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The Zombie Archive: Theorizing Aura and Digital Decay

Wreck-it Ralph, a zombie, and Walter Benjamin walk into a bar...

What do the titular character of Disney's latest 3D toon, the undead, and a long dead cultural theorist have in common? Plenty. Disney's newest hero is an 8-bit video game villain in a digital 3D film who yearns for more than his prescribed game-play identity affords. Thematically, the film is centered around digital identity, digital life span, and the nature of digital degradation and its ramifications in the world of gaming. Ralph (John C. Reilly) seeks freedom from the constraints of his work-a-day villainy, and when the arcade in which his game resides closes for the night, he heads to "Game Central Station" to explore the world beyond in the hopes of earning a heroism medal and shifting his place within his own game universe. As it happens, Ralph finds himself escaping from *Hero's Duty*, a first person shooter game that offers Ralph his chance at heroism, and crash landing in *Sugar Rush*, a racing game predicated on gendered gaming stereotypes, cart racing, and Anime styling. Ralph soon encounters Vanellope von Schweetz (Sarah Silverman), a glitchy young character banished into obscurity and marginalized by her peers and the ruler of the land, King Candy (Alan Tudyk). Vanellope represents a threat to the sanctity of the *Sugar Rush* universe; if Vanellope is allowed to race and her glitch is exposed to the gamer, the gaming proprietor will likely shut down the game and destroy the gaming universe. Of course, Ralph ultimately helps Vanellope discover the power of her glitch and the appeal it affords the gamer, all while uncovering the villainy of

King Candy and his secret plot to cover up his real identity while ruling as a despotic overlord. Ralph discovers the joy of fulfilling his role as villain, and the other characters in his game, *Fix-it Felix*, come to value Ralph's contribution to maintaining order in their world. Satisfaction is found in following one's prescribed role, as villains and heroes ensure coherency and functionality in the digital gaming realm. Even the gamers recognize that the game play and characterization in the 8-bit games are pleasurable; as Ralph puts it, "The gamers say we're 'Retro' which I think means 'Old but cool.'"[1] Nostalgia in digital gaming becomes a marker of legitimacy for old programs. But there's more at stake here; Disney's animated motion picture raises questions about the ramifications of digital decay, the immaterial and the material ghost of digitization, the zombie-fication of digital media, and the aura of the work of art in the age of digital reproduction.

Digital decay refers to the process of degradation that results in glitches, imperfections, pixilation, and general incompatibility that comes with shifting file formats, new technologies, new software, and new hardware devices in the digital sector.[2] Digital data exists in a contingent environment where access to information is predicated on the compatibility of software and hardware. If materials from an archive are digitized, they immediately are subject to these processes of transmutation and compatibility. If file formats change, the entire archive requires

reformatting to ensure access via new technologies, hardware platforms, etc. As archives are digitized, they face uncertain futures; how will unlimited access and digital degradation impact the status of the archive in terms of authority? How will analog degradation captured in the moment of digitization impact the nature of the interaction and the role of nostalgia in ascribing meaning to the process of archival research? There are myriad technical, organizational, legal, economic, and political ramifications for the archive sector in the shift to digitization. Practical concerns about the process of migration between file formats lead out to broader issues about longevity, accessibility, usability, and historiography. Furthermore, digitization in the film archive sector raises many theoretical questions related to presence and absence, media specificity, mutability, datamoshing, mediation, and the like.

This essay begins to explore the intersection of practical and theoretical issues of digitization in the archive sector through examination of the *Variety* digital archive. In September 2010, the entire 105 year history of daily and weekly magazines were made available online for researchers, fans, and the general public. For a monthly or yearly subscription fee, users can keyword search for everything from stars to movie titles, from historical milestones like the coming of sound to the first zombie movie. The entertainment industry's oldest industrial publication offers a wealth of opportunity to explore, historicize, analyze, and theorize. Motivations for the digitization of the archive appear to be in line with the rest of the archive sector; digitization meets demands for increased access to materials, subscription and monetization create new revenue streams that combat shrinking print subscription numbers while protecting the investment made in digital infrastructure, all while preserving historical materials for future study. But the digitization of the *Variety* archive raises as many issues as it answers. Once the publications are made digital, the archive becomes subject to digital decay, failure of formats, obsolescence, the need for standardization of file formats, migration issues between formats, and much more. The archive then requires digital maintenance as well as analog maintenance of original materials and is subject to the whims of its corporate parent.

