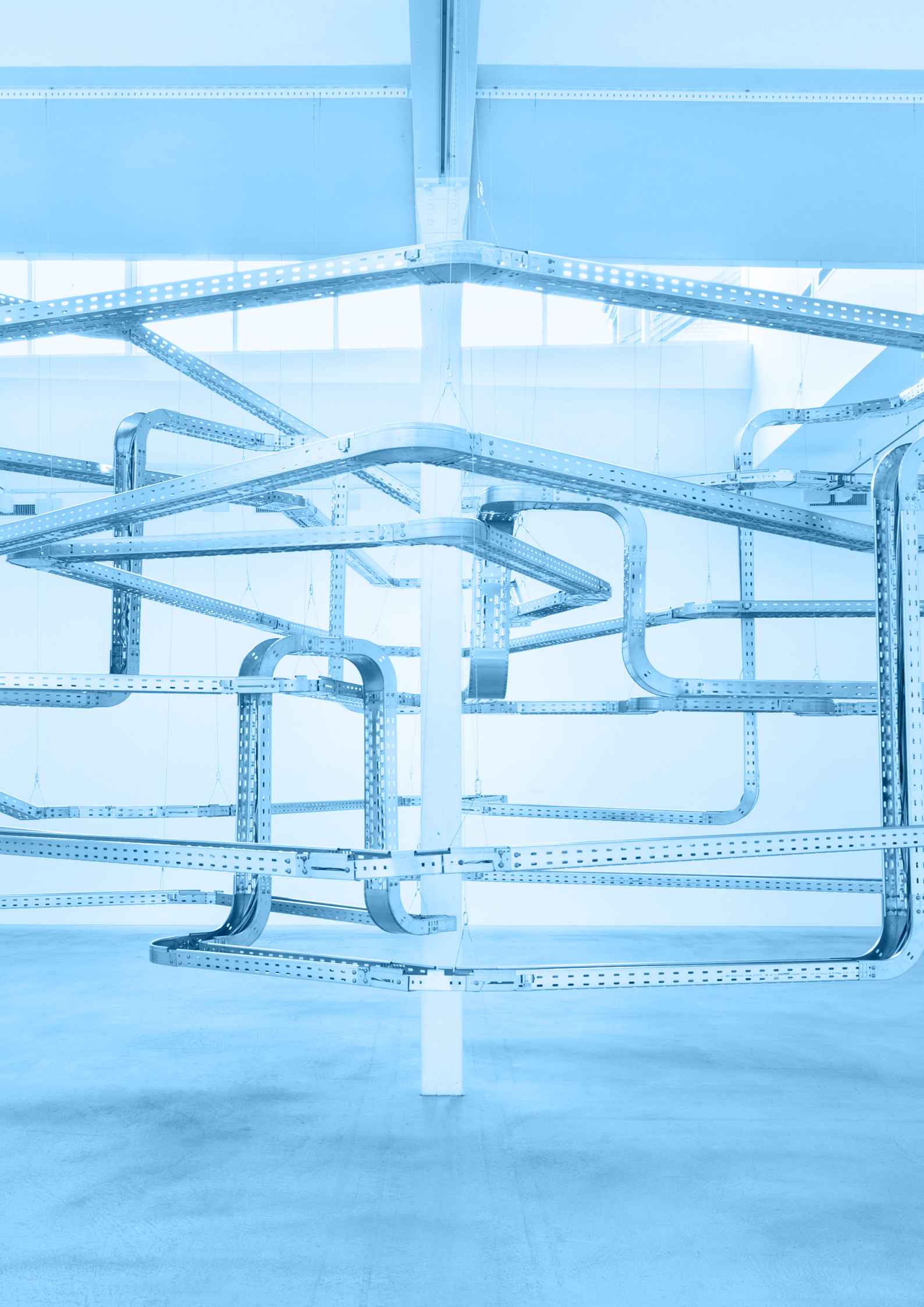

PEER-REVIEWED ARTICLE

IMAGE SPAM ERRORS IN THE AGE OF HYPERCONNECTION

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ABSTRACT | This essay examines the relevance of the connected digital image to some of our everyday life environments in a hyperconnected society. Image spam conveys an atmosphere of information overload and leaked images travelling at accelerated velocities to be copied, edited, and relinked in digital environments. Internet connectivity is the feature of media culture that enables the coexistence of image spam. This essay offers an account of the infrastructure of connectivity as the physical basis for information technologies in order to situate the pathways, the context, the way of being, and the errors of image spam.

