middle of the twentieth century. While a longer history of these devices and their relationship to media culture is yet to be written, they are essential context for the development of the ATM as public interface with private information. Of particular interest here are the ways in which the interaction between the teller and the client was transformed in order to allow for greater distance between the two parties. If early forms of 'convenience' banking, such as the 'drive-through' and 'walk-up' teller, maintained the face-to-face aspect of the interactions of commercial banking, other experiments relied on various optical technologies in order to extend the distance covered by this relationship. In 1950, the Mosler Safe Company of Ohio introduced the 'periscope' bank which allowed customers to interact and engage with bank staff situated in nearby underground bunkers that were 'built like a fortress' by means of a series of mirrors and telephones.[26] In the mid-fifties, Diebold,

another safe company from Ohio (now better known for their voting terminals), introduced 'television banking', which allowed for bank tellers to communicate with clients by means of a closed-circuit television system.[27] These units were rolled out for the next two decades, part of a broader program to find industrial uses for the new medium.[28]

The advantages of these models, over fully 'automatic' models like the one proposed by Simjian, was that they offered a smooth transition from the modes of interaction with tellers to which clients were accustomed. However, these experimental models, while offering advances in security and efficiency, created a problem of ensuring or producing the effect of face-to-face interactions with clients at a distance. When the International City Bank opened an 'all Television' branch in New Orleans in 1970, the managers found it necessary to train tellers who were not 'good on TV'.[29] While no information is available regarding the training provided to these tellers, the use of the phrase being 'good on TV' suggests an interest in producing a certain kind of natural self-presentation via the technology. However, this was not exclusively a problem for the tellers themselves. It was, according to manufacturers, built into the technology itself.

Diebold, in the promotional material for their first television terminal the Auto Teller DCV (with 'auto' signifying both automation and access via automobile), noted that the 'camera was arranged for normal viewing'. The promotional pamphlet goes on, noting that:

> As in the teller unit, the camera and monitor in customer units are placed in the most 'normal' locations to duplicate personal transactions. Size, height of camera, and monitor location have been 'human engineered' to best accommodate a person seated in an automobile.[30]

The promotional materials for the subsequent model, the Auto Teller II from the early 1960s, similarly proclaim that 'We've got Angle', noting that the angle of screen and camera is one that replicates the placement of the home television - slightly below eye level - because 'it is familiar to customers and therefore minimises any feeling of unfamiliarity on the part of the customer'. Furthermore, the organisation of the camera and the screen for the teller replicated closely the organisation of the teleprompter, ensuring that the personal 'touch' of individual banking was not lost.

The desire to develop a fully automatic bank kiosk that integrated advances in computerisation taking place simultaneously in the banking industry meant that these visual interfaces would prove to be a transitional technology. Communicating with users by means of coloured lights and routinised patterns of interaction, the ATMs introduced to the public in the late 1960s (by Barclays Bank in the UK and Chemical Bank in the United States) radically refigured established forms of personal presentation in the banking industry by dispensing with the face-to-face aspects of banking transactions entirely. The success of the fully automated ATM in which the screen was exclusively used to transmit data rather than the human likeness did away with some aspects of the problem of managing the relationship between clients and banks, at least with regard to eye contact and other modes of non-verbal address. As most other forms of remote banking (aside from drive-in banking in parts of the United States) disappeared, the figure of the face-to-face nature of the encounter with the bank remained in name only. In Spokane, Washington, for example, we find this ironically coded into the

branding of the kiosks as 'the homely teller', a name and advertising campaign that invoked the gendered history of clerical labour in banks.

Yet, if the transformation of the ATM's cathode ray tube from television screens to data display marks a break with important aspects of neoliberal optics, the new material configuration of the ATM brought into focus through their absence the significance of optical technologies in linking the distributed self of neoliberal culture with practices which involved personal affective engagement with institutions. The initial removal of transactions from the enclosure of the bank to the 'hole-in-the-wall' kiosk entailed a re-conceptualisation of the relationship between the visible and the invisible within the banking industry that were articulated as problems of security and safety for the technology and the users alike. Rather than fortress-like spaces that allowed for private exchange between clients and staff, new forms of remote banking required improved visibility. In the case of remote banking, this was explicitly written into the Banking Protection Act, adopted in 1968 in the United States. The act specifies that 'drive-in tellers' stations or windows should be located in such a manner as to reproduce identifiable images of persons in a position to transact business at each such station or window and areas of such station or window that are vulnerable to robbery or larceny'.