When, as happens in the contemporary media environment, *Variety* was sold to Penske Media Corporation in October 2012, the archive faces a degree of uncertainty as to its long-term prospects.

Digitization is a complex issue facing the media industries. When media is made digital, it offers increased speed of transmission, random accessibility, compressibility, mobility, and must be protected with digital rights management technologies to combat piracy. The digital media product becomes mutable in ways heretofore unimaginable; digital compositing makes photo-realism an aesthetic computer tool instead of an indexically created image. As Lev Manovich so eloquently put it, "digital media redefines the very identity of cinema."[3] So too does digital media redefine the very identity of the archive. Shifting from the material analog to the immaterial digital conflates archival materials with all other digital media products, making the archive subject to the same issues of protection, encryption, delivery, and mobility. Digitization requires a reconceptualization and theorization of the identity of the archive.[4] In important ways, the archive and the cinema have always had some affinities to each other; if cinema was originally theorized as the art of motion, based on an indexical relationship between represented image and reality, so too was the analog archive defined by its relationship to historical motion, temporality, and documentation, with the primary document representing an indexical relationship to the real. If cinema created the illusion of dynamic reality through fragments edited in time, so too did the archive present a dynamic and contingent historical reality composed of documentary evidence, waiting to be stitched together into narrative coherency by the researcher, cataloged by the archivist as film frames would be organized by the editor. Of course, the alignment is not complete; cinema is predicated on a communal experience in a public theater space (at least initially) where the spectator contributes to meaning-making but is largely the receiver of prescribed narrative content. A different type of engagement and experience defines the analog archive. The archival researcher has an individuated experience, sitting in the austere environment of the archive, pouring through boxes of materials and following evidentiary chains towards the construction of meaning. It is up to the researcher to find the threads of coherency, stitch together the patterns and to do so in isolation.

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As Manovich posits a five-part schema with which to understand digital filmmaking, so too do we need a method through which to understand the digital archive.[5] Once the schema has been identified, we can then move on to issues both practical and theoretical that further elucidate the importance of the digital move, including the ramifications of digital decay, archival zombies, and the role of the archive and its relationship to Benjamin's notion of "aura." So, let's consider five principles of the digital archive by reformulating Manovich:

1. The archive is no longer limited to presentation and organization of primary documentary materials. Physical documents are displaced from their role as the only possible material included in the archive; "born digital" as well as digitized physical materials co-mingle in the digital archive and blend without privileging one over the other.[6]

2. Once physical archival material is digitized it loses its privileged indexical relationship to history. The computer does not differentiate between original documents created in the past and born digital materials created by computers, since they are created by the same process of coding and/or pixilation. Physical documentary evidence is reduced to just another graphic, malleable and subject to digital manipulation as well as degradation.

3. If physical documentary evidence was made available to the researcher as a way to personally access past historical events, now the digital material functions as raw material for compositing history as a computer mediation. As a result, the archive obtains a plasticity and depersonalization that results in a new kind of historical engagement: the historical real which was experienced in the archive by the researcher through touch and smell of primary evidence is now experienced through the computer as something which looks like a primary document, although it really is not.

4. Previously, acquisition and maintenance of archival materials were separate activities. The archivist worked with estates and individuals to acquire content, catalog, and make accessible materials to the researcher. The archivist might then work with a preservation team to ensure that primary evidence was preserved and protected, or restored. The computer creates an entirely new workflow. The archivist must consider not only the maintenance and preservation of physical materials that remain after digitization, but the aforementioned issues of accessibility via interface design, digital decay, obsolescence, formatting and the like. So maintaining and shifting digital materials between file formats may be akin to recreation of the document in an entirely new form, with only traces of its original state.

5. Based on the preceding, we can define the digital archive accordingly: Digital archive= primary/physical historical documents + born digital documents + processing + digital maintenance + formatting + interface design

The digital archive therefore should be understood according to both the nature of its content, the design of its interface, and the quality of interaction it affords the researcher. What I am proposing herein is a means through which to resolve what is a "crisis of identity" for the archive in the digital era. To understand the nature of the digital content, it is necessary to understand that the process of representation of the real becomes the driving mechanism through which researchers gain access to documentary evidence. What once was an experience in a physical space mediated only by the apparatus of the archive itself, with

each archive establishing a set of conventions, guidelines, rules of access and behavior and so forth that amounted to a cultural practice of archival research, is radically altered with digitization. So, let's examine the nature of the interaction afforded by the digital archive through a discussion of the *Variety* archive, reviving Walter Benjamin's ghost in so doing before turning to the undead and zombification of the archive sector.

