

Interactive media and imperial subjects: Excavating the cinematic shooting gallery

Michael Cowan

NECSUS (7) 1, Spring 2018: 17–44

URL: <https://necsus-ejms.org/interactive-media-and-imperial-subjects-excavating-the-cinematic-shooting-gallery/>

Keywords: colonialism, hunting, interactivity, media archaeology, military, video games

Archaeologies of interactivity

If media history has gained anything from the recent archaeological turn, it is perhaps a much-needed scepticism towards ideas of a digital ‘revolution’. Whether examining the ‘Victorian Internet’,^[1] fin-de-siècle Skype,^[2] the pre-history of mobile phones,^[3] or early forms of interactive cinema, the archaeological approach can reveal that modes of media experience thought to mark our advance over previous generations have in fact existed all along – if not empirically, then at least as imaginaries. Hence, we have learned to be wary of linear historical narratives, particularly when these involve assumptions of progress. From this point of view, the digital turn represents less an advance over the past than an opportunity to rediscover the past: to excavate aspects overlooked by previous scholars and remind ourselves that earlier media users were no less complex than we are.^[4]

But the resistance to historical hubris need not entail an erasure of historical specificity. After all, early picture phones were not the same thing as Skype, even if we can identify traits that justify seeing them as precursors. Nor was the interactivity of early puzzle films or dance instructional films entirely analogous to, say, interactive documentary today, since those earlier experiments still operated within a stimulus-response model rather than allowing audiences to influence the action on the screen.^[5] Such ‘precursors’ became legible in different contexts, catered to different needs, and were

bound up with different modes of subjectification – all of which translated into different forms of user-media interaction. Attending to such specificities can help us understand not just how media evolve, but why and how they matter in different historical contexts.

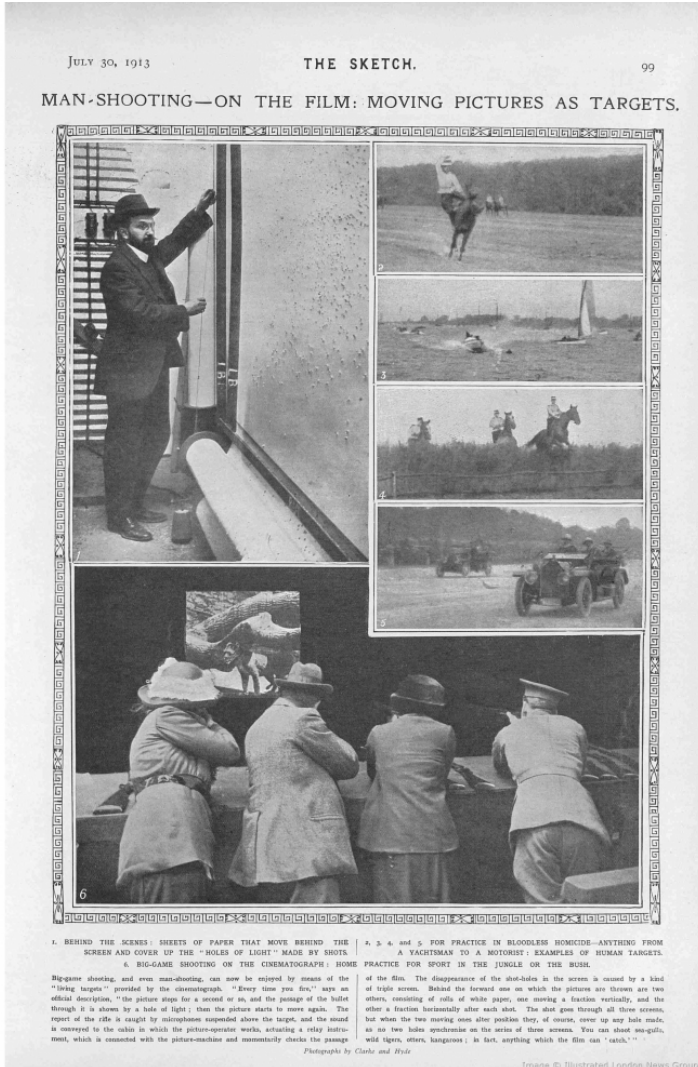


Fig. 1: 'Moving Pictures as Targets', illustration from The Sketch, 30 July 1913.

In this article, I consider another form of early interactive cinema that poses analogous questions for us today: the cinematic shooting gallery. Though

mostly overlooked by previous film historians, early cinematic target devices – in which players shot live bullets at projected images on the screen – are ripe for rediscovery, offering as they do an obvious forerunner of the first-person shooter games that have become a staple of the digital era. And yet, as I argue, understanding this ‘precursor’ also demands careful attention to its historical context, in particular its wider imbrications with the (visual) culture of European imperialism. In what follows, I consider those imbrications at both the representational and the dispositival level – that is, in terms both of what was shown on the screen and of the very form of interactivity these apparatuses solicited from players. That interactivity offered a mode of training in self-control that bore specific affinities with imperialist ideas about hunting, and – as I show further below – such training relied crucially on a less conspicuous aspect of the device: namely the pause.

A deep time of video games?

Though few if any of these devices survive today, print records suggest that ideas for the cinematic shooting gallery are nearly as old as cinema itself; patents for technologies allowing players to shoot at images projected by lanterns or cinematographs go back at least to 1901.[6] However, the most successful incarnation of the device first appeared in the UK around 1912 under the name *Life Targets*,[7] an attraction first patented by three inventors from Birmingham and subsequently exhibited in cities and towns such as London, Sheffield, Eastbourne, Manchester, Bisley, and Nottingham.[8] The attraction also quickly gained widespread attention on both sides of the Atlantic. In the German-speaking world, it was exhibited at fairgrounds and technology fairs under the name ‘*Lebende Zielscheibe*’ – generating enough attention by 1914 to merit highly publicised visits by Emperor Wilhelm II in Berlin and members of the Austrian Royal family in Salzburg.[9] Across the Rhine, the same device, known under the name of ‘*Tir cinématographique*’ or ‘*Tir au cinématographe*’, found a home, among other places, in promenade galleries of the famous *Palais Gaumont*, where visitors could test their skills before the main feature or during the intermission.[10] In the US, the Broadway producer Albert H. Woods – who had first encountered the attraction himself at a shooting gallery in Berlin – patented a similar device under the title ‘*Shooting Moving Pictures*’, which he exhibited in 1913 at the First International Exposition of Motion Picture Art at the New Grand Central Palace in New York

and marketed as an efficacious means for smaller theatres to compete with the new picture palaces.[11]

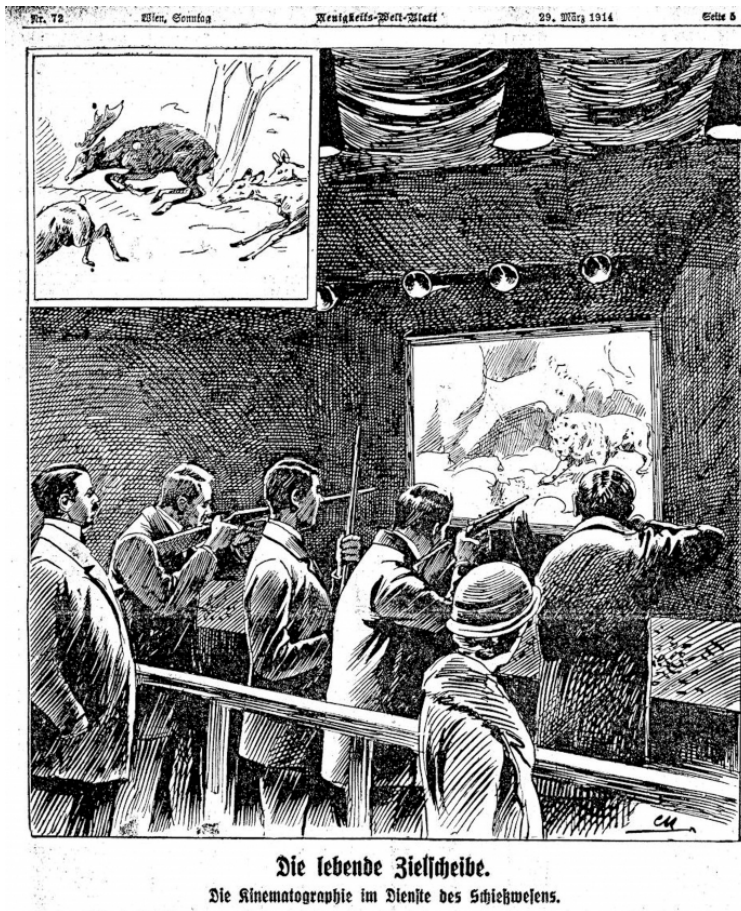


Fig. 2: 'Die Lebende Zielscheibe', illustration from Neuigkeits-Weltblatt, 29 March 1914.

