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SHIFTING SPACES IN DIGITAL RHETORIC: EPHEMERA IN THE AGE OF INFINITE MEMORY

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SHIFTING SPACES IN DIGITAL RHETORIC: EPHEMERA IN THE AGE OF
INFINITE MEMORY

By

Geoffrey Gimse

THESIS

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SHIFTING SPACES IN DIGITAL RHETORIC: EPHEMERA IN THE AGE OF
INFINITE MEMORY

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ABSTRACT

SHIFTING SPACES IN DIGITAL RHETORIC: EPHEMERA IN THE AGE OF INFINITE MEMORY

By

Geoffrey Gimse

The storage capacity of digital systems has expanded at an incredible rate over the past decade. This new and growing space and the rapidly evolving technologies that surround it have become an intrinsic component of the digital creative process, and yet they remain relatively unexamined. The methods by which creative works are offloaded from the human mind, abstracted into data objects, and ultimately placed into an external storage medium are an excellent starting point for this type of critical analysis. This paper seeks to set the groundwork for such an examination by outlining the relationship between storage, memory, and the data algorithms that shape today's digital systems. By examining digital memory and the storage of text and image from both a software and hardware perspective, it becomes apparent that as storage capacity increases, the relative impermanence and malleability of the objects created within that system also increases. Thus arises an interesting paradox: our ever-growing capacity to store and recall texts ultimately results in the works themselves becoming more ephemeral in nature.

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This thesis follows the format prescribed by the *MLA Style Manual* and the Department of English.

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I. Introduction

There are a plethora of papers and books that examine the impact of the digital revolution on writing and composition. This text exists not to sum up those collected and varied notions, but rather to offer up a suggestion that an examination be made not only on the broad effect of digital technology as a composite whole, but rather on specific aspects of this technology and the impacts those aspects have caused.

The demand for this type of research becomes ever more pressing as digital technology expands in size and scope. The world of 2014 is tremendously different from the world a decade ago. The technologies and innovations that society grapples with today are very different than those from even that short time ago. The conversation that those technologies create must change and grow accordingly. The theories and ideas that arose out of that time certainly have a value that cannot be overstated but they do not offer an end to the discussion. Instead, they help to provide insight into a conversation that is growing richer and more varied by the day.

This changing digital landscape suggests that we are entering a new era. One that is post-digital in nature (Berry). The rapid expansion and shift to digital and online technology, new media, and new media publishing that defined much of the previous generation has come to pass. New media, today, is hardly new. If one were to consider many of the earliest new media experiments, hypertext novels, text muds, and early computer generated audio, it may even be possible to say that new media has evolved and processed through multiple iterations in which certain forms and structures moved from the cutting edge to the now obsolete.

While the development of these new works including the transition of old works into new digital forms are an area rich in critical discourse so too are the tools and the underlying structures that support those tools worthy of deeper analysis. One of the most

significant changes in these structures as they exist in this new post-digital landscape is their sudden and drastic increase in available storage and memory. Because this growth occurs at an operational level, the changes are rarely examined with a critical focus. This despite the fact that these changes directly impact the digital creative process at every level from the imaginative processes and overall early development, to creation and design, and finally to publishing and distribution. By considering how storage and memory respond in a digital system and considering how the data they store is acted upon and ultimately changed through algorithms that work to define and translate that data, it is wholly apparent that the growing level of ease by which works can be stored and retained has a drastic effect on how new texts and works are conceived and built. In essence, this vast storage system meant to ensure that a creative object remains available to all, has instead become a shifting space in which objects lose both permanence and identity to the larger algorithmic constructs that define them. These constructs, however, are also subject to change. Thus, much of this collected content exists as sort of virtual ephemera: transitory and fleeting.

II. The Evolution of Technology and its Impact

Before these changes can be explored in any real depth, however, a certain groundwork is needed. It is important to understand what exactly the terms storage and memory represent in the context of this discussion. It is often easy to lose track of terminology especially in a work that bridges both the technical and the critical. This is especially true with terms that can and do have multiple meanings in both contexts and whose actual definition can fluctuate based on any number of factors.

With these difficulties in mind, it is perhaps best to start at the beginning. The first step in the process is to differentiate between two concepts that are often linked together especially in technological terms: storage and memory. From this technical perspective,

storage and memory are divided along rapidly coalescing lines of meaning. Storage is often considered as a virtual space within a physical form. These forms can be hard disks, USB drives, DVD-ROMs, and a whole slew of other physical objects that all act as receptacles for long-term data. In this case, long term can be understood as data which survives a potential power loss (Hodges, ch. 9). Memory, on the other hand, is usually used in reference to random access memory (RAM). While in purely mechanical terms it is also contained in a physical form, the availability of that memory space exists only while the machine is active. It is used to store active copies of current documents, games, and programs, and to provide these instanced applications to the users of the machine (Hodges, ch. 5).

In the digital space, active memory is considered to be faster than remote disk storage. While this is changing, in some respects, the immediacy of an active program will always outpace that of a stored object. Even as hard drives continue to improve, their very nature limits how fast they can operate in relation to other aspects of the system.

Fundamentally, storage is linked directly to retention. That is the ability to store content for retrieval and representation at a later date. Storage's only function is to ensure that the data is stored. It does not make assumptions about the nature of the data nor does it act with regard to presentation of that data. In fact, storage does not require any attached working system to exist. While often linked to physical devices, storage as a concept exists merely as space in which data can be placed. The method of access, or even if that data is ever accessed again, is not important.

Memory, by contrast, is an active process. It is an action of the existing system and its relation to the stored data. Memory is not merely the ability to store content, but rather the act of recovering stored content and presenting that content in a specific form toward a specific end. Thus even data stored on hard drives and other removable media is subject to becoming a part of the memory of a system. Where storage can be passive, memory is always active.

Consider this definition of memory from *Microelectronics Systems and Devices* by Owen Bishop in which both forms of memory, temporary and permanent, are explained.

"There are two main types of memory:

- Random access memory – used for temporary storage. Data may be written into it at any time, and later read from it. The data is lost when the power supply is switched off. Used for the storage of data and for programs copied from more permanent data stores such as magnetic disks.
- Read only memory – used for permanent storage. In most types, the data once written into it cannot be changed. Used for storing programs and data tables" (ch. 3).

Memory, then, is the act of storing and managing data, while storage is the space connected to a digital system that acts as the repository of data. The term data here is chosen deliberately as it acts to delineate from the presented work and the content that surrounds that work. Data is formless with respect to the eventual presented output. It may be stored in specific structures that are comprehensible to a machine, but which are completely inaccessible and unknown to the human examining it. The data on a drive or in memory could be a painting, a song, or a text, but until it is pulled into memory and presented in an understandable form to the viewer, it is merely a collection of bits. It is a virtual object that can be moved and reconstituted as needed. Thus data, this formless digital mass, acts as a sort of general appellation for all types of digital works.

This does not mean that data is irrelevant. Quite the opposite in fact. Data matters. It matters in the sense that, in a digital system, it provides the stuff from which works are created and it is the stuff to which they return. The structure of the data, how it is assembled and accessed matters in that it helps to ultimately decide the form and function of the final presented work. Ultimately, though, the work must return to this space of data storage or else it is deleted and ultimately removed from the system.

This act of deletion used to be commonplace. Until very recently, storage capacity was the primary limiting factor for computer systems. Because of the importance of data and the related cost of the physical hardware, drives and otherwise, that stored that data, storage and memory management were fundamental parts of any system administration plan. When this limited storage was completely used, the system was considered useless. Data deletion kept the system operational. This is no longer always the case, however. In today's world, the idea of complete deletion is almost nonsensical. This is the age of almost infinite storage. Pricing for raw disk storage, in 2000, cost \$11 per gigabyte of space. Today, that cost is less than \$.05 a gigabyte ("Average Cost of Hard Drive Storage"). This does not take into account the incredible advances in storage technology and the algorithms that surround it. The physical price of the storage is cheaper, and more data can be stored within the same available space.