Aura, Authenticity, and the Archive

Walter Benjamin theorizes that the work of art loses the power of its 'aura' through the process of reproduction.[7] While Benjamin is writing in the shadow of the Nazi rise to power and is concerned with the political usurpation of art and the aestheticization of politics through propaganda, his perspective is prescient for the shift to digital and the transcoding of cultural forms, including the archive. For Benjamin, the practice of engaging art through a ritualistic, culture-based interactive experience in person imbues that art with "aura." For Benjamin, aura is linked to authenticity:

> Even the most perfect reproduction of a work of art is lacking in one element: its presence in time and space, its unique existence at the place where it happens to be. This unique existence of the work of art determined the history to which it was subject throughout the time of its existence.[8]

Authenticity is therefore based on the presence of the original. When absent, the work of art is experienced through a mutated form of representation. Benjamin explains this through a discussion that speculates on both a shift in the form of the work of art itself and the nature of interaction and engagement with the work of art. Discussing "process reproduction" in photography, Benjamin argues that authority is diminished by virtue of the ability of the apparatus to shift focus from the original context of meaning.[9] Process reproduction can enlarge, diminish, alter speed (via slow motion, fast motion, etc.), and "bring out those aspects of the original that are unattainable to the naked eye."[10] Furthermore,

Benjamin argues that the process of reproduction resituates the work of art by altering the physical space of engagement. When the work of art is made multiple through reproduction, the experience of it can shift to be made mobile, personal, and idiosyncratic. For Benjamin, the experience of the work of art and its aura is predicated on the quality of its scarcity, its original setting of display and consumption, and the authority it acquires through its engagement with history. This last point is crucial for our purposes; the status of the work of art and its authenticity are directly connected to the history which it has experienced. The reproduction is stripped of the original's experience of history, its ownership changes, its patterns of wear and repair, and is left as a shadow of the original's power.

As Myriam Hansen suggests, the problems Benjamin identified "persist, albeit in different configurations and at an exponentially vaster scale" in the digital age.[11] The work of art exists in the digital age as simulacra; art copies art and originality is defined as the unique recombinatory practices of mashing and remixing. Digital creation and editing tools have redefined the very nature of artistic expression and have thrown aside romantic notions of the real in favor of expressions complicated by referential intertextuality and the experience of hypermediated culture. To paraphrase Orson Welles, it's unique, but is it art?[12] Meanwhile, the archive holds a last fleeting glimpse at a corollary to Benjamin's original. The film archive is most often comprised of a wide variety of primary documents, ranging from scripts, notes, memoranda, posters, costumes, props, and photos, to film reels, legal documents, letters, personal items, etc. The intrepid researcher can pour through these documents in the hallowed halls of the University or corporate archive, touching and smelling the traces of history left on the materials. By virtue of the archival experience, the researcher can gain access to an "authentic" historical moment. The materials in the archive are laden with aura; they are marked by their traces of historical use and misuse, by their connection to the original owner, and by their uniqueness. While much of the material may be ephemera, it is authenticated and legitimated by virtue of its inclusion in the archive. In so doing, the archivist becomes very much like Benjamin's artist, creating a coherent work that is made meaningful in context. While the archivist participates in the process

of aura creation, authenticating materials as worthy of cataloging and preservation, the researcher completes the circuit by traveling to the archive and physically interacting with the holdings. The physical archive thereby attains both cult and exhibition value.[13] The material in a traditional film archive exists in relation to abundance and scarcity. The holdings are of value because they are rare and because they are not commonly displayed. The researcher tacitly agrees that the items are worthy of historical examination by accessing them in person. The exhibition value is thereby secured and the archival works are received and valued.

