Pre-Cinema, Pre-GIFF, or Auto-Erotic Machine Art?

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ABSTRACT

In this paper I discuss the meaning of a ubiquitous digital art form, the animated GIFF, in the context of a technological/social history that stretches back to repetitive-loop animation devices of the mid-nineteenth century. Most histories treat these devices as 'pre-cinema', and as precursors of total realism. I am sympathetic to more recent histories that treat them as pre-GIFF. I raise the methodological problem of how we choose between these conflicting approaches. Our ideal should be historicist: we should refer our interpretation to contexts that were available to nineteenth-century actors. However, when relevant contexts are diverse and competing, as they were in this case, we are condemned to a degree of 'presentism' in how we select among them.

Choosing to view the nineteenth-century devices through the lens of the GIFF brings into focus a critical, reflexive and playful approach to illusion known as rational recreation. This nineteenth-century context reveals a number of levels of self-reflexivity in this machine art. It was liberated from mimetic representation and generated an extraordinary freedom of the imagination alongside a dark auto-erotic pessimism. All of these elements can plausibly be claimed for the genealogy of the GIFF.

CCS CONCEPTS

CCS → Applied computing → Arts and humanities → Media arts

1 Introduction

In this paper I discuss the meaning of a ubiquitous digital art form, the animated GIFF, in the context of a technological/social history that stretches back to repetitive-loop animation devices of the mid-nineteenth century. Most histories treat these devices as 'pre-cinema', and as precursors of total realism [1-6]. I am sympathetic to more recent histories that treat them as pre-GIFF [7]. I raise the methodological problem of how we choose between these conflicting approaches. Our ideal should be historicist: we should refer our interpretation to contexts that were available to nineteenth-century actors [8, 9]. However, when relevant contexts are diverse and competing, as they were in this case, we are condemned to a degree of 'presentism' in how we select among them.

Choosing to view the nineteenth-century devices through the lens of the GIFF brings into focus a critical, reflexive and playful approach to illusion known as rational recreation [10]. This nineteenth-century context reveals a number of levels of self-reflexivity in this machine art. It was liberated from mimetic representation and generated an extraordinary freedom of the imagination alongside a dark auto-erotic pessimism. All of these elements can plausibly be claimed for the genealogy of the GIFF.

2 Nineteenth-Century Contexts for Historical Interpretation

When the young scientist Michael Faraday was touring the industrial marvels of the age of steam to watch the machinery work, his attention was briefly drawn not to the actual motions of the meshing gears in Messrs. Maltby's 'magnificent lead mill' or the whirring pulleys of the great excavator of the London Tunnel,

but to strange phantom movements that they appeared to give off – bars of light and shadow perversely motionless or moving in directions contrary to the actual motion of things in the world [11].

His mind works at the intersection of a number of nineteenth-century contexts that give meaning to his observations and speculations. He is a scientist whose investigations have direct applications to electrical engineering and industrial design. He will contribute to the project of building more powerful and efficient machines of production. Others, like his contemporary Charles Babbage, will redesign the human components of these assemblages, abstracting the machine-like characteristics of manual work, building them into machines and demanding repetitive simplifications of working-class human bodies [12].

Optical toys formed another ubiquitous context in the formative years of young scientists and engineers of this period. Children of their social class were encouraged, through optical tricks and games of 'natural magic', to delight in the delusions of the senses while at the same time being encouraged to investigate and understand the hidden causes of these deceptions. This was 'rational recreation', which armed young bourgeois citizens with a critical, deconstructive approach to the illusions of representation. Through the thaumatrope for instance, children of this class learned of the so-called retinal persistence that was thought to be at play in the Faraday illusions [13].

Friends and colleagues of Faraday made the fallibilities of visual perception the focus of their scientific research. They constructed machines to capture, anantomize and give rational, preferably mathematical accounts of our flawed perceptual machinery [14]. It was to this conversation that he directed his 1833 paper 'On a Peculiar Class of Optical Deception'[11]. Belgian physicist Joseph Plateau had an intuition of the mathematical relationship between the periodicity of the real motion and Faraday's phantom motion and was able to construct a demonstration device, the first phenakistoscope, on that basis [15]. Like so many others whose scientific apparatuses tricked the senses into revealing their image-making secrets, Plateau's imagination immediately turned, perhaps recalling childhood delights, to the purposes of amusement [16]. The same was true of Charles Wheatstone, whose stereoscope, designed to abstract and isolate the role of binocular disparity in spatial perception, was almost immediately reconceived, within what I will call the optical-amusement complex, as a device for producing an illusion of space and 3D volume.