These concerns would expand with the widespread introduction of wholly computerised terminals, with the 1980s witnessing an explosion of ATM-related crime. Over time, the desire to ensure that remote banking transactions were visible was extended to include attempts to visually identify and authenticate the user. While few of the other elements of Simjian's Bankograph were adopted, it is worth recalling that a part of its mechanism for ensuring the identity and security of the transaction was taking a photograph of the user. It was perhaps this line of thought that would lead to Simjian filing a patent in 1968 for a verification system that would involve a rudimentary form of facial recognition using photography.[31] This, however, should not be surprising since, as Kelly Gates notes in her history of facial recognition, 'Banks became early adopters of biometric technologies, testing systems for controlling employee access and also envisioning how these technologies might be extended for automatically verifying the identity of banking customers'.[32]

The transformation of banks and ATMs to conform with structures and technologies of optical surveillance was not, however, the only transformation taking place. While the making visible of remote banking to systems of surveillance helped to secure ATMs and users, such visibility conflicted with the private nature of banking information itself. Even if the machines were fully secure and reliable (which they weren't), there was no guarantee that the privacy of the user would be protected. It is not surprising, then, that the primary issues related to the design of the interface involved the production of spaces and zones of partial privacy. A number of patents and systems were introduced during the 1980s and 1990s that sought to limit the visibility of the screen or of the input pad.[33] Most of these, of which 3M's micro-louver system is the most widely used, involved the framing of the screen behind technologies that structured the diffusion of light from the ATM screen so that it would only be visible to the user directly in front of the interface. Another option proposed at the time used metal grates as blinder to restrict the line of sight for those standing at any angle other than roughly 45 degrees.[34] While significant attention has been given to the way that the ATM has been integrated into surveillance networks, less attention has been paid to the way that the interfaces simultaneously produced spaces of visual privacy through the use of light-control films that

shaped and directed the visibility of the screen.

Of course, the development of the ATM's interface did not take place in isolation. Rather, it was part of a radical shift in the place of the bank within communities. It is difficult for the modern banking customer to understand how much more personal banking in the early twentieth century was in comparison to its contemporary organisation. Grant Bollmer's discussion of Frank Capra's *It's a Wonderful Life* (1946) is useful for making the relationship between the personal and the financial in mid-century America explicit. Bollmer writes:

> It is rarely acknowledged that the role of banking and the circulation of capital is central to *It's a Wonderful Life*'s representation of community. Throughout the film, George Bailey's life is continuously shown not only in the context of his relation to those around him, but in the context of his relation to money ... But more than simply the constant references back to money, *It's a Wonderful Life* locates banking and mortgages as the central agent in determining the character of a community.[35]

Bollmer convincingly situates the discourse connecting the moral and market economies together within contemporary popular culture in the United States in order to understand the financial crisis of 2008. However, I would like to situate his reading more as a snapshot of a banking industry that was soon to disappear in the wake of automation, expansion and the rapid concentration of banking that took place between 1950 and 1970.

The transition away from the face-to-face aspects of banking marked a clear break from the aspects of neoliberal optics outlined in the previous section. However, it is important to note that this break was not complete. Rather, the promise of direct visual contact via ATM continues to haunt proposals for improving existing forms of ATM and anxieties about the technology. If the intersection between the surveillance camera and the privacy screen created a sufficient amount of trust in the ATM apparatus to ensure its widespread use in many parts of the globe, concerns about the depersonalisation of banking should serve as a reminder of the discontinuity between the ATM and other forms of optical space that characterise the present moment.

The film *ATM*, which tells the story of three work colleagues trapped and tortured in a fully automated bank branch located in a desolate shopping-mall parking lot by a stranger in a parka, provides an explicit working out of these anxieties.[36] The automated branch, consisting of two ATMs in a glass enclosure, highlights the disconnect between being visible and being seen. Taking these anxieties to absurd ends - at one point the ATM enclosure is filled with water - the film nonetheless performs the insecurity of a surveillance culture in which nobody is monitoring the video feed of the CCTV. Such representations of anxiety about the visual aspects of depersonalisation find their counterpoint in promises to modernise the ATM in ways that might return it to the fold of tropes that characterise neoliberal optics, namely a more personalised mode of address. In 2013, one of the oldest ATM manufacturers, NCR, invested heavily in the production of video ATMs that allow users to connect face-to-face with remote bank employees. A number of articles in the popular press heralded this as giving ATMs a human face, and a way to return a feeling of personal connection to banking.[37]