These massive increases in available storage and in the competency of the technology that manages that storage have an impact on the evolution and management of creative works at every level. Even in the earliest iterations of these works the availability of storage and the methods by which that storage is managed impact creative work by increasing the development speed and easing barriers of access to raw materials and created objects. As the work evolves and develops, the type of storage employed will often adapt and develop with it. In some instance, this relationship becomes so intermingled that it becomes increasingly difficult to separate the storage from the work. In these cases, the storage becomes a part of the final presentation of the given work. This evolution can happen slowly, but it highlights how storage impacts a creative work from several different perspectives.

From a development perspective, storage provides the canvas for creation. A larger storage space means more space for development and experimentation. Images can be saved at greater resolutions allowing more detailed information to be manipulated and used. Text can be saved in multiple iterations and evaluated as part of the whole and as

component parts of new creative works. As storage grows, presentation data is often separated from content data and managed separately. This allows creators to play with both the form and the function of their work. It also requires significant storage and modern storage management techniques in order to be effective. These new techniques provide creators a variety of tools that can enhance the development process.

From a publishing perspective, storage dictates the final form and the number of final forms a specific work may have. Storage concerns drive design choices. The larger the available storage, the more options a publisher has to showcase a work. It is also true that storage concerns dictate the availability of certain works. As storage grows, more and more works remain available and accessible.

Of course, the availability of work is only part of the process. Storage is equally important when it comes to the distribution of content. If the availability of storage were weighted solely in favor of the creator, the work would remain unseen purely because the audience would lack the capacity to view that product. If someone decides, for example, to read a book that is hosted online, that book or segments of that book must first be copied from the Internet to the user's device prior to that viewing. Adequate storage is required even in this instance. In fact, even streaming content requires storage capacity. While the storage required may be smaller than that of the entire file being streamed and is only used while the streaming of the file is active, the availability of the streaming content relies on the ability of the presenting device to cache, or buffer, a certain amount of data. Without that capacity, streaming would fail. There is, then, a requirement for creators to create work that remains within the storage reach of the majority of their audience and to subtly and not-so-subtly encourage their audience to increase the amount of available storage they have. This in turn, encourages storage makers to continue to push the availability of storage up as the cost continues to decline.

At first blush, this appears to be a positive thing all around. The creative space has become much more democratized. The number of people who can participate in content

creation and who can actively develop and curate already existing creative content is larger than ever. Society today is awash in flood of content the likes of which have never before been seen. This has changed the stage for many modern writers. The agency model has been, repeatedly, declared obsolete. Blogs are everywhere. Twitter and Facebook publish mountains of text every day. On a more formalized front, sites like SmashWords and Lulu provide publishing tools to everyone and even Amazon sells direct, self-published, content to its customers. Photographers find themselves in just as dynamic a space. Getty now provides its entire image library for free online (Cohen) in order to compete with stock photo sites that sell direct from the amateur photographer to those willing to buy. YouTube generates ten years of video every single day ("Youtube - One Hour Per Second") and it is only one of myriad of video sites. It is easy to imagine this as a sort of creative Shangri-La. Storage is cheap. Content is everywhere.

Yet, as many researchers have noted, this ubiquity of content comes at a heavy price. As Zengotita elaborates in his analysis of the mediated space,

"So mobility among the options in a virtualized environment gives to human freedom a new and ironic character. You are completely free to choose because it doesn't matter what you choose. That's why you are so free. Because it doesn't matter" (17).

If YouTube generates ten years of video every day, then thousands of years' worth of video content are produced and uploaded every single year ("Youtube - One Hour Per Second"). There are simply not enough eyes on the planet to view all that content. Even worse, is that this content glut acts to actively obfuscate works. Since data itself is not the work, but rather the intangible form a work takes in storage until it is accessed, it is impossible to evaluate the work beyond the presentation aspect.

This stored data is nothing more than a logical collection of machine readable information. In essence, it is entirely abstract. This information could be the launch codes for a series of nuclear missiles or it could be the latest album release from a popular

singing group. The machines accessing this stored data only understand it as data. In fact, at this level there is really only a mathematical constant against which the data is tested to determine if that data is reliable or not. Should the test fail, the space where the data was housed is marked bad. If possible, the data is then regenerated and placed on a new space in the storage media. This happens entirely on the machine level. That the data that is placed in these storage constructs is placed without any care for the data itself. All that matters is that it is data.

This data equality is effective when it comes to storage management. At the same, it ends up creating a content-agnostic system that diminishes the meaning of stored works. Every stored work is generated, stored, and evaluated not as content but as data. This system creates a space in which the actual content of the work has no inherent value. It inhibits the ability of works to be considered as works. They all exist as data points indistinguishable from one another. This space of pure data also results in the growing impermanence of a work. As the data is moved between systems, the creative work is continuously in flux, shifting from one form to another. Some works, while still saved on storage systems, end up disappearing altogether. They are lost to the deep web, that vast area of the Internet that exists outside the reach of search engines (Madhavan et al. 1). In this space, they are merely un-accessed data, invisible and without demonstrable value as they exist only to the machine that houses them. The number of works lost in this space far outnumber the small few that are actually indexed and available via search engines like Google and Bing (Madhavan et al. 1).

The constant movement of data between systems and potential risk of that data being lost from human eyes gives rise to the inconstant nature of modern creative works. More content is saved today than ever before and yet, that content slips through humanity's fingers. Huge swathes of content data has been placed online. Digital archives have become the final resting place for many cultural artifacts that were disintegrating into dust (Samuelson 152). In one sense, this is a great boon. These works now exist in a

vast space of redundant storage where they can be protected and accessed for the edification of all. At the same time, they have been changed from their original form into these digital works. These new works are stored in a manner that differentiates them from the original object they were created to represent. The very nature of their digital design renders the works inconstant, always subject to modification and change as the systems they reside upon change. These digital works that live and breathe on the massive storage systems that drive today's tech powerhouses exist as little more than blips along a tenuous line. They flash to brilliance for a moment before disappearing back into the data, that ether from whence they were stored. If, by chance, they are accessed again, there is no guarantee or assurance that they will remain in the same form they were presented in before. In fact, it is quite likely that their form and function will have changed to fit the device the work is on, the viewer of the work, the publisher who is presenting the work, or even a new directive by the original creator of the work. The commands are issued, the work is altered and presented for a moment, only to disappear once again.

III. The Reproduction of Text and Storage

There was a time, when this inconstant state was the nature of all creative work. When humankind first gathered around the fire to share their stories there was no written language. There was no way to store their stories. The best they were able to do is save the images of their daily struggles with colored berries and stones in caves. This was the first real form of textual ephemera (Carr ch. 4). Stories and creative works were told from one storyteller to another. The only space these works could be stored was in the memory of the audience and the storyteller.

The human mind is an incredible storage device. While some believe that a technological system will be created that can equal or better it, it has yet to happen

(Rushkoff *Present Shock*, ch. 5). Its capacity and operating power is phenomenal. For much of history, it has been the primary tool humankind has used to manage, store, and tell its collected stories. This capacity to create, to share, to plan, and to remember beyond the moment or even beyond a single life is part of what helped to give humanity an evolutionary edge (Otgaar and Howe 1). It is the oldest of the storage tools acting as both a translator and a creative source. Even today, the mind reigns all but absolute in its power to drive the creative process. It dictates the ability to write, to carve, and to make images. It remains the first and primary data storage and creative output device for the human being.

And yet, for all of its strengths, the human mind is not a perfect storage device. It can and does develop faults. Philosophers today still argue about whether or not the perception and understanding of work can ever be equivalent between two people. If a work is always different, then it is impossible for one person to share a work with another as that work is always being redefined through the viewer's eyes. The original work, stored in one mind, can never be recovered perfectly in another. These imperfect storage systems can create serious problems for creative work. They can result in violence against the works and even lead to some works disappearing forever. Lost to anger, to pride, and to avarice these works will never again have a chance to be understood and shared.