An historicist approach to interpreting the meaning of mid-nineteenth century 3D moving image technologies should be limited to those interpretive contexts available to the constellation of players involved in the project of inventing these moving images. A problem emerges when those contexts are multi-faceted and contradictory. For instance, Jonathan Crary has argued that the scientific work of Wheatstone, Plateau and others on the physiology of human vision had as one of its covert aims the rationalization of attention and reaction times for the furthering of Babbage-inspired projects of labour control [17]. Crary is correct, as the subsequent history of time-motion studies seems to bear out. This was a project which culminated in Frederick Taylor's efforts not only to rationalize the human machine but to aggressively sever its predictable motions from thinking minds capable of critical or creative thought [18]. The hapless victims of this project of domination were understood to be easily duped by new and increasingly sophisticated technologies within the optical-amusement complex.

Yet the Wheatstone and Plateau devices cannot simply be read in this way. They figure simultaneously in projects designed to dominate and dupe and contrarily to enlighten and protect from being duped. A potential solution to this problem of interpretation is to attend to social class (and, as we shall see in subsequent images also gender) in the analysis. A critical, deconstructive approach to optical delusions was intended for the class that included engineers and industrialists; a naïve realist approach was for the class that included factory operatives and manual labourers.

3 Invention in the Optical-Amusement Complex

Andre Bazin has argued for thinking of the optical amusements of the nineteenth century as subordinate to a cultural imagination captured by what he calls the 'myth of total cinema' [19]. That myth is a yearning for realism in representation that incorporates photographic fidelity to the visual, plus the colour, movement, surround sound, and spatial immersiveness of actual experience. Many historians of 'pre-cinema' still implicitly adopt the assumption of the myth of total cinema despite methodological objections that have been raised [1-6]. The first objection is that the approach is teleological – all invention must have been directed toward the same endpoint which is the cinema, or perhaps the immersive 3D, we enjoy today [9]. The second is that it is 'presentist' – such historians wrongly export present contexts as their interpretive frame for actions of those in the past [20].

Bazin would counter that the myth, while not yet embodied in the primitive artefacts of the past, was nonetheless 'fully armed in their minds, as if in some platonic heaven' [19]. One might go further and consider the optical amusement complex of 1833 that embodied so many elements of the myth. There was colour projection (the magic lantern), machine-driven movement (clockwork automata, and the machines of the theatre and the Eidophusikon), 3D illusion (the zograscope, peepshow and kulissentheatre), machine-driven sound (music boxes, tableaux animées) [21-23]. The teleological approach would say that the ideas are here already and that history is the process of perfecting the technologies so that they mediate ever more transparently and offer no material friction to the illusion.

Stereoscopic 3D was better than the zograscope's weak illusion of depth and its volumes lighter, more frictionless than clunky automata. Phenakistiscope animation was similarly a step towards dematerialization – lighter and more flexible than clockwork or rope-and-pulley animation. Almost as soon as the stereoscope debuted in the optical amusement complex, inventive minds leaped independently to the idea of a stereoscope-phenakistiscope fusion, which, with the further addition of photographic images would realize moving 3D photographic images [3-5]. Denis Pellerin even goes so far as to suggest that Duboscq's design was an anticipation of Blu-Ray [5]. Each successive animation device had within a short time its stereoscopic version.

This is good evidence that for many, something like 3D immersive cinema was 'fully armed in their minds, as if in some platonic heaven'. Writings of the period also concur that, as Pellerin puts it, 'they wanted it all and they wanted it now!' Further evidence, however, points to other more interesting things going on. Design and invention within the optical amusement complex has produced numerous technological 'tropes' which, like physical themes and variations, recur across different devices and in different combinations over time. Many of them, like the use of the biconvex lens to produce a depth illusion, should, from the perspective of a history of 'progress', become obsolete, but somehow they do not. The repetitive loop is another example. It can be contrasted to the continuous roll of images such as a celluloid film strip or an eighteenth-century optical table whose images were linked together using the same roll-and-spool technology. Both have existed as technological tropes since the eighteenth century, and both are still employed in the twenty-first.