The *Variety* archive is unique as a film industry archive in that it includes a very limited range of materials. The archive only includes issues of the publication. As an archive, it lacks the diversity and breadth of content one might expect, but its completeness and depth of materials is noteworthy. Every issue is included in its entirety from 1905 to the present. The value of the collection, as Benjamin would have it, is "imbedded in the fabric of tradition."[14] Pouring through the pages of the archive, the researcher is struck by what would have been the ritualistic nature of engagement for readers throughout history. If, for instance, the archive held a personal collection of daily and weekly *Variety* that were held by a studio mogul, say Jack Warner for instance, the uniqueness of the material and their association with value would not be in question. But they are not; the archive does not have any association to a particular historical figure. In fact, the material is culled from the company itself. The pages, while worn in some instances and yellowed by history, do not contain burn marks from Groucho's cigar or a lipstick smudge from Marilyn's purse. The material is therefore somewhat sanitized of association and depersonalized and appears to lack the aura that might be associated with other kinds of film archival holdings. However, the materials, I argue, attain a unique quality of aura and authenticity by virtue of their association to history and their vary inclusion in the archive. While they are not selectively included as other materials would be by the archivist/artist, they are selected for display and cataloging by the corporate parent of *Variety*. The owners of the material recognized the economic and historical value of the materials and began the process of digitizing the paper materials. So, the archive is commodified and made valuable, but what of the status of these materials as "art?" As archival materials, are they "unique?"

The *Variety* archive contains materials that were never unique or artistic in their original context. However, the articles within the given edition did have contextual meaning that was connected to their placement on the page, the stories around them, advertisements on adjoining pages and so forth. When reading the edition, you would connect the story about Cinerama's premiere to television's popularity by reading about both stories on different pages in the same edition. This context is lost via digitization and search engine functionality. The process of digitization creates Benjamin's "process reproduction," as the search engine pulls articles and pages out of context for viewing and downloading, thus highlighting and emphasizing some stories or pages over others.[15]

The issues of *Variety* held in the digital archive are themselves copies of copies. They are issues of the industrial trade publication that would have been available to scores of readers and widely available in offices and studio complexes to non-subscribers. Each daily edition would have been printed and distributed to hundreds, if not thousands of readers and the weekly edition would have had a similar run. While circulation figures are difficult to attain, the actual figures are less important than the fact that as multiples, as copies made for wide-scale consumption, the materials were not, at least in their original context, original. Nor were they authentic and imbued with aura in their original context. The trade publication was just that, a mechanism to inform and advertise, to track trends in the industry and to cover news worthy events. Furthermore, the materials in the holdings are somewhat devalued by their completeness. They are not so scarce as to suggest uniqueness. Each edition is present, readable, and as valuable as the next. However, consideration of the value of the archival materials is not wholly contingent on these factors. In fact, the collection of daily and weekly editions of the archive is made valuable to the researcher, fan, and consumer because of its *completeness as a collection*. That is, by virtue of the completeness of the archive, it attains a value that supersedes the issues discussed above. The archive has value because it allows the researcher to experience industrial history through the lens of the publication across history in a longitudinal manner. The researcher can trace coverage of new technologies across history, or compare and contrast star coverage from one era to the next.

Furthermore, the value and aura of the archive should be understood in the context of archival aura more generally and in relation to how archival materials gain authenticity and aura across history. For instance, the holdings of the *Variety* archive, like other archives across the country, are made meaningful by virtue of their inclusion in an archive. This is a crucial point to be sure; the very act of archiving creates aura and authenticity. The institutional authority of the archivist transfers into the documents and creates value. The historical shift in value associated with art and documentary archival materials should also be recognized here as somewhat under-theorized by Benjamin. The acquisition of value, ritual or exhibition, can be a long process predicated on subsequent works by the artist, the influence of the critical establishment, or the sponsorship of a gallery or benefactor. Certainly not all art is created equal and not all art begins and ends with the same aura and value across history. This then is a similar dynamic of acquisition of value, aura, and authenticity within the *Variety* archive. The pages of each daily and weekly edition gain value, aura, and authenticity over time and by virtue of their inclusion in the archive. So, what then is the impact of digitization on the archival aura?

The process of digital reproduction strips the archival material of its traditional Benjaminian aura.[16] Aura, however, can be reacquired in myriad ways. Whether mechanical or digital, reproduction works to dehistoricize the original, removing it from its original context, and making access to it mobile, multiple, and impersonal. However, a number of scholars have pointed out that digitization is not a process of perfection in duplication.[17] Digitization opens the door to file corruption; compression techniques create partial data files with reference markers, and a host of digital storage issues that require near constant maintenance and attention must be addressed. However, the process of digitization also holds the potential to imbue the document with a new kind of digital aura. Once the pages of the daily and weekly editions of *Variety* are scanned into the computer, for example, they are freed from their physical forms, made virtual, and made subject to the processes of digital decay. While the documents have been transformed in the process into a wholly different entity, they are also freed from the processes of physical degradation and the impacts of material decay. Ironically, digitization locks in the markers of time, and the physical traces of history into digital code. This code is then malleable and conflates with all other computer code, but can gain digital aura by virtue of its acquisition of unique, wholly digital flaws.