As civilizations grew, another limitation was discovered. The human mind has a finite storage capacity. The amount of information collected by societies was growing, and the mind was simply unable to store it all. This inhibited the ability of a society to grow and advance. Information was scattered among many different people, leaving it inadequately shared and always at risk of loss. Another structure, another medium, was needed.

Codifying a series of marks that many can understand and devising a method for storing that information did not happen immediately but eventually written languages

were developed. Written language has the incredible power to evolve both as data storage and as a presentation object. It allows people to collect and present information on a platform that exists outside that of the individual. Thus a work can belong to a broader whole. The author need not be identified and, indeed, sometimes can't be identified. The creative work, bound on the page becomes separate from the author and creator. This spacing, is perhaps, the first real step along the path to where things are today. In her book, *How We Become Posthuman*, N. Katherine Hayles spends a considerable amount of time discussing how data has become disembodied. She links that disembodied state with the rise of the cybernetic culture (ch. 1), but the seeds were set long before that. As the content of the created work moves from the author and is instanced in another object, a book or a scroll, the author becomes less important. Indeed, as Barthes argues, "...literature is precisely the invention of this voice, to which we cannot assign a specific origin: literature is that neuter, that composite, that oblique into which every subject escapes, the trap where all identity is lost, beginning with the very identity of the body that writes" (1)

No longer was a story, or information, translated through a single individual voice in a space where the audience and the context was controlled. Instead, the ideas were separated from the person and open to a different set of interpretations based on the context of the reader. Even in the earliest cases, this was true. Images drawn on a cave wall in France still remain. These are moments of sharing and communication that cross the centuries. An individual viewing those images today, however, has a drastically different understanding than those who created the works (Rabinowitz 21).

The act of recording a story onto an external storage medium allows that story to transcend the original author and take on a life that becomes far larger than the original teller of the tale may have ever imagined. The information contained in the text was separated from its source. It became, as Hayles notes and Barthes echoes, disembodied and devoid of author (Hayles *How we Became Posthuman* ch. 2; Barthes "The Death of

Author" 4). This disembodied information was not merely removed from its source, however. It was reconstructed into a new form. Whether that form was a scroll, a painting on a cave wall, or bound manuscript, the information was assigned and took on this form. With this new form came a new set of prescribed characteristics. These characteristics changed the nature of the creative works by adding additional context and meaning beyond that of authorship and authority.

Indeed, in some aspects of early manuscript culture, the idea of authorship was completely removed. This is certainly true of illuminated texts which existed as one of the early forms of mass-copied literature (Bréhier). While some scribes were well known, many of the creators of these texts were largely unknown and unimportant in comparison to the texts themselves (Bréhier). Since the majority of these texts were religious in nature, this is not entirely a surprise. So too, the fact that these works were not newly created works, but merely the creation of skilled copiers. These scribes were not the original voices in the work. Instead, they acted as transcribers of other works, but in the process new images and ideas were added. The texts themselves became objects that existed beyond the ideal of text or even religious ideology. They existed as produced constructs of culture that extended beyond the original author and beyond the work of the scribe duplicating the work.

The effects of this distancing between creator and object were more than functional in nature. Walter Benjamin explores this idea in "The Work of Art in the Age of Mechanical Reproduction" noting that "works of art are received and valued on different planes. Two polar types stand out: with one, the accent is on the cult value; with the other, on the exhibition value of the work." Early oral arts and history were most certainly weighted more heavily in favor of cult value. Access to an oral works is limited by space and by proximity to the author. Thus an oral work is presented only to those select few and hidden from the vast majority of society. In addition, to replicate such work requires a lot of time and dedication from the individual conveying the oral art

form. Since the work was tied to the person telling the story, even this duplication was not a full and complete reproduction. This specifically limited access both physically and temporally to these oral texts. The inability to separate the created work from the individual presenting that work resulted in a loss of creative potential and ultimately culture itself. At the same time, this lack of availability and the requirement of dedicated time imbued those stories with a sense of power that modern texts can lack. It was this aura that Benjamin felt was lost when a piece of art was mechanically reproduced. For Benjamin, the aura of a work was directly tied to its ritual or cult value and its individual and unique nature (Benjamin).

It should be noted that Benjamin was not directly speaking about text in his essay on mechanical reproduction. His focus was the reproduction of graphics works and sculpture as these products were still carrying that sense of aura. For texts, that aura was already faded by Benjamin's time. In some sense it requires a return to spoken word art forms or even early handmade texts to discover that same sense of importance. The aura of those stories as aspects of cultural history passed down from one person to another, limited in accessibility, and uniquely performed each time, helped establish the importance of those stories. Couched in ritual value and given importance because of their hidden nature (Benjamin) these texts were ideally cultic in value.

It is not surprising, then, that religious institutions would have been the first to adopt methods by which to reproduce, and control, the distribution of texts. It is possible, after all, to create cult value by artificially limiting reproduction and distribution. It is into this space that illuminated manuscripts took on a specific importance and influence. "The role of illuminated manuscripts was considerable; by treating in their works scenes of sacred history the manuscript painters inspired other artists" (Bréhier). Illuminated texts were not limited to a specific region or religion (Bréhier), but they did share this commonality of existing as a both text and sacred artifact. By maintaining the focus on

the ritual, almost mythical, aspect of the subject in the most visual and physical of ways, the works retain a bit of that aura that allows them to transcend a typical copied work.

Yet even at this point, there is a loss of power along the way. The sacred value of the work is no longer tied to the individual but to the object. This is what Benjamin notes as well. The aura of a painting is not in the painter but in the created object. So too, the aura of an illuminated manuscript is not found in the scribe but in the object itself. For a religious institution, this creates a broader form of appeal and increases the space between humankind and the sacred. This suggests that those who lost the most in the transition from texts as embodied performance to texts in physical form were those very individuals whose power arose from their ability to act as the storytellers for the people. Their locus of power diminished, but as it did, the stories became available to a wider audience.

This has been the trajectory of textual media ever since. The printing press didn't necessarily revolutionize the ability of an individual to tell a story. It revolutionized the ability of an individual to store and share that story. It also greatly enhanced the depth of cultural memory. This separate memory, both as a function of storage and access, has been instrumental in changing how societies learn and interact. By offloading memory, by writing text down or printing it in a press, knowledge was shared and built upon not one person at a time, but with many people working all at the same time. The rise of the printed book created a space in which text could be disseminated on a wide basis and responded to by multiple people all at the same time.

It also provided a sense of protection against potential loss or deletion. If an individual were to raise heretical thoughts against the state, they could be silenced rather easily. Before the printing press, it was difficult to produce multiple copies of a work and it was rather easy to gather and destroy those texts. The printing press changed that. Suddenly a heretical work could be produced and published en masse. If a certain press was discovered and destroyed the book could still be duplicated on a different press and

distributed from there. This extended the ability of text to work as a broad influencer of the people. It allowed works to come into existence that challenged the status quo. Work that helped to give a voice to those who, before, did not have one.

This new voice was not the intended goal of any one aspect of printing press technology. At best, it was an unintended consequence. The technology itself, and the printing press is most assuredly a technology, was created as a tool of reproduction. In fact, as Elizabeth Einstein notes, the term printing press is used not so much as a referent to a singular technology but rather as a "convenient labelling device; as a shorthand way of referring to a larger cluster of specific changes" (xv). The printing press was created to solve a production problem. In the process, new avenues for communication were developed. Much of the evolution of memory offloading techniques were not developed with the idea of creating a specific social change. Instead, devices and tools were created to resolve issues that arose from the outgrowth of existing mechanical processes and were then applied to artistic design and function. Functionally speaking, the tools that were created to duplicate and produce text and image were not developed as tools of revolution, but as tools of the existing establishment.

Indeed, the rise of photography and cinema shows how the functional application of newly developed technologies opened the door for new methods of creation and data storage. It also fundamentally shifted the nature of the creative process in positive and negative ways. Photography helped to redefine the creative process as something that was accessible. While there was a certain amount of work required, the ability to take a photograph, even in the early days of photographic history, was drastically easier than trying to paint a painting. This ease meant that the tools were available to more people who could then explore what the photographic medium meant for them.