The most ubiquitous contemporary iteration of the repetitive loop is the GIFF, invented in 1987 by Compuserve Corp. It is 'inferior' to cinema since it lacks sound and can only produce movement for a few seconds. Despite being digital, it nonetheless has a kind of physicality which both limits and offers new affordances. It also has a unique aesthetic that cannot transcend the medium, indeed the friction of the medium defines the charm of the aesthetic. As Eppink points out, the 'limits' of the GIFF as a medium have actually become its strength [7].

The medium invites self-referentiality as though always calling attention to its goofy, machine-like quality. The medium also undermines realist pretentions. Even photographic GIFFs are at best parodic quotations of the 'real' that interfere aggressively with 'natural' time and motion. Both the nineteenth- and twenty-first century versions of the technology are simple in the sense of being easy to understand and facilitating user-made content.

4   Continuous-Loop Aesthetics

The machine announced itself as something that does not represent. What Faraday saw was machine-generated abstract patterns of motion that bore no correspondence to motion in the natural world or to the movements of actual machines. Some of the earliest images made for the phenakistiscope are true to this inspiration and invoke non-mimetic abstractions (see figure 4.1). The disks in this geometric series produce self-constituted artefactual motions. They are less representations of motion than meditations on the construction of motion. The new medium has an anti-realist tendency – freeing the imagination from mimetic representation (as will become evident in some later images).
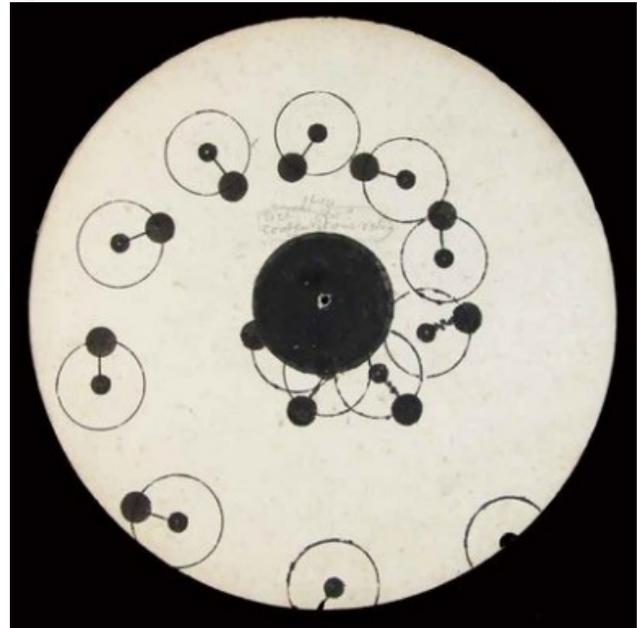

Figure 4.1 – Geometric Series, c. 1840, hand-drawn in ink, collection of François Binétruy, © François Binétruy.

Figure 4.2 – Geometric Series, c. 1840, hand-drawn in ink, collection of François Binétruy, © François Binétruy.

Without exception, when the inventors first think of possible representational subjects they think of machines – steam engines and steam trains [24]. While Plateau's first image – a pirouetting dancer – is a human figure, it is almost certainly taken from a music-box automaton. It is a clockwork automaton represented by a 'virtual' automaton – a mental construction across spatially and temporally separate images – driven by a hand-cranked machine. There is a machinic self-referentiality here that I think is crucial to nineteenth-century understandings of the apparatus and its meaning.

The overwhelming majority of images of human beings are of a different sort of semi-automated object of view – the working-class labourer. The viewing subject and observed object in this apparatus are typically of different social classes. The viewer is in the position of the master who runs the machine that commands repetitive labour. The image-disks, Babbage-like controllers, abstract the machinic qualities of working-class bodies and bind them to the machine. Women do domestic labour – in a promise that it too can eventually be rationalized and mechanized. That domestic labour includes punishment – an explicit disciplining of a subordinate body (figure 4.8). This was rational recreation for the future industrialist.