KEYWORDS | image spam, errors, cloud, hyperconnection

1. Introduction

Image spam is "one of the many dark matters of the digital world"[1] and for this reason the following pages endeavor to articulate an account of its errors. Image spam may have a lot to tell us about contemporary culture and it may likewise reveal the issues underlying the resources used to power this *dark matter* that permeates the digital world.

Image spam is a symptom of contemporary hyperconnected society; it is the image most predominantly found in physical-digital environments, although it goes by mostly unnoticed because it is not intrinsically prone to visibility. In these pages I will nonetheless attempt to bring into view the mode of existence of image spam by taking note of its errors.

Although image spam could be said to dwell in a digital world that is almost impossible to represent, I will here examine individual cases in which they have been denied, excluded, degraded, and catalogued as trash. In that sense, my aim will be to analyze the unfolding of human history in light of its discarded waste.

Garbage is the ideal material through which to discuss a history that has been forgotten, deleted, or privatized, because this material has itself been subjected to a kind of violence. Garbage is in itself a degraded and excluded material, but it is also an archaeological record that, although seemingly removed from hegemonic history, has left behind traces and errors.

2. Methodology

In this essay, I draw links between the work of theoreticians of the contemporary digital image and projects that aim to anchor theoretical thought through strategies of artistic creation in order to convey the social context that permeates the environment of image spam understood as a form of physical-digital waste.

I will thus deal with specific cases that instantiate the errors of image spam, the first of which is the concealment and erasure of images from the hegemonic history of humanity that results in a variety of marginalized images, which I define as image spam.

I also analyze the processes by which image spam is constructed by attending to the materials and processes that make up the physical work that underlies internet connectivity. As these examples show, image spam has both a physical and a digital status; although it functions predominantly within digital environments, there is also a critical organism implicit in the infrastructures of internet connectivity which have constructed *errors* in order to sustain a culture of hyperconnection.

3. Towards the Matter of Image Spam

"Over thirty years ago, on May 3, 1978, 392 members of Arpanet, the first version of the Internet, received the same email message from an unknown individual advertising a new computer: spam had been born."[2] The email in question was a mass message with entirely commercial aims soliciting the addressee by offering unrequested information; the unknown individual who sent it was breaking the platform's security codes with the hope of increasing the sales of the company for which he worked. "That unknown individual was Gary Thuerk, an American employee of the marketing department of the computer manufacturer DECsystem, no longer in existence. Thuerk had the visionary idea of sending an ad to all of Arpanet's members in the Western Coast of the United States."[3]

This was an early indication of the process by which "the world is assumed to be essentially advertisement,"[4] and in that sense the future of spam messaging was already patent. Although in its initial configuration spam messages were text-based, we now see that images can display the same characteristics as a leaked advertising message, and for this reason I propose to understand certain images as spam messages, that is to say, as unwanted or trash images.

The term "spam" derives from the name of a food product, SPAM: Hormel's Spiced Ham,[5] a canned snack "made of spiced pork meat and originally produced in response to an increasing demand for ready-to-serve food."[6] SPAM was consumed by American and British troops during the Second World War and later became very popular among civilians as an affordable product. With time, however, the meaning of the word changed. In a sketch from the television series *Monty Python's Flying Circus* that aired in 1970 a group of vikings was seen dining in a neighborhood pub along with some locals; when some patrons asked the owner what there was to eat she replied "spam."

At this time SPAM had come to be perceived as an undesirable food whose "dubious composition has earned it many nicknames" including "'Something Posing As Meat,' 'Stuff, Pork, and Ham,' and 'Spare Parts Animal Meat.'"[7] This led the Monty Pythons to choose this food over any other for the sketch, because "it presents an uncanny mix between the natural and the synthetic [...]. It is modest and cheap, made of bits and pieces, which may be somewhat recycled [...]."[8]

In the first part of her spam trilogy, "Digital Waste," Hito Steyerl observes that the Monty Python sketch is the source of the contemporary use of the term "spam" to refer to mass and unwanted electronic communication, and remarks that the inordinately repetitive use of the term in the sketch was later amplified in the context of emerging online practices (it is worth noting that in that essay's section on the "history of spam" Steyerl does not mention the Arpanet episode).[9]

Steyerl then develops an argument that allows her to expand the contemporary understanding of spam by examining specific events, including the growing use of the practice of sending senseless emails to specific groups of customers who were seeking to become part of a community during the 1980s.