It is important to note that there is a continuum of artistic forms that is being traveled here. Galloway speaks to this in his analysis of the movement from painting to photography to cinema and beyond. Photography and cinema, as mechanical processes,

are "of the world" (preface). That is they reflect a given moment in a world that occurred, either by happenstance or artistic design, and that is then reflected back to viewers who were unable to be there (Galloway preface). This means that photography and cinema act to record moments as they happen for recollection and later evaluation. Note how similar this idea is to storage and memory. It is no surprise, then, that memory and photography should be so closely linked. Even today, photography and film are often treated as a sort of unbiased observer whose recollection is far more accurate and complete than those who were actually there.

It helps that as photography and cinema advanced, so too did the storage mediums required to save that those memories. Soon, those segments of history could be stored on a small series of easily saved negatives which allowed for near continuous reproduction and creation. It also provided the first point at which the storage medium was not a duplicate of the presented work. The negative had to be worked upon in order to produce the actual visual product. This meant that these intermediate forms could also be changed and altered through a series of techniques to ultimately change the final presented outcome.

As these techniques grew more complex and intricate, the camera itself was becoming more and more advanced. The abilities of the camera to produce clearer and more precise images was improving. As the precision improved, so did the skill of the photographers using the camera. Soon, the divide that existed between an experienced painter and someone who just picked up a brush was beginning to become evident in photography. The art of photography, however, was always a mechanical process. The photographer needed to act both as an interpreter of the mechanical device and as a practitioner of the art. He or she needed to not only understand color, light, and composition, but how the device managed, viewed, and processed those elements. Most of all, the photographer needed to understand how the technology created the image so that they could, in essence, work their vision or aesthetic into a particular image.

The mechanical aspect of these new art forms and the mechanical nature of storage also provided limits to how individuals interacted with and created different forms of art. As the need for mechanical devices and tools grew, the ability of the individual artist to practice and add to the cultural landscape became much more limited. While the expansion of available storage mediums provided the artist with broader access to his or her audience, it also limited which artists could interact with that audience. In short, it provided a form by which those in power could limit the rise of revolutionary forms of art. After all, these new tools and storage mediums required money and power to access. The limiting nature of these devices suggested a commodification rather than a democratization of the creative process. This commodification diminished the value of work that did not fit a certain style or aesthetic while privileging those that fit a specific style or form. It deliberately worked to reinforce the norms and elevate those who already had cultural power while pushing to diminish those who did not have access or the understanding of the tools.

This isolation of the creative process only grew as film and radio came to the fore. As the technology became more complex, there were fewer people who could contribute to these new forms. In essence, the work became filtered behind a capitalist structure that favored work that could and did sell to the masses. Thus, mechanical forms of artistic expression created by a select few on the orders of an even more select few became the most widely enjoyed forms of creative expression.

This is not to say that there have not been those who have struggled against this process. There were several artists and creators in many of these art forms who actively fought to keep art accessible and encouraged more involvement. By and large, their efforts only minimally helped. Today, much of film, television, and radio content is still dominated by several powerful corporations whose primary focus is not artistic expression but profit margin. These forms of media also represent some of the most powerful forms of media consumption by today's audiences (Short 7). Even as digital

media and the Internet has started to gain in viewership and power, they often end up acting as little more than a distribution method for these existing forms of content. This might explain why the music video multi-channel VEVO has more channels in YouTube's top 100 than anybody else ("Top 100 Most Subscribed YouTube Channels Worldwide - February 2014"). Even with the continued reduction in pricing and accessibility of digital technology, the fact is that much of the accessible cultural content viewed and created today requires a specific set of tools and understanding. Those who do not have access to those tools and understanding are often lost and their very real contributions are rendered culturally insignificant.

As digital technology has risen in power, this differentiation has only gotten worse. Not only does digital technology require a static power source and a high degree of environmental control, its underlying forms and structures have been primarily dictated by western interests and ideas. Most of the programming languages used today are derived from English (Information Resources Management Association ch. 65). This limits the input of those who do not have a deep understanding of the English language. It also means that the very structure of the languages and the software products they produce are, in part, contextually driven to fit western customs and standards. While the impact of digital technology has and does influence almost every corner of the world, there are still many who have no direct access to these technologies. They are merely caught up in form of digital imperialism in which their lives and their culture are shaped by products they do not and cannot control.

This imbalance of power is even more problematic given the ability of digital technology to store content. In the current environment of cheap and nearly infinite storage, the products that are being stored are those that belong to the cultures that control access to the technologies. Many have argued that the problem with the Internet and digital technology is that it creates a "cult of the amateur" (Kakutani). Because the barriers to publishing have become so low, almost anything and everything is available to

watch and almost none of it is any good. At the same time, this glut prevents the good content from being seen. From a publishing perspective, the slush pile is now the content pile.

This misses the greater problem. It isn't just good content that gets lost but local cultural content. From a cultural perspective, local content helps to create social bonds and build a sense of common purpose (Rushkoff *Present Shock*, ch. 3). It also acts as a way to maintain customs and practices that have been a part of the cultural heritage of a people and a place (Rushkoff *Present Shock*, ch. 5). Unfortunately, that content is often overshadowed by the sheer amount of content available elsewhere. Even more distressing, the available content from other places tends to bury the content created locally. This has already happened in film and radio. Local content channels are becoming rarer. On the Internet, this isn't supposed to happen. Anyone can create a site to host local content, and that is still true today. Of course, that content now has to compete with literally millions of hours of content from all over the world. For many, it is simply as if that content never existed. As noted earlier, it exists merely as a potential product for viewing and nothing more.

As much as it would be nice to claim that the accessibility and affordability of digital storage has helped to open up creative access, it is fairly evident that this is not always the case. In fact, in some ways, it has become even more difficult to produce and display revolutionary art forms. The content glut diminishes the accessibility of creative works in two ways. The first is that the work is merely drowned out in and amongst the vast amount of work already available. The second, however, is more subtle and equally dangerous. Often these forms of art are cataloged and categorized as irrelevant by the broad algorithms that provide access to much of the content that people search for and view.

This content filtering is a natural function of the World Wide Web and the search engines that manage it. It has already been noted that the amount of content available and

indexed for searching is only a small subsection of the content that is out there. Indeed, much of that content will never be seen again. It exists merely as a stored object on a drive or in a database. It has, for all intents and purposes, been filtered out of existence by a series of algorithms that never actually consider the content value of the data they are processing.

This is shift not in result but in practice. Content has always been sifted and sorted. Even speakers and storytellers made decisions on what to tell and not to tell based on their audience and the reactions of those around them. As the process become more mechanical and commoditized, the process of filtering also became more mechanical and commoditized. Work was judged and filtered into multiple sections. Publishers would spend a good portion of their time sifting through piles of work looking for the best, or most commercial, products to publish. Ultimately, work deemed unacceptable would never see the light of day while the acceptable work would be published and sold.

This was not a perfect system, by any means. Publisher controlled access to the means of production and managed that control by ascribing a set monetary value to cultural artifacts. This gave an incredible amount of control over to those who decided what got published and what didn't. It also probably meant that many incredible works never saw the light of day for many reasons. This system maintained a power structure in which those who maintained the machinery of production continued to hold power and by wielding that power to increase their means of production, they could continue to shape the world in the image that was important and beneficial for their continued rule.

Very little has changed, today. While the content glut exists, media companies have moved from acting purely as publishers and are, instead, acting as curators of content. By selecting and providing content in high traffic areas, these media companies bring out new media trends. In addition, they help to foster the growth of viral videos and trend marketing that have become a major part of today's creative process. This form of content curation is not manual, though. Instead, it is often automated. Video, image, and text

content is optimized and tested for its ability to make it into search engines. There is a whole industry that surrounds search engine optimization (SEO) tactics and their benefits and drawbacks. What publishers are looking for are not cultural artifacts. Instead, they are looking for pieces that catch the eyes. They want content that brings in viewers to increase advertising revenue.