In its dispositival arrangement – allowing players to shoot at visual representations on a screen – the cinematic shooting gallery can clearly be understood as a precursor to video games, particularly first-person shooters.[12] Indeed, one could trace a more or less direct line leading from those early cinematic target systems to the optical light guns that caught on in the 1930s – rendering possible games like the Seeburg Ray-o-Lite and later the famous Duck Hunt – in order to arrive, finally, at the digital shooting games we know today.[13] In this technological narrative, the early cinematic shooting gallery

would constitute a key step towards the increasing virtualisation of the shooting game; while it still used live bullets, the apparatus offered an ‘advance’ – as many observers from the time noted – over previous target practice by replacing clay and metal targets with photo-realistic images of animals, objects, and people in motion.[14] This element of photorealism, in turn, led frequently to declarations such as the following: ‘The old shooting gallery is doomed. The fixed target will go with it into the limbo of obsolete things. The cinematograph is oust them both out of existence.’[15]

We might add that inventors had to overcome several technological challenges to create this immersive effect. First, there was the challenge of the screen. How to produce a screen capable of accumulating bullet holes while remaining an effective support for cinematic illusion? The problem was resolved early on by replacing the standard screen with a long strip of paper on rollers, which could be advanced whenever the number of holes became too distracting. The Life Targets system then improved further on this design by adding a second layer of paper and advancing the layers simultaneously in different directions, vertically and horizontally (see Fig. 1). Here, it sufficed simply to move both strips of paper circa 1cm after each shot in order – as the prominent critic Ernest Dench put it in his book *Motion Picture Education* – ‘to repair the injury’ to the screen almost indefinitely.[16]

More formidable still was the challenge of information feedback. Given the fleeting quality of projected cinematic images, how could players know whether they had hit their target at all? The earliest devices solved this problem in two ways. In the case of still lantern images, the operators simply traced the contours of the image onto the paper screen and shooters could verify the precision of the shot afterwards. For moving images, it was necessary to add a mobile metal receptor behind the screen, which was synced to the movements of the projected objects and triggered a flashing light when hit by a bullet.[17] This system allowed users to verify the results of their efforts in real time, but as surviving patent descriptions suggest, it permitted only for a limited range of horizontal movements on the screen.

This is the key aspect that the designers of Life Targets rethought in 1912, and they did so through the introduction of a complex pausing mechanism. Here, the apparatus incorporated a telephone receiver, which captured the sound of the gunshot to trigger a relay, which in turn activated a brake to pause the film projector for a few seconds after every shot. The shooter could then verify whether the bullet hole – now visible by means of a red light po-

sitioned directly behind the screen – corresponded to the object momentarily frozen on the screen, before the entire assemblage resumed its automatic motion.

One might argue that it was with this pausing mechanism, where the player's input now directly influenced the action of the machine (even if only to pause it), that the cinematic shooting gallery became a precursor to interactive video games. Of course, pausing is only one of the ways in which players interact with games today, and intuitively, perhaps not the most significant. According to Alexander Galloway, pausing the game is the most basic form of non-diegetic – as opposed to diegetic – interaction, since it suspends the action of the game rather than modifying it.[18] However, such distinctions are less clear in the case of *Life Targets*, where the act of pausing the machine was arguably integral to determining the action. Since there was no representation of the effect of the shot on the diegetic object (only the stilling of the machine and the chance to verify where the bullet had landed), players had to fill in the blanks themselves, imagining the death that was not shown on the screen. As one journalist described it:

[The shooter] fires. The picture stops, and though the lion does not drop, he remains in the position in which he stood when the shot was fired. But on the screen the bullet has made its mark, and so the hunter knows where he has shot his quarry. [19]

In this sense, the act of pausing the machine with a gunshot represented a diegetic and non-diegetic act at once; while suspending the movement of the images, it also allowed the player's imagination to complete the action by determining whether (s)he had in fact 'killed' the person or animal represented.

From this point of view, the pausing mechanism invented for *Life Targets* might be interpreted as a kind of primal template of shooter-game interactivity, which combined the various modes of user interaction that would only later come to be differentiated.[20] Such a genealogy might allow us to redeem *Life Targets* – once barely visible as a dead end within cinema's development towards story-telling – as a key moment in media history, one no less consequential for our own media universe than the contemporaneous historical emergence of feature films, narrative editing, and the star system. Cinematic shooting galleries – and the extensive research that went into their invention and development – would thus offer compelling evidence for Siegfried Zielinski's oft-cited argument that cinema, as 'entr'acte' in a larger history of audiovisions, was already superseded before its history began.[21]

A device with multiple uses

But such debates about the media development tell us little about how cinematic shooting galleries made sense in their own time. Perhaps instead, we should follow early cinema scholars to examine the place of these devices within existing practices around 1900. After all, cinematic target practice could only become intelligible in a context in which there already existed ‘cultural series’ – to borrow André Gaudreault’s familiar term – within which it could take up residence.[22] Heuristically, we might distinguish three such series relevant for the cinematic target, though these often overlapped in real-life situations: fairground shooting galleries, sports (particularly trap shooting and hunting), and military training. Not surprisingly, the cinematic target found usage in all three series. It became a common attraction in fairgrounds such as Coney Island and the Viennese Prater.[23] But it was also understood from the outset, in the words of one Austrian observer, as a means of ‘placing the cinematograph in the service of sport shooting’,[24] and it met with great interest among gun clubs such as the NRA.[25] Particularly popular was the idea that cinematic targets, housed in establishments such as the Bounding Buck Animated Target Range at 47th Street and Broadway, could allow city-dwellers to engage in the ‘outdoor’ sport of shooting at any time.[26] Thus one writer for the American outdoor sports journal *Outing* proclaimed in 1917:

Yesterday, I shot deer, mountain sheep, zebra, gnu, elk, antelope, hartebeest, ostrich and swan. I shot them all within the space of an hour and within four minutes walk of this office! [...] Ah, now you begin to see! Certainly, it was in the movies! [...] Shooting the movies is an exciting sport, and it should have a strong appeal for all sportsmen. [27]



Outdoor SHOOTING Indoors
It's the Best Sport in N. Y. because it does the most for you—makes you FIT—is loads of FUN—is real PREPAREDNESS—Practice.
Outdoor lovers, Home Defense bodies and the tired business man are all keen for it.

NOON TILL MIDNIGHT
47th St. off Broadway
103rd St. & Broadway
136 East 42nd St.
218 West 34th St.
Newark—828 Broad St.



THE BOUNDING BUCK

Fig. 3: Advertisement for the 'Bounding Buck' cinematic shooting gallery in New York, The Sun, 9 December 1917.