While these innovations will involve a number of institutional, technological and legal changes that are beyond the scope of this paper to discuss, the relationship between client

and bank teller as mediated by optical technologies provides insight into the complexities of visual experience in neoliberal culture. In its continuities with, and disconnections from, other technologies and visual practices of subsequent decades, tracing the history of the ATM as a site of optical subjectivity contributes to the ways in which we are able to study the material and representational modes that sustain neoliberal culture. It remains to be seen whether the human face will return to ATM screens in the near future. However, the reappearance of fears and desires associated with the now institutionalised form of depersonalisation symbolised by the ATM helps us to position the anecdote about the failure of Simjian's Bankograph as well as the development and eventual disappearance of alternate forms of remote banking as part of the visual complex which regulates the relationship between private information and public life that shapes the experience of the individual in neoliberal culture.[38]

***

In *The Victorian Eye: A Political History of Light and Vision in Britain, 1800-1910,* Chris Otter traces the place of optics and the rise of illumination at the intersection of political liberalism and the use of large scale technological infrastructure as a mode of governance. According to Otter, 'freedom, whether conceived by J.S. Mill or by sanitarians and engineers, was routinely conceived to be at least partially securable through technology'. Otter's detailed discussion of the construction of a material infrastructure that aides particular kinds of visibility (whether through electric light or more open architecture) is a more thorough analysis of a socio-technical assemblage that is quite similar in scope and purpose to what has been discussed here as 'neoliberal optics'. For this reason, it is helpful to conclude by considering the ways in which Otter's analysis differs from the account of technologies and relations sketched out in this article.

Similar to the preceding discussion, at the centre of Otter's analysis of Victorian optics is the emergence of a particular kind of individual: intentional, objective and mobile. The Victorian individual maintained a distance from what was observed, and a variety of technologies were put in place to ensure that this vantage point was preserved and secured. Given the preceding discussion, there are two primary distinctions that separate the liberal from the neoliberal modes of visualisation. First, there is the changing relationship to technology. If during the nineteenth century, the age of classic liberalism, technology was constructed and described as a tool, exterior to the body, the neoliberalisation of technology entails its integration into the body. While neoliberal ideology is often cited as entailing the apotheosis of the individual, this overlooks the extent to which a variety of media and communication technologies have enacted an undoing of the personal sovereignty that defined the liberal individual. As a number of contemporary authors have noted - for example, through the revival of the idea of the 'general intellect' by the Italian autonomists - the integration of technologically mediated forms of collectivity is central to contemporary forms of capitalist exploitation. At the same time, such writers point to the growing centrality of affective engagement as a means for maintaining engagement as well as a source of value which can be expropriated. Less a part of the discourse which surrounded the liberal individual, modes of address which solicit affective address have proliferated across public life.

In the preceding discussion, both of these elements have been considered as part of the

structures and relational dynamics which constitute neoliberal optics. Neoliberal optics is fundamentally transactional in nature, having impacted on both what it means to see and be seen as an individual, and the modes of collectivity that are possible and how they are made visual. The importance of neoliberal optics to the future study of neoliberal culture is that it highlights the extent to which, beyond the limits and failings of neoliberal market ideology, an entire mode of being and experience has been implemented as part of the neoliberal project. In the present moment, as market crises become endemic rather than occasional, it is not unlikely that these 'other' aspects of neoliberal culture will remain even as appeals to the free market and the entrepreneurial individual fade. Their power comes not only from their efficacy as tools for governance, control and exploitation but also from the ways in which they have been made to seem natural and intimate to our everyday lives and personal experiences.

Notes

1. David Harvey, *A Brief History of Neoliberalism*, London, Oxford University Press, 2005.

2. Nick Couldry, *Voice Matters: Culture and Politics after Neoliberalism*, London, Sage Publications, 2010, p5.

3. Individuation is most associated with the work of Gilbert Simondon. See Muriel Combes, *Gilbert Simondon and the Philosophy of the Transindividual*, London, The MIT Press, 2013.

4. Discussions of these aspects of neoliberal culture include Jack Amariglio and David Ruccio, 'Modern Economics: The Case of the Disappearing Body?', *Cambridge Journal of Economics*, 26, 1, (2002): 81-103; Erin Manning, *Politics of Touch: Sense, Movement, Sovereignty*, Minneapolis, University of Minnesota Press, 2006; and Lisa Blackman, *Immaterial Bodies: Affect, Embodiment, Mediation*, London, Sage Publications, 2013.