So it is that content is evaluated by machine long before it is every looked at by a human being. The machine makes choices based on its evolving understanding of what the audience is looking for and what the audience is accessing. Unlike publishers before, it has up-to-the-minute details on the habits and practices of its demographic and, just like publishers before, it is searching for the products that will sell the best. Ultimately then, the change is only one of practice. The algorithm becomes the arbiter of text and digital memory. It becomes the filter that was previously held by the publisher.

The algorithm is not an object in and of itself, however. In fact, at its core an algorithm is merely a method by which an act or a series of acts is accomplished (OED). The algorithm does not exist in any physical space. It exists, instead, as a sort of virtual methodology, it acts not as the construction but rather it forms the rules by which the construction is developed. The algorithm, then, is both incredibly powerful and relatively unseen. It is this invisible nature that adds to its strength. Hidden from view, but intrinsic in hardware and software tools, the algorithm becomes a ubiquitous part of the creative process. These algorithms are the format for the tools of creation and thus drive everything else.

This helps to explain why the push for programming literacy has becomes so important in this era. Digital technology has productive control in almost every aspect of human life. The algorithms that manage this technology create the tools that people use every day. If people do not understand how these algorithms work, then they are subject to those who do. They lose control not over the means of production by rather the means by which those means of production are developed (Rushkoff *Program or be*

Programmed, 139). This is an important distinction for any critical consideration of digital media. As algorithms take on a growing importance, they must be examined and understood both as technology methods and as cultural artifacts in and of themselves. As with all developed work and processes, an algorithm makes specific assumptions about the world and, as a rule, it then seeks to resolve some problem through a series of steps. When thought of, in such a manner, it becomes very easy to see that the algorithm is not an independent object outside of ideological consideration. Rather, it exists and acts as a support to specific ideologies of thought and action and should be examined as such.

IV. Content as Algorithm

Any such examination must accept a certain level of technological depth. While an in-depth overview of disk and network attached storage subsystems is currently outside the scope of this examination, a certain level of developmental and structural knowledge is required. After all, understanding how the system works allows a deeper and more meaningful level of critique.

Digital storage exists in a wide variety of shapes and forms. Ultimately, however, it ends up as a series of patterns, magnetic or otherwise, recorded onto a physical medium (Bishop ch. 3). This is a decidedly broad definition, but it captures the essence of what data storage is. As noted earlier, this idea of storage is fundamentally different than the idea of memory. Memory is an action of the algorithm, storage is the medium worked upon.

As a practical comparison of these two concepts, consider the action of reading a page from a standard paperback book or an eBook reader application. In the standard paperback book, a reader's eyes observe the text which is stored as a pattern on paper. This pattern is given meaning. At this point the concern is not what that meaning is or how that meaning is derived. The book as a storage device contains a single copy of the

data which is available only to those in close proximity. The appearance of the text and the book itself was fixed at creation. The reader is able to examine the created work which remains very similar in form to how it was at the creation of the object.

An eBook is stored as a pattern on a disk or data storage card. It is a pattern that is meaningless to most people. Even if the form is understood, the actual stored data is meaningless without the connecting data around it. Essentially, a reader selects a text from a lists of texts using an interface on the ereader. Once the text is selected, an ereader application is launched with a directive to access certain sections of the disk and to load the data stored in those sections into a working memory space. These sections coincide with the location where the book is stored. Once the data is accessed, it is processed by the ereader application and it then appears as text on the ereader screen for the reader to enjoy.

This brief example highlights just how far removed the data truly is from the viewer and the creator. Something interesting begins to happens when data is becomes this distant from the individuals creating and viewing it. It becomes a separate product from the creative force that derived it. Once again, Hayles's ideas on disembodied data have renewed importance. In *How We Became Posthuman* she traces the origin of this algorithmic thought to early cybernetics and the separation of the human body from the human data. Hayles's interest is directly connected to the human being and the data that derives them. Her argument is that this disembodied notion leaves a space that ultimately dehumanizes the individual.

"Embodiment can be destroyed, but it cannot be replicated. Once the specific form constituting it is gone, no amount of massaging data will bring it back. This observation is as true of the planet as it is of an individual life-form" (ch. 2).

This distance becomes even more pronounced when the work is not a constructive part of the personal being, but rather an output of the creative process of that individual. This is the evolution of alienation. The work an individual creates is not merely assigned

a value wholly independent and different from the work (Brookfield 163), but rather the work itself is subsumed within the context of the data machine. It is lost in the larger fabric of something that is not connected and even understandable without machine intervention. The created product then, remains hidden behind an impenetrable wall. Even before capitalist concerns of money and power there is the very real concern about machine access and capability versus the nature of humanity and the culture it creates.

This shifts the focus of power considerably, and it places an interesting limitation on those who control that power and the methods they use to exercise their control. Even more intriguingly, it places specific demands and rules on the creative process at every level. Ultimately, the machine, this vast storehouse and translator of data, holds the control. Even those in power must first use the machine to access and translate the stored data. They do not have direct access. The idea of direct access in this day and age is all but gone. Power resides in the ability to control and manipulate the machinery to produce the output for the material means of production. This productive power, however, is not held by any specific entity. As Althusser notes, the people in control of the state apparatus can change even while the apparatus itself remains intact (140). This is especially true in a space where the state apparatus is little more than machinery and data. The operator in such a scenario matters little.

Power itself becomes part of the abstract of data construction. This is both the trap and the possibility of virtualized data. It opens up the possibility for disenfranchised voices to take up the mechanisms of control, to convert and subvert the machinery, to evoke data and power change. At the same time, those in power have the capacity to limit and shape access to that data. They create the interfaces and the structures through which the data is accessed. This access, in turn, shapes the understanding of the data and creates a reinforced and totalizing view for the entirety of society. This duality between revolution and totalitarianism is at the core of today's digital environment. It exists entirely because of the now intangible, inaccessible nature of data, and the ability to use

computers to access and define the very nature of that data in order to shape an understanding of reality that either reinforces or dismisses the current status quo.

The world today, then, lives and creates in a space of algorithmic reliance. It requires methods and tools by which it can access and manipulate the data. While the data is formless at its source, one of the primary activities that occurs even before the data is used and presented is that it is developed and linked by algorithmic models to create specific associations. Nowhere is this model more apparent than in the form of the database.

The database acts as an excellent source for critical examination because it acts at both a storage location and it contains a variety of algorithms that can be used to access and present data. If the disk and disk storage subsystem operates at the physical hardware level. The database and database connectivity operate at what is known as the middleware level. They provide the connectivity and the interfaces by which applications can access, manipulate, process, and store data (Hodges ch. 16). Typically invisible to the user, this type of software, whether it resides on a separate and remote system or whether it is part of a single system, is key in that it provides the user access and control over the data. Without it, the data remains locked and hidden on drives completely out of reach of the user.

The database also defines the rules of access and the format of the data. Many of the most common databases are relational in nature. They associate data points and link that data using specific commonalities. These linked associations are then cataloged and categorized into a broad structure that provides the database's schema (Hodges ch. 13). This schema is the definition of the database, but it is not the data (Hodges ch. 13).

Once again, the space between the data and the object managing that data is apparent. The database schema defines the relationship between the data in the database. It is, on a broad level, a metadata construct that describes that data. As an object, the database schema exists outside the data. It describes the types and format of the data, and

it establishes a connective logic for the data. The schema doesn't specifically define the data per se, but it does define how that data is examined and evaluated.

Consider the eBook example from earlier. A database can be constructed from the data associated with the eBook. The author and publisher can be associated with a particular text in order to provide better searching or to identify creative and constructive influence. A different schema could dismiss the connection between the book and either party. The author could be removed and the book connected solely with the publisher or vice versa. Even more interestingly, the book could be removed altogether and the schema could instead focus on the relationship between the author and the publisher.