Finally, the cinematic shooting gallery found widespread interest among military authorities, who saw in the technology a means of artillery training offering the advantage of not being dependent upon weather conditions.[28] With the outbreak of the Great War in August 1914, the device also found actual usage both in combat training and in home-front propaganda;

surviving records describe British shooting galleries allowing visitors to fire at images of German soldiers, German versions featuring filmed images of Serbians, or Austrian variations showing Scottish soldiers in kilts.[29] Especially recurrent during the war years is the idea that civilians – including women – needed to train in firearms usage in order to be prepared for potential invasions.[30]

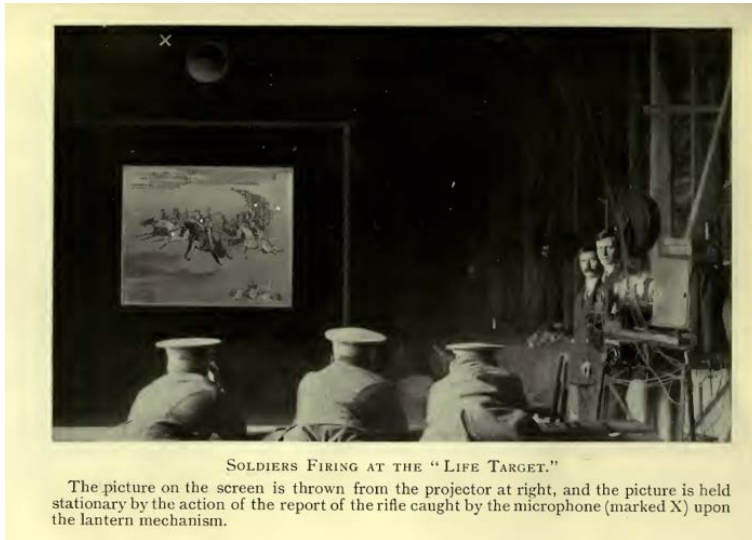


Fig. 4: Military training via Life Targets device, illustration from Frederick Talbot, *Practical Cinematography* (1913). The image shows the telephone receiver (upper left) and illuminated bullet holes in the screen.

Of course, the presence of the military here raises another question. By now, readers are familiar with the thesis that media development is conditioned by military needs, and a device like the cinematic shooting gallery might seem tailor-made for a Kittlerian or Virilian history of cinema and warfare. Such a narrative might stretch from the projecting phenakistiscopes invented in the mid-19th century by the Austrian artillery general Franz von Uchiatus for military instruction to the ‘serious games’ employed by the military today and recently explored by Harun Farocki. And it would certainly include apparatuses such as the Waller Flexible Gunnery, an anti-aircraft training system invented in the 1940s by Fred Waller, who would use the same technology to roll out Cinerama a few years later.[31] In this narrative, the cinematic shooting gallery would confirm the post-humanist viewpoint where entertainment media are understood as ‘by-products or waste products of pure military research’.[32]

But as important as military uses surely were here, reducing the cinematic shooting gallery to a story of media and warfare does little justice to the variety of archival evidence, nor does it fully explain the attraction's historical popularity. To begin with, there is no evidence of military involvement in initial research and development of these devices, and none of the early patents explicitly envision military uses. In reality, the cinematic shooting gallery emerged slowly from practices that were already multiple, before lantern projectors or cinematographs ever came to occupy their dispositional spaces. And crucially, these practices remained multiple; whatever military uses did come about, they always co-existed with more ludic incarnations, which remained the main form of marketing for the device.[33]

Imperial entertainments

But to say that the cinematic shooting gallery cannot be reduced to a narrative of warfare does not mean that its popular history is harmless. In addition to propaganda uses, the most salient line of exploration here is offered by the imbrications between such shooting galleries and the broader visual culture of colonialism. Colonialist scenarios formed one of the most prevalent motifs of the device when used as a fairground entertainment. Not uncommonly, one can find descriptions of devices showing 'Indians in ambush' or allowing users to 'fight photographic battles with fierce African Zulus' (as one column describing Woods' premiere of the device at the New York technology fair recounted).[34] But popular uses of cinematic shooting galleries were dominated above all by scenarios of hunting. The central motif in advertising for the device, hunting was also the main framework for imagining the pleasure it offered. Thus an article in the British magazine *The Graphic* could characterise the game as follows: 'All the joys of deer-stalking, the tremendous thrills of the elephant and rhinoceros shooting, and the delight of bear hunting can be indulged in without going in search of big game.'[35] Another article for *Moving Picture News* could ask rhetorically in 1913: 'Who is there among us who will not welcome an opportunity to take a shot with an honest to goodness rifle at a nearly honest to goodness lion charging at us from the wilds of a South African forest?'[36]



Fig. 5: Advertisement for 'Lebende Zielscheibe' from *Kinematographische Rundschau* (July 1914).

The prevalence of hunting motifs in discussions of cinematic shooting galleries suggests a different avenue for understanding their popularity in the early 20th century. Historians have examined the key role of hunting sports in the propagation of imperial culture, particularly in Britain where Life Targets first emerged and achieved widespread use.[37] Though hunting had accompanied colonial settlement as a commercial activity since at least the early 19th century,[38] the institution was transformed after 1900 – as European countries extended their bureaucratic control over African territories – by the rise of a tourist industry of pre-packaged safaris for wealthy patrons. As Angela Thompsell has shown, this 'shift from commercial ivory hunting to tourist safaris' created a new level of visibility for hunting by occasioning a flood of 'hunting media': print narratives, photo albums, illustrated lectures, films, and no least of all the countless hunting 'trophies' that adorned natural history museums, private collections, and home interiors.[39] At the same time, the transformation of hunting into a safari industry also helped to redefine the social meaning of hunting, which came to be understood as an ideal means of individual and racial 'regeneration' in the face of fears about over-civilization and neurasthenia.[40] Perhaps no one embodied this meaning of the hunt better than Theodor Roosevelt, whose highly publicised hunting trips in the American West (in the 1880s) and in Africa (in 1909-1910) were closely bound up with the colonial ideas about racial fitness, and intended specifically to reverse Roosevelt's early political reputation as an effeminate neurasthenic.[41] In the age of neurasthenia, 'roughing it' thus came to embody a new desideratum of imperial self-cultivation, one most often associated with 'martial masculinity', but one also available – as Thompsell has shown – to women hunters.[42]



Fig. 6: Frontispiece from Theodor Roosevelt, *African Game Trails* (1910).

Undoubtedly, this transformation of hunting into an imperial tourist sport forms one of the contexts in which devices such as Life Targets could emerge as an intelligible form of mass entertainment – one marketed to both men and women.[43] As a virtual safari, the cinematic shooting gallery was also

closely linked to the contemporaneous vogue for safari films such as Selig's *Hunting Big Game in Africa* from 1909 (a re-enactment of Roosevelt's African safari shot in an American zoo) or Paul J. Rainey's *African Hunt* (1912),[44] and contemporary observers clearly understood the device as one that could intensify the pleasures of filmed hunts through its interactive format. Thus one article for *The New York Clipper* stated that such shooting devices 'will revolutionise the moving picture business by giving the patron a keen personal interest in the thrilling scenes depicted on the screen'.[45] As another journalist for the *Linzer Tageblatt* explained: 'Film, which has often served to represent and immortalize scenes of hunting, has now itself become the object of the hunt.'[46] Hence, we might speculate that the popularity of these shooting games stemmed from the way they allowed everyday players to imagine themselves as a Rainey or a Roosevelt traveling through Africa, Asia, or the American wilderness.[47] As another writer described the experience:

A scene flickers before [the player's eyes]; the room fades away, and he is in Uganda 'on safari' lion-hunting. The lion appears. The armchair big-game hunter can choose his moment to shoot and the spot where his shot will prove fatal. [48]

In this sense, the cinematic shooting gallery can also be understood as a forgotten chapter in the long tradition of 'safari media', stretching from 19th century photo albums and travel lectures to early cinema all the way to present-day Imax adventure films.[49] And like other safari media, the cinematic shooting gallery promised first and foremost to provide all the pleasures of the safari while avoiding the discomfort and danger of actual travel.[50] As a writer for *Popular Mechanics* explained in 1913:

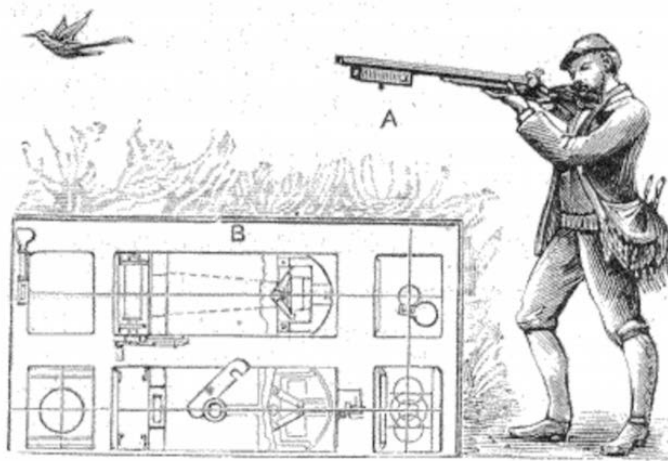
Society this winter will have the delightful experience of shooting wild animals in the drawing room. No longer is it necessary to go to the heart of Africa, the fastness of the Ural Mountains or the crags of the Rockies to shoot big game. This can now be done between office hours and dinner in a business suit or after dinner in evening clothes, with no danger to the sportsman, by means of the motion picture shooting gallery. [51]



Fig. 7: 'Shooting Up the Movies', Illustration from Popular Mechanics, November 1913.

This emphasis on avoiding danger also links the cinematic shooting gallery to a wider discourse on travel media as such. As many scholars have pointed out, one of the most consistent appeals of travel media – from illustrated books to early cinema – was precisely the promise of virtual travel from the safety of one's chair, a trope repeated endlessly in advertising for phantom rides and related film genres.[52] This appeal was especially strong in the case of the cinematic hunt, which promised all the thrill of face-to-face animal

confrontation with none of the actual danger. 'Nothing can be more pleasant than facing a raging lion,' wrote a columnist for *Moving Picture News*, 'knowing that at the crack of your rifle he will stop short, whether your shot has struck a vital spot or missed entirely, and then pass out of the picture and make way for more fierce beasts, flying birds, racing automobiles, aeroplanes, flashing across the sky, charging soldiers and fleeing burglars.' [53]



Le fusil photographique ou chambre noire du chasseur.
A. Mode d'emploi de l'appareil. — B. Schéma du mécanisme.

Fig. 8: 'La Chambre noire du chasseur', illustration from *La Nature*, January 1892.

But I believe there was also another, supplementary source of pleasure at work here, one driven by the association, widespread at the time, between the act of shooting for trophies and the act of capturing effigies through photos. While this association was implicitly present in Marey's famous photographic gun, it also found more explicit realisations, such as the so-called 'chambre noire du chasseur', a small, rifle-mounted camera developed in 1891, which allowed hunters to photograph their prey and shoot it with the same trigger – and hence to experience the 'double pleasure of photography and hunting'. [54] With the rise of tourist safaris, this parallel gave way to a tension as many seasoned hunters turned to the camera to promote a more conservationist form of 'image hunting' as an alternative to killing – albeit one they insisted was no less thrilling as a sport. [55] Thus the author of *Camera Adventures in the African Wilds* (1910) could claim in his introduction that

the purpose of his book lay in the ‘preservation of wild animals’ through photography rather than taxidermy, and went on to explain why he had traded in the gun for the photographic camera:

The idea of killing for killing’s sake lost its fascination. Further, it seemed wrong and foolish inasmuch as it destroyed the very creature that afforded the opportunity for study. [...] I know many men who a few years ago devoted their holidays to shooting, but who to-day find greater pleasure in hunting with the camera. Unquestioningly, the excitement is greater, and a comparison of the difficulties makes shooting in most cases appear as a boy’s sport. [...] Photographic hunting, besides being one of the keenest of sports, affords the greatest of opportunities for studying the life of wild animals, [...] and all wild animals and birds are game for the photographic bag. [56]

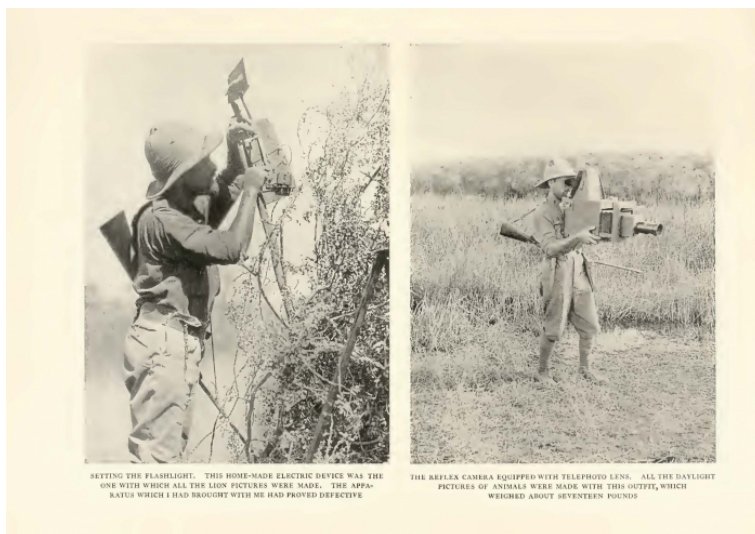


Fig. 9: Illustration from A. Radclyffe Dugmore, *Camera Adventures in the African Wilds* (1910).

This link between shooting animals and shooting pictures – later satirised in Peter Kubelka’s *Unsere Afrikareise* (1966) – hardly escaped the observers of cinematic shooting galleries. As Dench described it in *Motion Picture Education*:

Many wealthy sportsmen now prefer to ‘hunt’ with a motion picture camera. Whether it be the king of the jungle or the humble rabbit, there is no suggestion of posing in the pictures obtained, which are therefore unsurpassed for realism. All of this is what must have inspired inventors [of the cinematic target] to approach as near to the real thing as the automatic target can do. [57]

The ambiguity of Dench's wording here – does the 'the real thing' refer to the act of shooting an animal, that of shooting a photo, or both? – suggests that the pleasure offered by the cinematic shooting gallery might have been similarly ambiguous. If players could imagine themselves as adventurer-hunters shooting animals, they might also have imagined themselves as photographers capturing images; after all, the tangible result of firing the gun was precisely to produce a still image, albeit a momentary one.

This analogy between hunting for trophies and capturing pictorial effigies for the 'photographic bag' also situates the cinematic shooting gallery within a broader dynamic of colonialist visual culture. While virtual shooting galleries may not have contributed to the production of ethnographic knowledge in the same way as the educational travel films analysed by Allison Griffiths,[58] their very dispositival arrangement did participate in a broader process of colonial image production and reception. According to Tom Gunning, the frenetic production of exotic images from the late 19th century onward – in postcards, illustrated magazines, lectures, and filmic travelogues – was not simply a reflection of an imperial world view, but one of its central catalysts; for whatever else these images represented, their circulation never ceased to promise Western observers a visual 'possession' of the world, a function that marks out what Gunning describes as 'cinema's complicity with the most destructive aspects of modern perception'.[59] The cinematic shooting gallery shows us a particularly powerful instantiation of that possessive drive, where acts of trophy hunting and the consumption of exotic images were placed in direct parallel.