Figure 4.4 – Alphonse Giroux, c. 1850 Phénakisticope Disk of a pointless, perhaps masturbatory machine, collection of François Binétruy, © François Binétruy.
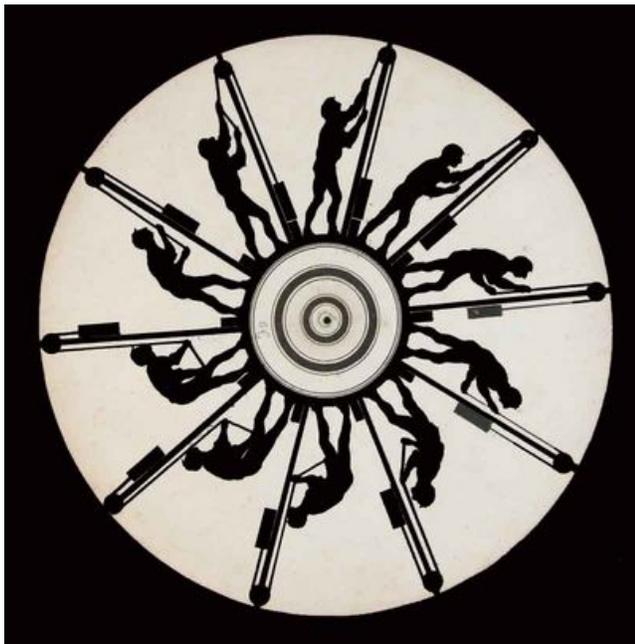

Figure 4.3 – Alphonse Giroux, c. 1850 Phénakisticope Disk of some sort of hammering device, collection of François Binétruy, © François Binétruy.
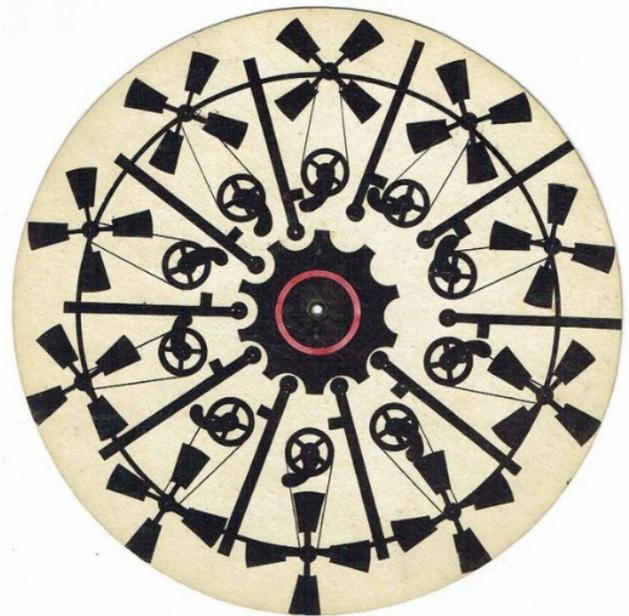

Figure 4.5 – A. Giroux, Phenakistiscope Disk, c. 1840, Hand Sawyer, collection of François Binétruy, © François Binétruy.

Figure 4.6 – Alphonse Giroux c. 1840 Phénakisticope Disk of a Mechanical Sawmill, collection of François Binétruy, © François Binétruy.
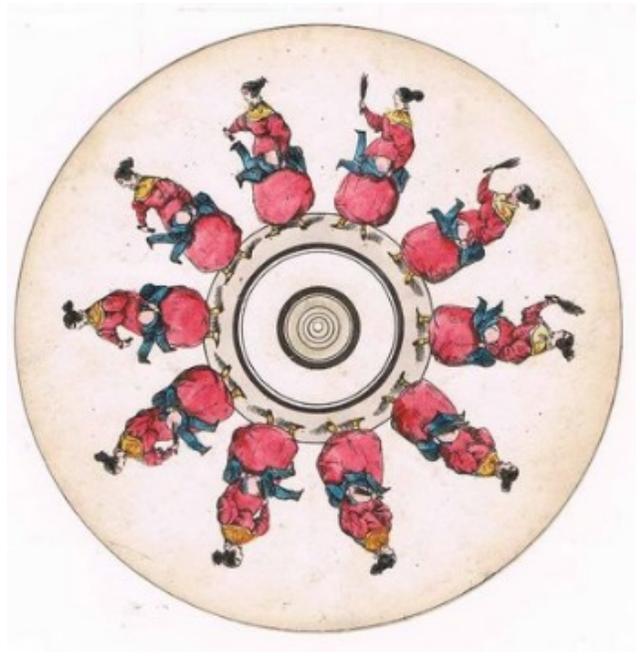

Figure 4.8 – A. Giroux, Phenakistiscope Disk, c. 1840, Domestic Labour: Spanking, collection of François Binétruy, © François Binétruy.