All of these connections are defined and pulled from the same pool of data. The database, and the database schema, provide the definition of that relation. In essence, the database portrays a version of reality from the data. If the data is every possible aspect of a story, then the database and its related schema are the first step in creating a narrative from the story. This narrative is not the only possible telling of the story the data tells, but it is the one that the machine and its operator collude to create.

The analogous relationship between data and schema and story and narrative is noted for a reason. It is far too easy to assume that the malleable and difficult to access nature of data makes it somehow immune from relations of meaning, and that, because of this, data exists as some sort of positivistic whole incapable of corruption. Thus rises the idea, common not-so-long-ago, that data and information exist as open and discrete objects. Information, the saying goes, "wants to be free." In this idea, having access to the "raw" data will somehow provide a society with a natural democratizing power.

There are several problems with this assumption. The first is the assumption that "raw" data exists. It does not. Data must be processed and presented in order to be understood. Numerous critical theorists have already debunked the notion that any content viewed can be viewed outside an ideological bubble (Althusser 175). Of course, this assumes that the ideology exists merely on the behalf of the individual viewing the

presented data, which is equally untrue. The database schema is, functionally, an ideological object. It views and presents data according to the structure which defines it. Indeed, this idea of a connection between data is just as common in non-database systems, as well. Data must be connected and defined according to a set of rules before it can be presented on a screen. It is impossible, then, for data to exist outside the structure of ideology. The belief that, within digital technology, there exists a pure state of knowledge and information that can provide an absolute view of reality collapses when the relationship between data and the interfaces that provides the context for that data are examined more closely.

At this point, the idea of data and of the middleware applications that define that data still do not relate to actual content. Middleware acts on data. It creates and provides the mechanisms for access and the relationships by which that data is defined, but it does not manage how that data is ultimately packaged, created, and presented. Ostensibly, the database and its assorted applications represent a sort of second level abstraction that allows for content to be presented. Content is the output, the text on the screen, the voice in a sound file, the image in a movie file. Middleware only reacts to content by defining its data relationships and interconnections.

Consider a piece of data being sent from one place to another on an IP network. The data is taken and broken into sections. As this data moves through multiple software and hardware layers, it is encapsulated with headers that provide the software with some understanding of how to reassemble the data. Arguably, this is a middleware approach. The data is assigned a relationship via the headers and then reconnected and assembled according to that relationship. As the very core of the header-wrapped object, however, is the content. As data, content moves back and forth from system to system. It is saved on hard drives, put into active memory, but it does not interact in any meaningful way with the system. Content only matters at the final presentation layer where all of the relational data has been extracted and the object is relayed to the audience.

For the audience and for the author, content is key. It is the most important part of the process, and yet it spends most of its life as little more than a data blob. For a content creator, a designer of any compositional work, this means that there are numerous layers of abstraction that must be crossed before that content is available. Even more troubling is the fact that content is often the least considered part of the system resulting in a creative productive system that is far more interested in creating and representing momentary structures, as defined by relational data models, than anything lasting. The very nature of content in a digital space combined with the shifting nature of data relationships results in a creative space where the content object is in flux. It creates a space where content is ephemeral.

V. Text as Ephemera

Consider the birth of a new work: an author sits down to create. He or she begins to write, words are formed in the mind and then appear on the screen as the author begins to develop the very crux of what that work is. This is not the beginning of construction on that creative work, however. Before this moment, the author has taken time to consider the work. They have developed a plan and an approach that will allow them to move in the direction they need. Ultimately, they are focused on creating something that will be viewed or read by others. In this way, creative works act as a form of communication between the author and the audience. It is almost always the case, however, that the imagined piece will vary from the understanding of the actual creation.

There are numerous reasons for this. Rabinowitz in his discussion on Narrative Conventions notes that the author may have a set audience in mind when they write, the "hypothetical or authorial audience," but that audience is not always the same as the "actual audience"(21). The author may be interested in creating a work with a specific message, but that message may be limited by culture, time, and language. In the end, the

work takes on a negotiated meaning constructed not only from the text and images in the work and the understandings of the creators and the readers but also from the paratextual components that surround the work. Thus the meaning of a work remains in a state of flux as each individual consumes and applies their own contextual understanding to the broader work (Rabinowitz 33).

This issue of changing paratext becomes an even greater problem when work is then modified and re-used in the development and creation of new works. The meaning of the text in this new environment is considered merely as an aspect of the new work of which it has become a part, but that neglects how the meaning of the original source work can change because of the association provided in the new work. Genette highlights this while outlining the definition of paratext. For Genette, paratext is "the means by which a text makes a book of itself and proposes itself as such to its readers, and more generally to the public" (261). One particularly important feature of paratext is its temporality. Paratext is not merely creation when the text itself is born, but rather it shifts and evolves from before the actual presentation of the work up and to the present day. As Genette states,

"So if an element of the paratext can thus appear at any moment, it can equally disappear, definitively or not, through the decision of the author or through outside intervention, or by reason of the wear and tear of time" (265).

While Genette's definition of paratext sets the groundwork for today, it does require a bit of modification. Paratext, today, surrounds not only the textual elements of a work, but the entirety of the presentation. A presentation that no longer requires the physical structure of the original book. Often, the book may remain as the expected primary form of the work, but this is not always the case. This is especially when the paratext acts to represent the meaning and nature of a work. For example, Rick Astley released a song in 1987 titled "Never Gonna Give You Up." The song was a somewhat popular pop song

from the 1980s and, as was the emerging custom for pop of music of the time, a video was created along with the song. For many years, this is all that "Never Gonna Give You Up" meant to the broader cultural context. In the mid-2000s as URL shorteners became more popular, the song and video took on an entirely new context. It became a common joke on Internet forums and early social media sites to "Rickroll" unsuspecting users by creating a shortened link to the video on YouTube and telling users it was a link to something else. This became such an Internet phenomenon that Youtube itself made every video on its front page a link to "Never Gonna Give You Up" for April fool's day in 2008 (Albrecht). Today, the song is not understood as a pop ballad, but rather as an Internet prank. Rickrolling did not just use the song, it ultimately changed the understanding of that song. For viewers and audiences alive today, it is impossible to view the video outside of that new contextual understanding. The meaning itself shifted.

This shift is not merely a shift in presentation, but a shift in the overall understanding and delivery of the work. The Rick Astley video is not presented as it was before. It is not being shown on a television, but on a video site with a line of comments below it that directly reference this new meaning. The understanding has a cultural context, but that context is reinforced by the physical presentation of the work. The work that existed before has, in a very real sense, ceased to exist becoming little more than a piece of ephemera.

As has already been discussed, the idea that text is most often ephemeral is not a new concept. Indeed, much of the content created before the digital age is ephemeral. That is to say that most text from these earlier ages simply did not survive. These works existed but for a moment before disappearing forever from the cultural consciousness. This remained true even as it became easier to reproduce a specific work. While this reproduction allowed for better storage and retention, the expense, effort, and space required to maintain a vast collection of work limited which texts could and would be saved.

In the modern era, these concerns no longer bear much consideration. The drastic rise of digital technology continues to reduce the expense, effort, and space required to store creative works to almost trivial levels. In many ways this infinite storage has become the mantra of the modern Internet: nothing disappears. The Rick Astley video survives entirely because it is on YouTube and has been collected along with an ever-growing ("YouTube — One Hour Per Second") number of videos. The entire system has been constructed to protect data from being deleted regardless of whether the attempted deletion was by accident or by choice. Instead, content is gathered up and stored forever on vast arrays of disks in geographically dispersed locations. These storage systems are built in such a way that even in the event of catastrophic component failures, the system survives intact. Today, a creative work can survive, in some form, forever.

Despite this storage, the context of the presentation of the Rick Astley video has been forever changed. The increase in available storage has not reduced the amount of textual ephemera. Rather, digital technology has shifted the understanding of what ephemera is. An ephemeral work is an object or work in transition. It only exists for a brief moment before disappearing or changing ("ephemera"). This transitory status is key to establishing a work as ephemeral in nature. While transitory can be a movement from a state of existence to a state of non-existence, it can also be a movement or shift from one form into another. Ephemerality, then, can be thought of as another term for dynamic presentation. For a work to be ephemeral, it must not remain static.