5. Luther George Simjian, *Portions of an Autobiography*, 1997.

6. Ibid., pp283-298.

7. Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century*, Cambridge, MIT Press, 1990, p70.

8. Fred Barton and Hubert J. Schlafly, 'TelePrompter - New Production Tool', *Journal of the Society of Motion Picture and Television Engineers* 58, 6, (1952): 515-521. Also see Schlafly's obituaries, especially Dennis Hevesi, 'Hubert Schlafly, Who Helped Build Teleprompter, is Dead at 91', *New York Times*, 27.04.2011.

9. US Patent # 2,711,667 - 'Prompting Device'

10. US Patent #2,883,902 - 'Prompting Apparatus'

11. Jacques Derrida and Bernard Stiegler, *Echographies of Television: Filmed Interviews*, Cambridge, Polity Press, 2002, p3.

12. Ibid., p4.

13. Paddy Scannell, 'Television and History: Questioning the Archive', *The Communication Review*, 13: 49.

14. Ibid.

15. Simjian, *Portions of an Autobiography*, op. cit., p162.

16. Ibid., p163.

17. Richard Hornsey, 'Francis Bacon and the Photobooth: Facing the Homosexual in Post-war Britain', *Visual Culture in Britain*, 8: 86.

18. Ibid., p87.

19. 'Yale Scientist Discovers Remarkable New Camera', *Yale Daily News*, 42, (12 November 1929).

20. John Tagg, *The Burden of Representation*, Amherst, University of Massachusetts Press, 1988, p64.

21. Crary, *Techniques of the Observer*, op. cit., p2, cited in Mark B.N. Hansen, *New Philosophy for New Media*, Cambridge, MA, MIT Press, 2004

22. Hansen, *New Philosophy for New Media*, op. cit., p230.

23. The common periodisation found in histories of the ATM's development involve the transition from off-line automated

cash deposit and dispensing units to networked on-line kiosks that offered a variety of financial services in real time. Both of these periods are presented as mere precursors to truly cashless economies mediated by point-of-sale terminals, personal computers and mobile devices that has yet to be fully realised. For a consideration of this approach to the ATM, see Richard Coopey, 'A Passing Technology: The Automated Teller Machine' in Peter Lyth and Helmuth Trischler (eds), *Wiring Prometheus: Globalisation, History and Technology*, Aarhus, Aarhus University Press, 2004.

24. US Patent # 3,358,992 - 'Depository Machine'; Simjian, *Portions of an Autobiography*, op. cit., pp258-260; Stacy Jones, 'Robot Bank Teller is invented to give Photograph as Receipt', *New York Times*, 2.04.1960, p29.

25. Simjian, *Portions of an Autobiography*, op. cit., p259.

26. 'Remote Banking Comes to Focus', *New York Times*, 8.08.1956, p46.

27. Diebold Incorporated, *Catalogue: Undercounter Products, Drive-Up/Walk-Up & Remote Banking*, Canton, Ohio, Diebold, 1960.

28. H.F. Schneider, 'How Can Industry Use Television?', *Industrial Electronics*, 1956, pp23-31; J.E.H. Brace, 'Industrial Television: A Survey of History, Requirements and Applications', *Journal of British Industrial Relations*, June 1960.

29. Milton O'Neal, 'All-TV banking Catches On', *Banking*, 65, (September 1972): 39.

30. Diebold Incorporated, *Catalogue*, op. cit.

31. US Patent #3,569,619 – 'Verification System Using Coded Identifying and Storage Means'.

32. Kelly Gates, *Our Biometric Future: Facial Recognition Technology and the Culture of Surveillance*, New York, New York University Press, 2011.

33. US Patent #5,528,319 – 'Privacy Filter for Display Device'; US Patent #5,528,319 - 'Polarizing Privacy System for Use with a Visual Display Terminal'.

34. US Patent #4,812,709 - 'Privacy Screen for a Color Cathode Ray Display Tube'.

35. Grant Bollmer, 'Community as a Financial Network: Mortgages, Citizenship and Connectivity', *Democratic Communiqué*, 24, (2011): 39.

36. David Brooks (director), *ATM*, Buffalo Gal Productions, 2012.

37. Martha White, 'ATMs with a Human Touch: How New ATMs May Replace Bank Tellers' *Time*, 17.05.2012; and Hadley Malcolm, 'Video ATMs let customers interact remotely', *USA Today*, 4.12.2012.

38. For more on 'visual complexes' see Nicholas Mirzeoff, *The Right to Look: A Counterhistory of Visuality*, Durham, NC., Duke University Press, 2011.