The original documents transform into digital representations in the scanning process, with markers of their analog historical lives frozen for all time into the digital code. Each new researcher then experiences these same markers, making the copy we see each time over-determined as the only version of that page worthy of study. Decisions made in the process of digitization regarding fixing or covering up flaws, as well as practical issues such as file format, digital preservation and re-mastering, and the like are themselves preserved in time and are hugely important as factors determining the subsequent research experience and the digital life of the archive.[18] The files, once digital, are subject to manipulation, digital degradation and glitching over time.[19] It becomes contingent upon not only preservation of the data itself, but a dependent relationship between devices and techniques used to read the data through the interface. If the machine or the software is lost or becomes antiquated, the data may become lost to history as well. In an important sense, the digitization of the archive makes it vulnerable to loss and new kinds of degradation.

The Undead Archive

Allan Cameron argues that markers of distortion, pixilation, and digital decay within digital media suggest an association to the zombie film's representation of physical, social and hermeneutical disorder through mediation.[20] The process of mediation, transcription, or digitization shifts the materiality of analog media to the immateriality of digital format codes and in so doing, creates a "phantasmatic body" that is more a ghostly shadow of existence than a fully formed entity. Traces or distortions are a link to the process of mediation and representation and point to the deterioration process in digital and analog media. This link to the process of transmission and transmutation is mirrored in media about zombies, such that the zombie body and the physical medium become metaphorically connected. Cameron demonstrates that across the genre of zombie horror, the presence of zombies comes to represent an attack on the media as a threat to bodily integrity. The zombie is increasingly a commentary that analog and digital media forms are linked to horrific forms

of sub-humanity and central to our imminent demise. Similarly, the metaphor reverses to comment upon the deathly nature of reproduction, representation, and media decay. Mediation, or in the case of the digital archive, digitization becomes synonymous with cadaverous mortality. "Media are overlaid with bodily metaphors and are viewed as vulnerable, like human bodies, to aging, disease, and dismemberment."[21] The digital media form enacts a metaphoric play with embodiment and disembodiment, abstracted and unified, material and dematerialization.

The digital archive, as we have seen, is inextricably linked to the broader ontological status of digital media. The digital archive is digital media and is therefore tied to its abstraction, mediation, and horrific association to the undead. The digital archive becomes a zombified version of its analog counterpart. The process of digitization in the Variety archive has, like the bite of the zombie, locked the subject/document in its state of being prior to beginning a wholly new process of decay. The zombie, once infected, loses many traces of unified humanity, but only after the process of transformation. The zombie loses control of the voice, motor skills are impaired, rational thought and long term reasoning are impossible, and the flesh begins decomposition. Similarly, the original document, once scanned, loses its unified connection to materiality, is unable to link to the authentic real of its historical voice, and begins a new process of digital decomposition. The digital archive zombifies the document, leaving traces of the original, but none of the wholeness that would afford the researcher close, safe, tactile interaction.

Within the genre of zombie horror, Cameron points out that evidence of decay and corruption are evident on the body of the film itself. Filmmakers have gone to great lengths to create scratches, flares, discoloration, and pixilation to align the dissolution of the medium with the deterioration of zombie flesh.[22] Even when working within digital high definition formats, filmmakers employ CGI compositing to represent analog distortion and degradation. The appearance of the medium's demise aligns with the metaphoric or narrative and thematic dissolution of order and the corruption of the human body. When considering the applicability of this metaphor to the archival document, the connection becomes clear. The process of scanning the analog document into the digital archive creates a corresponding representation of analog decay. Replicated by the computer, the markings

of age, the discoloration of the paper, the wear and water markings on the edges of the document signal analog distortion and age. The computer replicates the relationship of the original document to history, just as the zombie filmmaker replicates the bubbling celluloid in *Planet Terror*.[23] Cameron further suggests that the representation of decay is pleasurable for audiences, "the aesthetic 'ugliness' of degraded media images is at once also a source of attraction and pleasure… zombie films foreground both the utilitarian plainness and the material sensuality of degraded media."[24] This sensuality is tied to the experience of tactility, to the feel and psychic recollection of the analog in an era of digital ephemera. So does the digital archival document reference the original, asking for the researcher to consider the original's tactility that exists in an inaccessible physical past that has been replicated in the digital present.