The critical meaning of these facts can be discerned if we regard them as the point of inception of contemporary problems linked to the proliferation of spam: its errors. Steyerl thus outlines a contemporary hierarchy of images, a "class society of images," that separates high resolution images from poor images, including image spam.

Within this hierarchy based on levels of sharpness and resolution, certain images are regarded as having greater significance and as exclusive luxury items. On the other side, there are images like those found in Andy Warhol's early film works, which challenged the established parameters of commercial features screened in exclusive locations like movie theaters and filmed using large format cameras and carefully constructed sets. These are the products of large studios relying on special effects that can only endure within the structure created by the film industry.

Exclusive and luxury images depend on privatization, since an image must be concealed in order to retain its hierarchical status within that "class society of images" and position itself as historically significant.

When we speak of concealment here, then, it is specifically in terms of what lies hidden behind those private images. A statement from Milan Kundera's novel *Immortality* quoted by Juan Martín Prada summarizes the complexity of this seemingly basic question: "a person can hide behind their image, they can disappear forever behind their image, they can become completely separated from their image: a person is never their image."[10]

This means that, although we perceive a surface effect, by showing an image of oneself one can also be concealing a part of oneself. The invasion by images that we seem to experience does not entail an absence of concealment. The fact that there is image spam all around us does not mean that these images are not hiding things. It is then worth asking: what is image spam, what lies behind it, and what are its errors?

The case of the leaked Arpanet emails is already a good example of the connection between image spam and advertising in the usual sense. Image spam is used to "advertise pharmaceuticals, replica items, body enhancements, penny stocks, and degrees. According to the pictures dispersed by image spam, humanity consists of scantily dressed degree holders with jolly smiles enhanced by orthodontic braces."[11]

According to this definition, image spam works through stereotyped images that rely on the use of advertising and all manner of editing software and filters on digital platforms to consolidate an image of the human being as ever closer to perfection, and to simultaneously produce a layer of concealment of that being who is subjected to relentless transformation and editing. Image spam intends to show "improvable" people, "potentially 'flawless;'" it "might tell us a lot about 'ideal' humans, but not by showing actual humans."[12]

The potentially-enhanced spam subject is thus detached from their authentic image through the construction of an archive of stereotypes that are addressed to them by everyday advertising—which "forms the bulk of digital writing"[13]—because digital environments constantly promote the circulation of stereotype-images that produce the disappearance of what lies behind them.

Image spam thus stands in place of something that has disappeared, not only due to the invasion of internet advertising addressed to the spam subject, but also through the theft of their identity and by their deprivation of the possibility of being a part of human history. The theft and exclusion of historical discourses can thus be counted among the errors of image spam, since most historical archives that should be part of the public domain are not.

A case in point is the concealment of a great part of the history of the twentieth and twenty-first centuries in an "image bunker" built 220 feet below ground to hold the 17 million photographs from the Bettmann photo archive in New York acquired by Bill Gates in 1995. Gates also acquired "two large collections [...] from the UPI image agency comprising up to 65 million items, including photographs of Albert Einstein, John F. Kennedy, Orson Welles, and many other important historical personalities. Corbis also acquired reproduction rights from major museums like the National Gallery in London, the Hermitage in Saint Petersburg, and Philadelphia's Museum of Art."[14]

Why conceal them? "The archive bunker—according to Gates—protects delicate visual documents against potential natural and military catastrophes, in addition to delaying the inevitable process of chemical self-destruction of the photographic images."[15]

The decision to place a collective memory out of reach raises many questions given the significance of these images to human history. We do not know *exactly which* images from the Bettmann archive may be used to represent humanity after a catastrophe, since the public has no access to most of its content.[16] The greatest source of worry is that Gates has thus secured a monopoly over an essential part of the visual memory of the twentieth century. According to Peter Krieger, regardless of his good intentions Gates is in fact compromising the public's freedom of access to a collection of images that can be used in academic research and for advertising purposes, and his policy of privatization has more negative than positive implications. It is impossible to know which human histories these images will tell, and an error is thus produced: the loss of first-hand historical witnesses.

4. An Overabundance of Image Errors

> *What actually happens when a glitch occurs is unknown, I stare at the glitch as a void of knowledge; a strange dimension where the laws of technology are suddenly very different from what I expected and know.*
>
> *Rosa Menkman, "Glitch Studies Manifesto."*

Thus far I have mapped out a few brief case studies of image spam errors. In the case of the image bunker, the error lies in the fact that the privatization of a part of human history produces subjects deprived of a context. The result is a spam subject that cannot function as a historical witness. At this point, however, we must take note of a notion to which the Dutch theorist Rosa Menkman has devoted a great deal of research in recent years: the glitch, a term that designates errors in the constant flow of information in the age of hyperconnection.