In the digital space a work is rarely static. It is always in some sort of transitional state moving from one form of presented data to another. While the data of the work may remain, in some form, intact, the actual work is constantly being reinvented. All of these shifts change a reader's experience. They also require supplementary creative effort to redesign and re-imagine the work within these spaces.

There is, in this discussion, a very deliberate focus on the presentation of the work. This term presentation is taken directly from Genette's discourse on paratext and operates

in some way to deflect from the idea that every experience between audience and the created work is unique and thus every work, as an experience, is ephemeral. This may be true, but it neglects the real focus on the presentation of the work. Every experience may be unique, but every work that is created must also in some form present itself to the audience (Genette 261). The technical ability to change the presented form of a work is growing at an incredible rate as are the presentation platforms. These shifting platforms rely on data storage architecture and algorithms to produce content. Without them, the possibility for the multiplicity of form would be drastically limited. In order for a work to continue to be reinvented it requires the ability to store its primary data separately from its presentation form. Note that this is exactly what the modern storage infrastructure has sought to do.

It is true that some of these reinventions can be small. Perhaps, they are merely a size shift. A work is refitted and redesigned to fit on a smaller screen or it is modified to look better on higher resolution displays. These are small changes, but they still alter the final presentation of the work. These reinventions can also directly change the work by implementing new interface tools and conventions that allow users to explore and bring in newly created works that now operate in conjunction with the original work. This is exactly what JK Rowling is doing with the Pottermore site, a web site built around the existing Harry Potter franchise and its eBook content. As she released digital versions of the books, she and her staff incorporated new content that allowed readers to interact with the books in new and interesting ways. While the core text is the same as it was in the published books, the experience and the creative work of the Pottermore website is something entirely new ("A unique online Harry Potter experience from J.K. Rowling").

This Pottermore example highlights another important aspect of these shifting works. While Rowling certainly had a plan for the Pottermore site, there are certain fundamental limitations in the hardware and software that must be dealt with. This results in a situation where the shifts in a work's form are not always a conscious action on the

part of the creator or author. Today much of the redesign that a work goes through is conducted by algorithm, by machine. With products like Instagram, which allows an image creator the conscious choice of a specific number of filters, and the automatically applied image correction that is supplied by online platforms such as Google Images, there is often a mix of consciously applied modification in conjunction with machine defined shifts. It is also important to note that these shifts are not always author or publisher directed. The viewer of a work can apply their own filter and tools to shift the appearance, the form, and the structure of a work. They can even choose to replace certain words or images, if they feel it makes their experience better. What this means is that every users' experience with a specific work is becoming more and more unique.

This drive to create a unique experience keeps the work itself in a constant state of flux. There is no chance for a work to have a singular form. This was not as true with physical copies of a work. While books can have different forms, each of those forms are limited and specific. Every reader who sits down with a paperback copy of a specific book can expect to have a similar experience with that book. The presentation, barring any sort of printing flaw, should be identical.

This is not the case in the digital space. In fact, this is exactly what the digital space is trying to eliminate. Personal content presentation and personal curation has trumped the idea of the universal experience. Google, for example, is continuously trying to customize the content experience of its users, by shifting the results of its search to match their supposed needs (Pariser). In addition, sites like Amazon, Youtube and Netflix use complex matching algorithms to help provide access to carefully curated channels that contextually link films together in ways that viewers may not have expected or intended. This world is one of constant customization, a narrative existence solely built on the audiences' personal preferences. Yet, every such shift comes with certain costs.

Perhaps, the first major cost of this new era is realization that as stored content data grows, so too the sheer number of presented works grows. This returns the discussion,

once again, to the content glut. The glut here, however, is not about so much about access and availability but about the form of a work. Readers have more content to view, in more forms, than ever before (Rushkoff *Present Shock*, ch. 1). Even text that was once out of print has become available again (Singel). The pure amount of text, image, and video available today is impossibly vast. Yet none of it exists for very long at all. That which does exist, does so merely as a static blip in a content storm that as Rushkoff indicates, is always in the present (*Present Shock* ch. 1). Beyond diminishing levels of access, the content glut drives the viral nature of certain works which means that every view and every share changes the reception and context of the work. This is the modern world, a world drowning in content and starving for it.

Authors Rushkoff and Galloway have touched on the conceptual problems of time in the space of content glut. Thomas De Zengotita in his book *Mediated* specifically talks about the problem of real time technology and media and the struggle for attention that drives the supposed "real-time" data feeds. Zengotita posits that the term real time supposes that there must also exist an unreal time (195). This unreal time consists of media and actions that are not occurring in the moment, but are instead representations "that lags behind or previews and/or otherwise selects from the actual stream of events is in unreal time" (195). These "real-time" technologies must therefore require the existence and subordination of an "unreal time" that is the necessary space in which people live a good portion of their lives (Zengotita 195).

Rushkoff echoes much of Zengotita's concerns. A good portion of his book *Present Shock* is dedicated to the notion that the current structures of narrative are falling apart in Zengotita's mediated universe. For Rushkoff this constant stream of content, and its shifting forms, leads to a more reactive audience. The audience that demands from all its content a feeling of constant action. Stories, even those developed as informational or political for the 24 hour news cycle, require a state of constant "crisis management" (Rushkoff *Present Shock*, ch. 1).

"While grand narratives may have prompted ethnocentric and jingoistic attitudes from ideological policy makers (neoconservatism being just one of the more recent varieties of world writing), the lack of any narrative at all subjects them to the constant onslaught of random disasters. The effort to decisively end a story is futile" (Rushkoff, ch. 1).

This lack of ending is another characteristic of modern works that also bears examination. As the presentation of the work becomes more ephemeral, more fleeting in nature, it tends to diminish the conclusion of the narrative arc. Work exists in a perpetual state of change, a shift from one presentation form to another. There is no consistent or static point where a work can have a sense of permanent closure.

Consider, for example, a blog post written five years ago. Whether or not the post is stored in a database, in the rawest of forms it exists as a collection of data points. These data points are then linked and connected in multiple ways depending on the structure of the system looking at that data. There may be a post date, the title, the author, associated tags that could be used for further identification. These components are not necessarily part of Genette's paratext as the paratext itself is part of the representation of the work (Genette 267). It is not required that all of this data be presented in the final presentation. The data, however, exists and is stored and attached with other aspects of the work. In addition to this metadata, there is the content text, associated images, sounds, and video data, and whatever exists in conjunction with that work. Note that while this data is related to a specific work, it exists and is often presented or expressed differently depending on the nature of the content and the desired presentation format from either the viewer, the author, or the machine itself. This data is then collected and expressed stylistically to produce the final work. This final work exists merely for as long as the associated styles remain active. This means that a user may experience the work in the same form for 3 years or that it may shift forms repeatedly over that time. While the

content itself shifts and the work changes repeatedly, the actual associated text remains the same. There is never a progression to the next point in the story. This blog post, always exists and is constantly being re-expressed as new content. As Rushkoff goes on to state, "We get a textural experience... We do not get to the end; we shut it off and it continues without us" (ch. 1).

This is another major paradox of modern media. More unique content is being created than ever before and, yet, a good portion of that content is remixed and reconstituted media. What's more, at least when considering large scale creation, is the fact that this remixing of old content is actually preferred over new content (Rushkoff *Present Shock* ch. 1). There is, then, a certain predilection in the current era to draw on stylistic and presentation based changes over the broader aspects of the work.