Training imperial subjects: The pause

But this training in possessive vision was inseparable from a particular kind of training in 'self-possession', which occurred through the very form of interactivity these devices demanded of users. Many descriptions from the time emphasise the rapidity of the images projected onto the paper screen, which appeared abruptly in fleeting movements, requiring quick responses. Thus the *Popular Mechanics* article cited above described 'the excitement of shooting at birds on the wing, at horses leaping fences, airmen soaring and dipping, polar bears, Indians in ambush, lions and other beasts in the jungle, motorcycles racing, automobiles speeding, wild ducks taking to the water –

indeed almost anything in motion'.[60] As one can gather from such descriptions, the training proffered by the cinematic target device relied on the medium's temporality; like individuals before a tachistoscope, players here had to identify and aim at images in a fraction of a second. As another article from *Motion Picture Magazine* put it:

Motion Picture target practice is of inestimable value [...] for training the sense of alertness and quickness with the gun. It is one thing to hit a still target, and quite another thing to hit an object in rapid motion. [61]

In this sense, the cinematic shooting gallery – along with similar forms of interactive cinema – might be seen as part of a broader regime of visual training for a modern world in motion.[62]

But self-possession here was not only about alertness. No less important was the affective modality of this training. Other descriptions tended to highlight the threatening quality of representations, which often appeared to charge directly at players. As one Viennese journalist described it: 'The target appears on the screen and seems to move directly at the shooter, such that he can shoot his bullet in conditions that resemble an actual moment of danger' (my emphasis).[63] Here, it was a question above all of learning to master one's own bodily responses to confront the imaginary dangers on the screen. As another writer stated, describing a military representation: 'One must keep one's nerve here in order to fire directly at the people in the image.'[64] Such a training in self-possession – 'keeping one's nerve' – leads back to the new meanings attached to hunting in the age of neurasthenia. Again, Theodor Roosevelt provides a useful case study. As he described it in his autobiography of 1913, learning to kill dangerous animals, which might charge at any second, was an ideal training for overcoming what he called, in the hunting language of the time, 'buck fever':

Buck fever means a state of intense nervous excitement, which may be entirely divorced from timidity. It may affect a man the first time he has to speak to a large audience just as it affects him the first time he sees a buck or goes in to battle. What such a man needs is not courage but nerve control, cool-headedness. This he can get only by actual practice. He must, by custom and repeated exercise of self-mastery, get his nerves thoroughly under control. This is largely a matter of habit, in the sense of repeated effort and repeated exercise of will power. [65]

Roosevelt's reference to 'will power' here is hardly fortuitous. For the kind of nervous self-mastery he imagined corresponded precisely to contemporary psychological models of the will, understood widely as the key faculty for

overcoming neurasthenia in the early 20th century.[66] As I have examined elsewhere, psychologists such as Théodule Ribot and William James understood the will not as an agency that sets the body into motion, but rather as the power to arrest or inhibit the body's automatic or involuntary nervous reactions.[67] This understanding of the will went hand in hand with a popular understanding of modern nervous illnesses as so many 'diseases of the will', which Friedrich Nietzsche characterised in thoroughly scientific terms as 'the inability not to react to a stimulus'.[68] Part of the appeal of safari hunting resided precisely in its promise to help participants train their will power in situations of intense bodily excitement. And it was that same will training that Life Targets – that 'safer' version of hunting on the virtual screen – promised to nervous city dwellers between office hours and dinner.

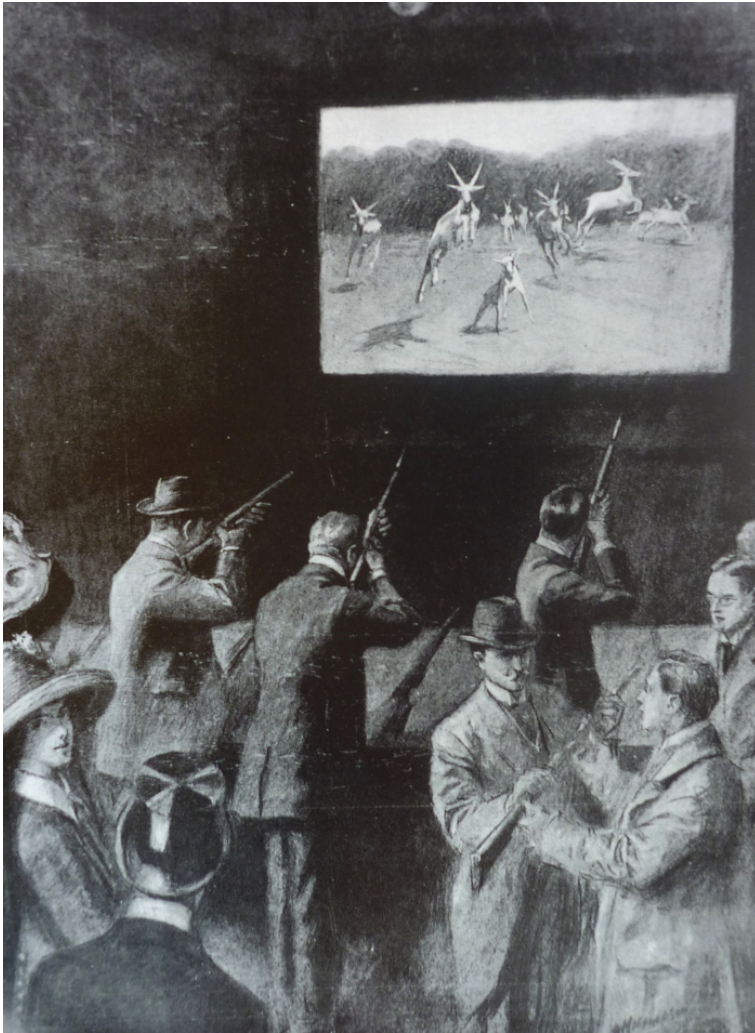


Fig. 10: 'A New Use for Moving Pictures', illustration from *The Graphic*, 26 July 1913.

Most interestingly, for media historians, this moment of the stopping of the body's nervous reactions coincided, in the cinematic shooting gallery, with the stopping of the machine itself. Recall that the actual input of players here was not to set images in motion, but rather to arrest the motion happening automatically on the screen. In this capacity, the Life Targets system offered a precise reversal of the first Lumière screenings, where motion itself was the attraction as still photos were set into movement before spectators' eyes. The

cinematic shooting gallery, on the contrary, challenged players to freeze the motion on the screen and ‘possess’ a still image, if only momentarily, of the charging animal, object, or person that they had ‘killed’. As an article from *Moving Image News* put it: ‘Soldiers in entrenchments, beasts of prey in the jungle and the forest, grouse and partridge on the moors – all these can be peppered at – moving rapidly as they do in life and with the virtue that they must all stop dead for a second or two to show you whether you have hit or missed’.[69] By firing the shot, players stopped the relentless flow of the machine to produce something more akin to a still photograph or visual ‘trophy’.

We might add that the pause mechanism devised for Life Targets did not exist in a vacuum. Film historians have tended to associate the origins of the pause with the introduction of video cassettes and remote controls in the 1970s, which transformed the old cinematic spectator into an amateur montage artist (who could zap between channels at will), or a new kind of Barthesian contemplator, who – according to Laura Mulvey’s oft-cited analysis – can now view old films as so many indexical photographs to be stilled and contemplated at the touch of a button.[70] But there is also a much deeper history of the pause. As we know, stopping a projector was a dangerous undertaking in cinema’s early decades on account of film’s flammability. The cinematic shooting gallery overcame this obstacle by incorporating canisters of frigid air, which was blown directly onto the film for the duration of the pause. Such difficulties in pausing film makes all the more remarkable the sheer amount of discourse on pausing that existed in early cinema. Pausing was a key concern, in particular, for educational groups, who sought to counteract the rapidity of moving images in the interest of visual mastery: to allow spectators to recognise details, inspect objects up close, and linger over certain phenomena. As the educator Adolf Sellmann wrote in 1913, ‘at any moment, the film must be able to be transformed into a motionless image’.[71]

To be sure, the pausing mechanism in Life Targets fulfilled a function distinct from the pedagogical goals of educators. But it was nonetheless analogous in its promise to let users ‘get hold’ of the fleeting image, to stop it in its tracks and possess it for a moment. And this stopping of the image found a counterpart in two parallel forms of arrest: the virtual killing of the animal or person on the screen and the stilling of one’s own body in an act of self-mastery. It was perhaps this promise of a triple stilling – of the thing represented, of the moving image itself, and of one’s own body – that constituted the real pleasure of the cinematic shooting gallery. In this context, interacting

with the apparatus meant producing stillness in the face of automatic movement: stopping the machine to create a visual trophy at the same time as one mastered the involuntary nervous reactions emanating from within the body. And in this sense, the implicit promise of Life Targets was that of a possession of both world and self, one that resonated with the broader promise of colonial visual culture and safari tourism.