Figure 4.7 – A. Giroux, Phenakistiscope Disk, c. 1840, Domestic Labour: Churning Butter (the butter churn recalls a steam piston and cylinder), collection of François Binétruy, © François Binétruy.

All of the twenty or more designs for 3D animation apparatuses between 1849 and 1873 use a repetitive loop of images either on a disk or a circular strip [3, 4, 8]. Not one uses the continuous roll-and-spool design even though this technology can be found in exhibition devices since the eighteenth century. The continuous roll offers the possibility of longer-term linear narrative that became associated with motion pictures in cinema. Innovation seemed to be headed not forward towards cinema, but in a circle. Perhaps circularity and repetition held a particular fascination to the nineteenth-century imagination?

This problem casts doubt on the myth of total cinema in more than one way. Not only do the phenakistisciope, zoetrope and praxinoscope refuse the linear narrative of cinema, their aim seems to be self-reflexive – they are machines that dwell upon the machine context that gave them birth. They constantly recall the motif of the steam engine whose relentless repetition mesmerizes, and whose motive force is the back-and-forth, in-and-out of the piston. This is less 'representation' than onanistic self-referentiality of machines talking about machines.

5   Auto-Erotic Machines

At this point in my research I had begun to ask why no explicitly sexual and masterbatory images were produced for the repetitive disk. In the world of GIFFs, there is a huge selection that celebrate the rhythmic qualities of sex between humans. There is also a proliferation of sex-machine GIFFs. These are repetitive loop invocations of people, mostly women, having masturbatory

and BDSM-inflected sex with sex-machines. The sex-machine GIFF can be read as a full realization of the structure of nineteenth-century machine thinking where abstracted mechanical human motion is replaced by an equivalent, perhaps improved machine motion (contrast figures 4.3 with 4.4 and 4.5 with 4.6).

I initially thought I would trace the genealogy of the sex-machine GIFF back to the mid-nineteenth century not through realized artefacts, but through proxies of a dream 'fully armed in [nineteenth-century] minds, as if in some platonic heaven'. There are high-art links in the genealogy that include Francis Picabia's machine brides, and Marcel Duchamp's rotoreliefs [25].

There is ample historical evidence that the erotic imagination looked forward with alacrity to each new technological medium, as was the case, at the historical moment in question, with erotic stereoviews [26]. Sex as domestic labour and masturbation seemed to me to be hinted at in the technological assemblies of phenakistiscope, zoetrope, praxinoscope and their machinic imagery. Reading backward from twenty-first century sex-machine GIFFs I was ready to argue that the pleasures of machine-sex are always intertwined with BDSM, that is, bondage and discipline, dominance and submission. The same dark truth applies to the working-class experience of labour discipline, regardless of any purported social benefits of the output of this machine-driven labour.

This machine-image complex taps into something non-rational and ambivalent, a kind of machine unconscious. On the one hand it invokes dreams of sexual control and the perpetual motion of love. On the other it unleashes the nightmares of sex-slaves, robot lovers and alienated factory workers. Perhaps it is not surprising that the phenakistiscope quickly began to churn out demons (figure 5.1).

Figure 5.1 – Ackermann, 1833, Phenakistiscope Disk, phantasmagoric, © François Binétruy.