In some sense, this is not really all that surprising. As content continues to grow, there is a natural desire to minimize the impact of the new. It is easier to understand a work, especially one that may change tomorrow, if that work is can be related to a previous work. In essence, these creative works act as a sort of skeuomorph. In normal parlance, a skeuomorph refers to a "design feature that is no longer functional in itself but that refers back to a feature that was functional at an earlier time" (Hayles *How We Think: Digital Media and Contemporary Technogenesis*, 17). Examples can be seen in decorative overlays of buttons on coats or even the idea of looking through windows as a way work within a computer interface. In the context of creative work, the skeuomorph acts as a reference point from which meaning can be derived. The skeuomorphs "testify to the social or psychological necessity for innovation to be tempered by replication" (Hayles *How We Think: Digital Media and Contemporary Technogenesis*, 17). This replication is required in a space where the work itself is undergoing a state of ready and rapid change. Without this contextual space to provide a locus of understanding, there is little space in which a work can be considered and discussed.

Of course, this doesn't mean that a work isn't being evaluated. In fact, the evaluating data itself becomes another aspect, reflection, and representation of the work. At this point, the examination of the ephemeral nature of digital work has focused only on the presentation of the work. As storage increases, the content stored is repeatedly modified and presented to an audience as new work. Part of this represented data is directly associated with the metadata surrounding the work. As noted earlier, this metadata is ostensibly separate from the work itself. It may be incorporated, but it does not have to be. In fact, often the metadata becomes an entirely separate work in which works that contain a certain type of metadata are attached and discussed as one.

The texts used as references in this paper, for example, exist on a drive saved to Zotero. The works are linked and referenced under the specific title of this work and identified by the tags and indicators that further allow for content searching and pattern matching. The Zotero information does not appear in this text. It is not even part of this text, and yet, an examination of that information could help to make sense of this text. At the same time, it is possible to see this saved list and its annotations purely in its own right. The collected information can be viewed as an annotated bibliography that encompasses not only the work of this paper, but of work later on. Indeed, it can stand and may be used by others as a reference text in and of itself.

This metadata that exists, then, has become an entirely new work. The metadata and the explanation of that metadata exists and is stored away. Indeed, much of the focus of "big data" algorithms has to do with the manipulation and understanding of this attached metadata and the associated log data that comes with it.

It is this final form of data, systemic or machine data, that is the most difficult to adequately categorize. Metadata, by its definition is data about data. There is an implied association between these types of data. Metadata can and is just as ephemeral as primary data. In the example of the five year old blog post, for example, the metadata attached to that post was merely first order data. The metadata attached to that same post, once it has

been harvested by Google's web spiders, would be entirely different even though the actual primary data is relatively unchanged. System data, in relation, is even more dynamic and more rapidly changing. In some sense, it is also less directly related to the work as it is primarily related to the publishing of a specific presentation of the work. That said, there is an undeniable relationship between the log files created while developing, distributing and accessing a specific work and the work itself. The log files act as the final collector of viewership. They produce a vast amount of the metadata that is then attached to a work and can ultimately change the display of the data based on what they collect. In essence, the log files which may exist for no more than a day and the related log entries which may only be relevant for less than a few minutes still have a drastic effect on the experience and presentation of that work.

Log files are created text. It is perhaps easy to see these files as nothing more than automated tools, but that denies the very real fact that there was a very specific and intentional logic applied in their development. They exist as fuel for the presentation engine. What they report becomes a part of the machine that represents the work in the ways that, it is imagined, best suit those viewing the work. Thus, they too exist as content driven artifacts in the digital age.

VI. Conclusion

The impact of this evolving digital media platform will not be fully known for some time. As the transition from a digital world defined by an ongoing revolution of the information age to a post-digital world in which digital technology has a nearly ubiquitous impact on the human experience even in places that may not have direct access to that technology continues (Berry), the understanding and ability to address these changes will evolve. It is possible, however, to highlight several areas worthy of deeper exploration.

Perhaps, the biggest impact of the ongoing shift in media and the immediacy of custom works designed for an individual, is the steady reduction in shared cultural capital. There is no shared media experience. Mass media itself has shifted from being a tool of communication to the masses along specific channels that were usually one way in nature (Rushkoff *Present Shock*, ch. 1) into a method by which an idea is communicated in multiple forms to an interactive and often actively communicating audience.

What this means is that even as access to content creates a larger number of potential viewers, the availability of more content results in a drastic reduction in the number of viewers a specific piece of work will receive. In 2004, Chris Anderson termed this the "long tail." He theorized that the future of media will focus on niche creations aimed at smaller audiences. These niche locations have become a source for growth and prosperity in this new space. Anderson believed that it was in these locations that new artists and authors would grow and thrive. While big media companies continue to buck this trend, the reality is that the long tail idea is steadily being proven out. Today, companies like Kickstarter exist because of the long tail. Kickstarter provides a platform on which creators can leverage their audience to help create new projects. If a creator can convince enough of their audience that a project is worthwhile then that project will receive the needed funding. Recently, Kickstarter has been joined by a new company named Patreon. Patreon focuses not on projects but on the creators themselves. Creators actively seek patrons who will pay them a set fee which usually runs anywhere from \$10 to \$25 based on the work they produce. As an artist gathers patrons, they are able to produce more. In all of these situations, the creator is not seeking a mass audience. Instead, they tailor their work for their chosen audience. In some sense, this is the ultimate realization of Rabinowitz's "authorial audience" (21) in that the author is making a specific pitch to reach the people they expect to fund their work.

This also means that while audiences are smaller, audience members are becoming more and more dedicated to their authors and genres. Richard Nash, former publisher for

Softskull Press, spoke out about this change in 2010. He discussed a model in which the space between the creator and the audience was drastically shifting. In the old model there were numerous intermediaries between the audience and the author. This space is rapidly disappearing and successful authors are learning how to directly engage with their audience (Turner). These small cults of personality can help to drive incredibly successful publishing ventures in both the digital and non-digital spaces, but ultimately the success relies on the ability of the author to engage that audience successfully.

This is a very real departure from the previous models in which authors were expected to produce the text and little more. Today, a creator is not merely a generator of work, but they are the manager, willing or not, of a community of fans that surround that work. The success of their next creative venture can be directly reliant on their capacity to maintain that audience. This can severely impact the creative breadth of an artist or author. If the audience, acting in that almost real-time manner can control what the author does then the work itself may suffer. This may also be another reason why authors tend to stay in the comfortable territory of their works instead of branching out. There is little impetus, and plenty of risk, in doing so.

Ultimately, the effects of data storage and memory growth are still struggling to be understood. This is complicated by the speed at which things are changing, but these are avenues and discussions worth having. For far too long, the conversation about digital creation and digital technology has remained focused on output forms of presented data, art form to art form, or on a deep examination of the technical subject in relation to itself, hardware and software studies. The underlying systemic components that drive these changes and fundamentally impact how users and machines interact remain relatively unexplored.

This was an exercise in highlighting how a simple shift in storage technology has fundamentally changed how creators and their audiences interact with creative works. This shift in interaction has broad repercussions across every level of society. More

importantly than that, however, is the fact that it changes how societies communicate. This change needs to be addressed and understood not only as pure research, but within a broader critical context. These shifts in communication mean that new voices may be heard that were previously silenced, but there is also the very real risk that other voices may be silenced. This must be a consideration in any examination of technology and digital creation at the systemic level.

Indeed, the ephemeral nature of modern text would seem to highlight those risks of silence. Throughout this study, aspects of potential risk for the individual and the broader creative culture were highlighted. This is only the beginning, however. Just as critical inquiry has multiple tools and lenses of examination, so too must those lenses be focused on the shifting creative space developing today. This is not an easy task. The very ephemeral nature of the final presentation makes it difficult to connect these aspects of meaning, but this only acts to reinforce the point that a critical examination of the tools that produce that content may actually provide a greater benefit than research on the product itself.

Digital technology exists within an incredibly fascinating dialectic. On one end, the totalizing power of a technology exists to bend a culture and a world to an almost singular view. On the other, it provides the tools and the mechanisms by which the voices of millions, voices that previously were silent, can be heard. In the midst of this is a swirling mass of content and data that is constantly being formed and reformed, connected and reconnected. In this inconstant state where all works, all voices, exist as brief echoes in the ether, there is a very real chance to gain understanding and to develop approaches that will encourage creative work that stands against the totalizing influences of technology while encouraging the more democratic processes.

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