Conclusion

Where, then, does all of this leave the question of media archaeology, and particularly of video games? One could, of course, point to many descendants of the cinematic shooting gallery, not only in digital indoor shooting ranges or *Schießkinos* for amateur hunters,[72] but also in safari-themed arcade games, home video games and, more recently, interactive VR experiences. But the attention to the cultural context also allows us to rediscover the early cinematic target as a ‘precursor’ to video games more broadly, albeit in a sense stretching beyond technological narratives: namely as a precursor to those ‘games of empire’ analysed by Nick Dyer-Witheford and Greig de Peuter. According to Dyer-Witheford and de Peuter, the contemporary online games industry offers ‘the exemplary media needed to produce subjects for twenty-first-century global hypercapitalism’ by training players for a world order defined by flexible labour, ubiquitous financialisation, and perpetual warfare.[73] Of course, cinematic shooting galleries operated in a very different social order, one defined by the intensification of direct bureaucratic control over colonial territories. And yet, it is possible to draw an analogy to the way in which the cinematic shooting gallery positioned players within a symbolic order of colonialism, where city-dwellers of colonial powers could train their wills through acts of visual conquest.

One might extend this analogy to the realm of political economy. One of the points made by Dyer-Witheford and de Peuter has to do with the unequal access to game play today, where the digital divide means that ‘[v]irtual play is firmly embedded in Empire’s unequal and destructive consumption of global resources’.[74] Analogously, one could point out that cinematic shooting galleries – as products of industrial colonial centres – were hardly available to players within the African settings they often depicted. This might seem obvious, but it mirrored a conspicuous development in safari culture more broadly whereby, with the rise of hunting tourism, African hunters

were increasingly barred from obtaining permits and participating in a sport reserved for white sportsmen. As Thompsell points out, by the early 20th century, the new extent of colonial control and licensing in Africa meant that ‘the only group to be clearly excluded from hunting were Africans’.[75] Against this backdrop, the question of who was ‘invited’ to play the game appears in a different light. By catering to Western city-dwellers and promising to take them on a virtual safari to Africa, the cinematic shooting gallery positioned players within a colonial hierarchy before a single shot was fired.

Of course, the early cinematic shooting galleries examined here attained nothing like the global reach of online video games today. But when considered as part of a broader set of ‘safari media’ (museum displays, books and magazines, photo albums, films, and various sorts of games), all marketed to the masses from colonial centres, they nonetheless appear as a consequential form of entertainment. This is, of course, another reason why any analysis limited to a technical history of apparatuses cannot tell the entire story. Media history has a lot to learn from the archaeological turn, and the cinematic shooting gallery can, no doubt, help to trouble the chronology implicit in notions of a digital revolution. But espousing archaeological methods should not lead us to jettison analysis stretching beyond technologies to the contexts – cultural, political, intermedial – in which such technologies’ meanings took shape. A device such as the cinematic shooting gallery can hardly be understood without it.

Author

Professor Michael Cowan is Head of the Department of Film Studies at University of St Andrews.

References

- Albera, F. and Tortajada, M. ‘The 1900 Episteme’ in *Cinema beyond film*, edited by F. Albera and M. Tortajada. Amsterdam: Amsterdam University Press, 2011: 25-45.
- Conrad, B. *My father: Joseph Conrad*. London: Calder + Boyars, 1970.
- Cowan, M. *Cult of the will: Nervousness and German modernity*. State Park: Pennsylvania State University Press, 2008.
- _____. ‘Moving Picture Puzzles: Training Urban Perception in the “Rebus Films”’, *Screen*, 51:3, 2010: 197-128.
- Croy, H. *How motion pictures are made*. New York-London: Harper and Brothers, 1918.

- Curtis, S. 'Animal Pictures' in *The encyclopedia of early cinema*, edited by R. Abel. London: Routledge, 2013: 25-26.
- Dench, E. *Motion picture education*. Cincinnati: Standard Publishing, 1917: 223.
- 'Rifle Practice by the Film', *Picture Play Weekly*, #1, no. 11, 19 June 1915: 10.
- Dixon, R. *Photography, early cinema and colonial modernity*. London-New York: Anthem Press, 2012.
- Dodge, W.P. 'Shooting Up the Movies', *Popular Mechanics*, November 1913: 623-625.
- Dyer-Witheford, N. and de Peuter, G. 'Empire@Play: Virtual Games and Global Capitalism' in *Critical digital studies: A Reader*, edited by A. Kroker and M. Kroker. Toronto: University of Toronto Press, 1913: 162-179.
- *Games of empire: Global capitalism and video games*. Minneapolis: University of Minnesota Press, 2009.
- Elsaesser, T. 'Archaeologies of Interactivity: Early Cinema, Narrative, Spectatorship' in *Film 1900*, edited by A. Ligers and K. Kreimeier. New Barnet: John Libbey, 2015: 9-22.
- 'The New Film History as Media Archaeology', *Cinémas* 14, no. 2-3, 2004: 75-117.
- Espey, D. 'Imperialism and the Image of the White Hunter', *Research Studies*, #46, March 1978: 12-19.
- Galloway, A. *Gaming: Essays on algorithmic culture*. Minneapolis: University of Minnesota Press, 2006.
- Gaudreault, A. 'The Culture Broth and the Froth of So-called Early Cinema' in *A companion to early cinema*, edited by A. Gaudreault, N. Dulac, and S. Hidalgo. Oxford: Wiley-Blackwell, 2012: 15-31.
- 'Les vues cinématographiques selon Georges Méliès ou: comment Mitry et Sadoul avaient peut-être raison d'avoir tort (même si c'est surtout Deslandes qu'il faut lire et relire)...' in *Georges Méliès, l'illusionniste fin de siècle?*, edited by J. Malthête and M. Marie. Paris: Presses de la Sorbonne Nouvelle, 1998: 119-124.
- Griffiths, A. *Wondrous difference: Cinema, anthropology & turn-of-the-century visual culture*. New York: Columbia University Press, 2002.
- Gunning, T. 'The Whole World Within Reach: Travel Images Without Borders' in *Virtual voyages: Cinema and travel*, edited by Jeffrey Ruof. Durham: Duke University Press, 2006: 25-41.
- Harding, C. and Popple, S. *In the kingdom of shadows: A companion to early cinema*. London: Cygnus, 1996.
- Holtam, D. 'Find out more about the UK's first shooting cinema or Schiesskino', *Rifle Shooter*, 19 October 2017: <http://www.rifleshootermagazine.co.uk/features/hunting-abroad/find-out-more-about-the-uk-s-first-shooting-cinema-or-schiesskino-1-5244127>.
- Hopkins, A (ed.). *The book of progress. Volume 1: Man the creator*. New York: Cricks Publishing, 1915.
- Job, H. 'Wild Fowl at Close Range', *Outing*, #68, December 1916: 300-316.
- Kaes, A., Baer, N., and Cowan, M (eds). *The promise of cinema: German film theory 1907-1933*. Oakland: University of California Press, 2016.
- Kittler, F. *Optical media*. London: Polity Press, 2009.
- Köhler, K. *Der tänzerische Film. Früher Filmkultur und moderner Tanz*. Marburg: Schüren, 2017.
- Lutz, T. *American nervousness 1903: An anecdotal history*. Ithaca: Cornell University Press, 1991.
- MacKenzie, J. *The empire of nature: Hunting, conservation and British imperialism*. Manchester: Manchester University Press, 1988.
- Mangan, J.A. and MacKenzie, C. *Militarism, hunting, imperialism: 'Blooding' the martial male*. London: Routledge, 2010.
- Maxim, H. 'How the Movies Move the Nation', *Motion Picture Magazine*, #13, no. 6, 4 July 1917: 160.
- Mulvey, L. *Death 24x a second*. London: Reaktion, 2006.
- Nietzsche, F. *Götzendämmerung in Sämtliche Werke. Kritische Studienausgabe*, vol. 6, edited by G. Colli and M. Montinari. Berlin: Deutsche Taschenbuch-Verlag, 1988.
- Parikka, J. *What is media archaeology?* Cambridge: Polity Press, 2012.
- Radclyffe Dugmore, A. *Camera adventures in the African wilds*. New York: Doubleday, 1910.
- Reicke, E. 'Der Film im Geschichtsunterricht', *Film und Lichtbild*, #3, 1914: 46.
- Roosevelt, T. *An autobiography*. New York: Macmillan Company, 1913.
- Sellmann, A. 'Der Film als Lehrmittel', *Bild und Film*, #2, no. 10, 1913: 233.
- Standage, T. *The Victorian internet*. London: Weidenfeld and Nicolson, 1999.