I approached my argument in this circuitous way until I found the following disk and the erotic series of which it is a part. Here we have machine-like sex between humans in various configurations, a cam-driven, rotating sex machine (figure 5.2), anal sex, queer sex, an inter-sex transformation, masturbatory sex (including the first continuous-loop cum shots), demonic, industrial sex with scorching masochism (figure 5.3) and an interesting fancy on female agency and desire (figure 5.4).
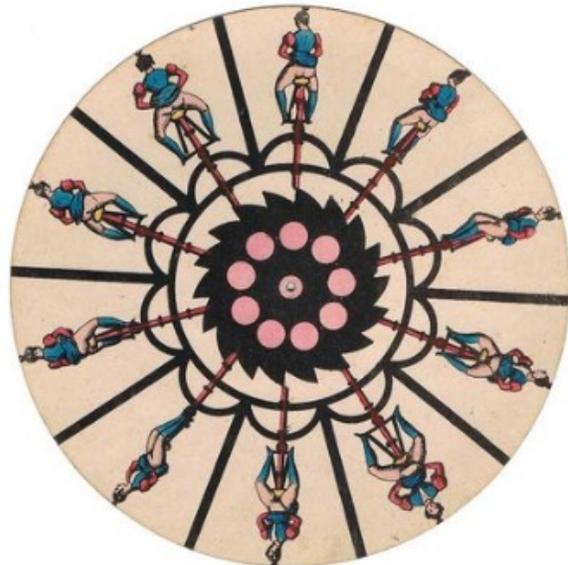

Figure 5.2 – Alphonse Giroux, c. 1840, Phenakistiscope Disk, Sex Machine, collection of François Binétruy, © François Binétruy.

Figure 5.3 – Alphonse Giroux, c. 1840, Phenakistiscope Disk, Demonic Masturbation, collection of François Binétruy, © François Binétruy.

Figure 5.4 – Alphonse Giroux, c. 1840, Phenakistiscope Disk, Flight of Fancy, collection of François Binétruy, © François Binétruy.

By now it should be obvious that the pornographic GIFF is the telos of the phenakistiscope disk. The GIFF, not cinema, is the endpoint of the evolution of this nineteenth-century machine-image complex. It is not surprising that GIFFs are used to bring this nineteenth-century form back to life and allow it to proliferate on the Internet.

6   Playful Machines

Even in its darkest images, there is something irreducibly whimsical and parodic in the repetitive-loop form. It reminds us, over and over and over again how we are condemned to our bodily rhythms and, try as we might to escape into ideal machines, we become further entrapped in their ever-revolving wheels. This machine inevitability perversely inspires humour and free and fanciful invention. What better relief than laughter at our tragi-comic entrapment?

The spirit of play and the promise of freedom works at another level as well. The auto-erotic is a version of do-it-yourself. People animated their own machines, but also built them and drew their own simple imagery for them. This was rational recreation – deconstructing, building and thereby understanding one's own illusions. In a digitally-mediated revival, people are again making their own phenakstiscopes and zoetropes – using the digital to return to the accessible physicality of this old medium.

The digital GIFF too is an accessible do-it-yourself medium in the tradition of rational recreation – a better heir to the phenaskstiscope than high-tech, realist 3D cinema.

7   Conclusion

In arguing that the phenakistiscope and its sister devices are pre-GIFF, I am staging a *reductio ad absurdum* of teleological accounts of these mid-century devices that take them to be steps towards the evolution of total cinema. I am arguing against simplistic forms of presentism. However a pure historicism faces its own problems. We can and should re-construct nineteenth-century contexts for interpretation – these might be scientific projects [9], projects of labour rationalization [17], realist projects within the optical amusement complex [6], or conversely rational recreation projects. Our difficulty is when these contexts are diverse and contradictory, as they generally are. In selecting the context to emphasize we are still projecting our present concerns upon the past.

The value in reading the phenakistiscope as the genealogy of the GIFF rather than total cinema, is that it highlights the continuity of that critical and deconstructive thread of rational recreation. It reminds us that the dream of immersive high-tech realism is not inevitable. It can help us think of our love of illusion in terms of agency and domination. It can help us think about the relationship between art and its changing technological context. In the twenty-first century a digital landscape has replaced the mechanical – our nightmare of domination is not so much labour discipline as the intersection between propaganda, fake news, deep-fake imagery and total immersive media. While I accept that the myth is an old one, there is a totalitarian impulse in the ideal of a total cinema that seamlessly directs perception and imagination. Perhaps for this reason there remains an enduring fascination with simple, primitive media that can release the imagination.

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