The contingent nature of time and temporality is the final link between zombie media, the zombie archive, and the media zombie. Cameron argues that by emphasizing format as it relates to narrative (the role of the characters in filming their zombie apocalypse) or materiality (the foregrounding of resolution or speed of the format), "these films remind us not only of the temporalities of narrative or reception but also of the temporality of physical registration."[25] This physical registration is the existence of the pro-filmic reality, that moment before the lens when the actors, locations, and various production resources were presented for the camera. Zombie media therefore becomes contingent on recognition that the events on screen are created for the screen and unfolding time is likewise a construction of the creators. Similarly, the archival material asks the researcher to recognize the contingent nature of its identity, that it is tied to temporality that is itself contingent on the creation of coherency by the archivist. Gaps and ellipses are effaced in favor of a sutured sense of the temporal real.

As we have seen, the notion of archival aura has been problematized through this theorization of the digital apparatus and the process of coding. The digital archival document is stripped of its privileged relationship to the historical real in the process of digitization. It loses the ability to reach out across history to be authenticated as real and imbued with the aura of originality. The very physicality that defined the document, its composition of words and images on a page or the collection of ink and fiber become traces of

a former vibrancy. Instead, the digital document begins anew as a digital zombie, deteriorating as all digital media does. The zombification of the digital archive ironically functions to breath a new kind of life into the document. The archival zombie is no longer subject to dissolution of the body, but only the degradation of the file. This degradation, as I have argued, creates a new kind of digital aura defined by new concerns about obsolescence, file conversion and maintenance, and hardware and software compatibility. This degradation also opens the possibility for new kinds of expression, as the digital glitch may become a part of the new document, and may degrade the document to suggest digital authenticity.

Conclusion

Returning to the opening metaphor, it is evident that *Wreck-it-Ralph*, a zombie, and Walter Benjamin all deal with issues related to the status of the work of art and the process of mediation, reproduction, and digital decay. How did Disney come to explore these themes in a mainstream motion picture? Cherchi Usai argues that John Lasseter, head of Disney Animation, and Executive Producer of *Wreck-it-Ralph*, was faced with a crisis of data corruption and glitching when Disney and Pixar decided to release *Toy Story* (directed by Lasseter, 1995) on DVD in 2000.[26] According to Cherci Usai, at least twelve percent of the digital masters had vanished.[27] Five years after one of the most influential animated film in history was archived on computers at one of the largest media conglomerates on the planet, the files had been corrupted or vanished. Leave it to Lasseter to turn that experience into a sophisticated commentary on digital degradation and the value of glitches and nostalgia to the realm of digital media.

The theoretical importance of the digitization of the *Variety* archive and its significance to the future of archival meaning making is predicated on the value and authority ascribed to digital content and its connection to the processes and issues related to digital decay. The process of digitization makes archival materials susceptible to degradation while shifting the nature of access and the process of interacting with digital content. The researcher can access the material outside of the prescribed archival apparatus; the archive is made digital, mobile, and common. This strips the archive of some of its aura, attained through history and by virtue of the authority of the archivist. However, while this analog aura is diminished, digital aura is attained through contingent temporality, zombification, and digital markers of decay and deterioration. While the analog original is made virtual, its reproduction opens out to a new realm of meaning making. The digital points to the original's status, its state of decay, and represents this in a spectral manner that creates a contingent relationship to the real.

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Endnotes

1 Quoted from the feature film *Wreck-It-Ralph* (Moore 2012)

2 See Charlotte Crofts, "Digital Decay," *Moving Image* 8, No. 2 (Fall 2008): 14-15.

3 Quoted in Lev Manovich, "What is Digital Cinema?" *Blimp Film Magazine* 37 (1997): 29.

4 See Claudy Op den Kamp, "Reimagining the Archive: Remapping and Remixing Traditional Models in the Digital Era," *Moving Image* 11, No. 2 (Fall 2011): 133-136.

5 Lev Manovich, "What is Digital Cinema?" *Blimp Film Magazine* 37 (1997), last accessed April 11, 2013 http://www.manovich.net/TEXT/digital-cinema.html.

6 See Dylan Cave, "'Born Digital'—Raised an Orphan?" *Moving Image* 8, No. 1 (Spring 2008): 2-4.

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22 Cameron, "Zombie Media," 84.

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24 Cameron, "Zombie Media," 83.

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26 P. Cherchi Usai, *The Death of Cinema: History, Cultural Memory and the Digital Dark Age* (London: British Film Institute, 2001)

27 P. Cherchi Usai, 1-5.