- Staples, A. 'Safari Adventure: Forgotten Cinematic Journeys in Africa', *Film History*, #18, 2006: 392-411.
- Talbot, F. *Practical cinematography and its applications*. London: William Heinemann, 1913.
- Taylor, G. 'A Military Use for Widescreen Cinema: Training the Body through Immersive Media', *The Velvet Light Trap*, no 72, Fall 2013: 17-32.
- Thompson, A. *Hunting Africa: British sport, African knowledge and the nature of empire*. London-New York: Palgrave Macmillan, 2015.
- Wild, J. *The Parisian avant-garde in the age of cinema 1900-1923*. Oakland: University of California Press, 2015.
- Zielinski, F. *Audiovisions: Cinema and television as entr'actes in history*. Amsterdam: Amsterdam University Press, 1999.

Notes

- [1] Standage 1999.
- [2] Kaes & Baer & Cowan 2016, p. 596.
- [3] A rediscovered British Pathé newsreel, *Eve's Wireless* (1922), recently became an internet sensation because it purportedly showed one of the first-known scenarios of a mobile phone. See 'Eve's Wireless Becomes an Internet Phenomenon', <https://britishpathe.wordpress.com/2010/05/27/eves-wireless-becomes-an-internet-phenomena/> (accessed 25 July 2017).
- [4] On this point, see Elsaesser 2004; Elsaesser 2009; Parikka 2012, p. 10.
- [5] Cowan, 2010, p. 198.
- [6] For the 1901 patent, see Google Patents GB190114871A. <https://patents.google.com/patent/GB190114871A/en>.
- [7] For the earliest retrievable patent under the name Life Targets Ltd., see Bates, Benjamin Williams, Henry Welldon Kelly and Douglas Haynes Corbin, 'Target apparatus for use with kinematographs', Life Targets Ltd., United Kingdom, 1912. <https://patents.google.com/patent/US1072298A/en?q=bates&q=kelly&inventor=corbin> (accessed 6 April 2018).
- [8] See e.g. 'Talk of the Town', *Pall Mall Gazette*, 11 September 1914, p. 6; 'Life Targets', *Sheffield Daily Telegraph*, 29 December 1914, p. 8; 'Life Targets', *Eastbourn Gazette*, 28 January 1914, p. 8; 'Northern Kinematograph Exhibition', *Manchester Courier and Lancashire General Advertiser*, 9 October 1913, p. 1; 'Doom of the Bullseye Target: Remarkable New Invention', *Northern Whig*, 23 July 1913, p. 11; 'Their Own Target', *Nottingham Evening Post*, 24 July 1913, p. 4.
- [9] Wilhelm II's visit was widely reported in both the German and international press. See e.g. 'Lebende Zielscheibe', *Kinematographische Rundschau*, no. 325 (31 May 1914), p. 56; 'Dépêches télégraphiques', *Le Temps*, 27 May 1914, p. 1. For visits by the Austrian Royal Family in Salzburg, see e.g. 'Ausstellungen und Volksfest im Kaiser Franz Josefs park', *Salzburger Wacht*, 15, no. 124 (4 June 1914), p. 3.
- [10] See for example 'Le tir au cinématographe', *Le journal du dimanche*, no. 76 (1 May 1910), 286. On the use of the device in the Gaumont Palace, see Wild 2015, pp. 135-136.
- [11] On the New York premiere, see 'The Greatest Novelty in the World to be Shown for the First Time in America at the Exposition', *The Moving Picture News* 7, no. 23 (7 June 1913), p. 22.
- [12] For the purposes of this article, I follow the model of 'dispositif' laid out by François Albera and Maria Tortajada who define the dispositif as a series of analysable relations between spectators, machinery, and representations. See Albera & Tortajada 2011, pp. 38-39.
- [13] Most sources date optical light guns back to the 1930s. However, as early as 1915, Ernest Dench mentions the invention of a shooting gallery by a certain 'Mr. Baker' from Scotland, which employed 'nothing more dangerous than electric lamps.' Dench 1915, p. 10.

- [14] See for example 'Woods' Shooting Moving Pictures', *Moving Picture News* 8, no. 4 (1913), p. 18.
- [15] 'Life Targets', *Isle of Wright Observer*, 28 October 1916, p. 6.
- [16] Dench 1917, p. 223.
- [17] For illustrations, see Paterson, J. and J. T. Musgrave, 'Improvements in and relating to Targets for Shooting Practice' (patent), United Kingdom, 1908. <https://patents.google.com/patent/GB190825527A/en?q=paterson&q=musgrave&sort=old>.
- [18] Galloway 2006, p. 8.
- [19] 'Big Game Hunting by Cinematograph: How to Bag Rhinoceros in the Parlour', *The Graphic*, 26 July 1913, cited in Harding & Pople 1996, p. 40.
- [20] In this sense, it would also offer a very different genealogy from the one proposed by Galloway himself, who locates the 'origins' of first-person shooters in first-person cinema. See Galloway 2006, pp. 39-69.
- [21] See Zielinski 1999, pp. 11-12.
- [22] Gaudreault 1998. See also Gaudreault 2012.
- [23] On the presence of the cinematic shooting gallery at Coney Island, see Hopkins 1915, p. 23; 'Shooting at Moving Pictures', *Scientific American* 9, no. 3 (19 July 1913), p. 49.
- [24] 'Die Lebende Zielscheibe', *Linzer Tages-Post*, 50, no. 62 (4 April 1914), p. 10.
- [25] See e.g. 'Targets that Look Alive', *American Rifleman* 55, no. 7 (1913), p. 132.
- [26] This emphasis on city-dwellers is quite frequent in the literature on cinematic shooting galleries. See e.g. 'Learn to Shoot', *Outdoor Life* 41 (May 1918), p. 382; 'Shooting at Moving Pictures', *Scientific American* 9, no. 3 (19 July 1913), p. 49.
- [27] 'Hunting Big Game in the Big City', *Outing* 69, no. 4 (January 1917), p. 512.
- [28] See e.g. 'Kinematographie für Heereszwecke', *Kastalia* 2, no. 3 (1913), pp. 6-7. See also Talbot 1913, pp. 197-209.
- [29] Dench claimed in 1915 that the device was being used to train marksmen on the British battleship *Queen Mary* (Dench 1915, p. 10), and by 1918, an article for the National Rifle Association could claim that the device 'has already invaded the cantonments of the National Army' ('Snap Shooting and Animated Targets', *Arms and the Man* 63, no. 19 [2 February 1918], p. 363). On the use for propaganda in English cities, see Dench 1915, p. 10; on German uses with images of Serbian soldiers, see 'Der Kinematograph als Schießstand', *Die Umschau* 18, no. 32 (August 8, 1914), p. 648. For the Austrian device showing Scottish soldiers, see Conrad 1970, pp. 95-96.
- [30] According to some British reports, Life Targets became an especially popular attraction for women, who knew about German atrocities and were 'resolved to know how to handle firearms against all emergencies'. 'From Our London Correspondence', *Western Morning News*, 12 September 1914, p. 4. One American writer argued in 1917 that 'this method of Motion Picture target practice should be installed in all cities and towns of moderate size throughout the country' to train citizens for a form of warfare in which 'there are no non-combatants' (Maxim 1917, p. 160).
- [31] Ong the Waller Flexible Gunnery, see Kittler 2009, p. 74; Taylor 2013.
- [32] Kittler 2009, p. 74.
- [33] One patent from 1915 for a 'Cinematograph target apparatus' explicitly envisioned multiple uses: 'If the target be used for purposes of amusement instead of as a target for drilling marksmen, the character of the images projected may be varied to make the pastime more amusing.' <https://www.google.co.uk/patents/US1197567?dq=cinematograph+target+bat-tle&hl=fr&sa=X&ved=0ahUKEwi9g6b7xrPVAhVjD8AKHW0dCU8Q6AEIJzAA> (accessed on 6 May 2017). Other sources even suggest a disconnect between cinematic targets and the military. Thus an article for *Larousse* illustrated encyclopedia explained in 1916: 'Bien que ces distractions de temps de paix soient momentanément abandonnées pour des exercices sur des objectifs plus

réels, il semblera peut-être intéressant de connaître les dispositifs très ingénieux qui ont été imaginées en vue de cette application nouvelle du cinématographe'. *Larousse mensuelle illustrée*, no. 115 (September 1916), p. 858.

- [34] 'First International Moving Picture Show', *Scientific American*, 109 (19 July 1913), p. 54. For the reference to Indians in ambush, see Dodge 1913, p. 624.
- [35] 'Big Game Hunting by Cinematograph', p. 40.
- [36] 'Greatest Novelty in the World', p. 22.
- [37] Older studies include Espey 1978 and Mackenzie 1988. More recent studies include Mangan & Mackenzie 2010 and Thompsell 2015.
- [38] Thompsell 2015, pp. 13-14.
- [39] According to Thompsell, between 1909 and 1912, the Uganda Railway carried over 100 tons of hunting trophies per year to be shipped back to Britain alone (Thompsell 2017, p. 36).
- [40] Thompsell 2015, pp. 149-154.
- [41] See Lutz 1991, pp. 77-98.
- [42] On martial masculinity, see Mangan & Mackenzie 2010. On the widespread presence of women in hunting, see Thompsell 2015, pp. 101-134.
- [43] Contemporary descriptions also characterised the device as entertainment for all ages and genders. Thus one journalist wrote: 'The weapon used in shooting at these living targets is a light but accurate rifle, easily handled by women and children as well as men, and affording a perfect test of keenness of eye and steadiness of hand'. 'Woods' Shooting Moving Pictures', p. 18.
- [44] For discussions of Rainey, see Griffiths 2002, pp. 270-276; Staples 2006, p. 394; Dixon 2012, pp. 169-170; Curtis 2013, pp. 25-26.
- [45] 'The Shooting Pictures', *New York Clipper* (26 July 1913), p. 16.
- [46] 'Die Lebende Zielscheibe', *Linzer Tages-Post*, 50, no. 62 (4 April 1914), p. 10.
- [47] The connection to Roosevelt was hardly lost on contemporary observers. One article on Woods' Shooting Moving Pictures thus began: 'Theodor Roosevelt, with all his influence, had to go to Africa and risk illness and death in order to shoot lions and other wild animals. Had he waited just a few years, he could have gained just as much experience as a sharp shooter and had more fun right in his own home town potting the same sort of beasts without discomfort or danger – thanks to the "Shooting Moving Pictures" just brought to this country by Manager A. H. Woods'. 'Woods' Shooting Moving Pictures', p. 18.
- [48] 'Big Game Hunting by Cinematograph', p. 40.
- [49] On safari media as a concept, see also Staples 2006.
- [50] On this point, see also Griffiths 2002, p. 274.
- [51] Dodge 1913, p. 624. It is worth noting, in passing, that this promise to eliminate danger was not entirely honest; some surviving records of cinematic shooting galleries concern accidents, such as the one that occurred in 1913 in Vienna, when one Elly Mak accidentally shot 19-year-old Christine Rzaunek in the stomach. See 'Der Unfall in der "Lebenden Zielscheibe"', *Neues Wiener Journal* (13 January 1915), p. 9.
- [52] See for example Gunning 2006, p. 38.
- [53] 'Woods' Shooting Moving Pictures', p. 18.
- [54] 'Chambre noire du chasseur', *Nouvelles Scientifiques: Supplément à « La Nature »*, no. 973 (23 January 1892), p. 31. I thank Sonny Walbrou (Université Lille 3) for drawing my attention to this device.
- [55] As Thompsell points out, one of the enabling factors in the rise of tourist safaris was the International Convention for the Preservation of Wild Animals, Birds and Fish in Africa of 1900, which

- introduced a paid licensing system for hunting. This helped to catalyse a new ethics of hunting, where hunters were to practice self-constraint in the interest of conservation (ibid., pp. 148-149).
- [56] Radclyffe Dugmore 1910, pp. xii-xiii. One could cite numerous similar defences of ‘photographic hunting’. One writer for the journal *Outing* explained in 1916: ‘Wild fowl shooting is exciting, but this hunting them with the camera, especially the motion picture machine, with the chance to enjoy such intimate acquaintance with the wary creatures, beats it “hull down”’ (Job 1916, p. 313). For more on the debates about camera hunting vs. hunting with guns, see Thompsell 2015, pp. 147-148.
- [57] Dench 1917, p. 223. Dench goes on to use language almost identical to the author of *Camera Adventures in the Wild*: ‘Shooting at the film ranks next best to shooting the object in the flesh. There is no killing for the sake of killing, while the life of the hunter is never in danger’ (Ibid., p. 227).
- [58] Griffiths 2002.
- [59] Gunning 2006, p. 38.
- [60] Dodge 1913, pp. 623-624. See also ‘British Notes’, *The Moving Picture World* (1913), p. 38.
- [61] Maxim 1917, p. 160.
- [62] This is the framework I proposed for understanding early crossword puzzle films. See Cowan 2010.
- [63] ‘Die lebende Zielscheibe’, *Das Interessante Blatt* 33, no. 14 (2 April 1914), p. 12.
- [64] ‘Kinematographische Zielscheiben’, *Film und Lichtbild* 1, no. 3 (1912), p. 46.
- [65] Roosevelt 1913, p. 38.
- [66] See Cowan 2008
- [67] Ibid., pp. 90-91.
- [68] Nietzsche 1988 (orig. in 1888), p. 83.
- [69] ‘Woods’ Shooting Moving Pictures’, p. 18.
- [70] See Mulvey 2006, pp. 184-186.
- [71] Sellmann 1913, p. 233. Other writers argued that such pausing mechanisms would also allow filmmakers to reduce film prices since they could remove some film in places where an educational film would be paused for an explanation. See Reicke 1914, p. 46.
- [72] There has been a resurgence of digital cinematic shooting galleries in recent years, especially in the German-speaking world, but also in countries like the UK. See for example, Holtam 2017.
- [73] Dyer-Witthford & de Peuter 2013.
- [74] Ibid., p. 164.
- [75] Thompsell 2015, p. 34.