Menkman defines the glitch as "an unexpected occurrence, unintended result, or break or disruption in a system"[17] and as the "most puzzling [...] noise artifact" that "reveals itself to perception as accident."[18] Indeed, errors come about when an excess of images leads to a loss of control and an accident. Although there are of course fortuitous accidents, in the case of image spam we are often dealing with premeditated accidents.

As Paul Virilio pointed out, the accident is immanent to every technological stage, so that "[t]o invent the sailing ship or steamer is also *to invent the shipwreck*," and "[t]o get what is heavier than air to take off in the form of an aeroplane or dirigible is *to invent the crash*, the air disaster."[19] In that sense, we might say that to invent hegemonic history is to invent exclusion; in other words: if the accident is a trash subject then the latter is immanent to contemporary culture.

An artwork that brings into view the institutional exclusion of important moments that should be part of history is the installation *El lamento de las imágenes* by the artist Alfredo Jaar, exhibited at the 2002 edition of Documenta in Kassel. The work displays a document that describes how the U.S. Department of Defense signed a contract with the private company Space Imaging moments before launching an airstrike against Afghanistan in 2001. The purpose of the contract was to purchase images captured by the Ikonos satellite and to acquire exclusive rights over all available satellite images of Afghanistan and its neighboring countries.[20] "The agreement also produced a real erasure of the operation by preventing Western media from seeing the results of the bombing and eliminating any possibility of verification or independent refutation of the official version."[21]

In this case, the U.S. Department of Defense produced a two-fold accident: the first and most obvious one is the armed conflict in Afghanistan, with all of the disasters that come with such a confrontation; the second is the effective erasure of this particular operation. This second accident amounts to an elimination of relevant events that are suppressed from history by going unrecorded. There are thus no images or historical documents that could provide an account of the atrocities that were experienced there.

In turn, the act of erasing or deleting the experiences of human beings who were involved in that war causes yet another two-fold accident or error: the first is the erasure of human beings who are degraded to the condition of trash or waste; the second is the erasure of that part of the operation in order to prevent anyone from gaining access to information, by which the victims are deprived of the possibility exerting their key role as witnesses. For this reason, the errors of spam subjects appear as a decontextualization and are visually represented as a negative.

In spite of this example, one might think that such efforts to conceal and eliminate certain images are no longer altogether successful, since the *machine* that allows us to see everything that circulates through social networks and news sources is intended to overload us with images.[22] As Jacques Rancière claims: "There are too many images, it is rumored [...]. Too many images of massacres, of bleeding flesh, of amputated children, bodies piled up in mass graves."[23] It may be true that there are enough images and we should not be concerned about having more, since this daily dose of images of horror affords us a degree of satisfaction (perhaps because they help us to develop an immunity to horror).

We should not overlook the fact that governments manage their own image by likewise hiding images from the net, and that there are "many governments that require the filtering of certain search terms in their territories"[24] for the sake of political interests, as Martín Prada claims, adding that this is "probably [...] the most clear proof that the Internet is far from being an authentically transnational space, and that it is never removed from the conflicts determined by political boundaries."[25]

It is therefore not true that "those who dominate the world deceive us and blind us by showing us too many images. Their power is exercised above all by discarding them,"[26] and both Bill Gates and the U.S. Department of Defense have deployed their power to discard information and to thus eliminate historical witnesses.

It is also important to consider the role played by memory libraries like Wikipedia in a context in which "voids of knowledge," as Menkman describes them, can be produced by those who have the power to privatize and create permanent erasures of information. Wikipedia allows us to accurately find a great quantity of synthesized information, but as Rancière notes any such quantity remains insufficient inasmuch as it is not grounded on in-depth research; moreover, these platforms make no effort to uncover what is privatized, but are content to present a host of information in the form of a "quick view" of synthesized historical facts.

On the contrary, a platform that does make it a point to find those errors or gaps in knowledge is the international non-profit organization WikiLeaks, which can be understood as a critical response to Wikipedia by virtue of its efforts to visibilize, investigate, and leak classified documents that are not in the public domain. Indeed, the main objective of WikiLeaks is to bring classified documents into public view, and the files that they are able to find allow us to reclaim the position of historical witnesses, while institutions and power players have only sought to remove witnesses from the picture.

Here we may quote an argument by the Israeli historian and theorist Ariella Azoulay, who describes plunder as a way of abusing the historical archive:

> *The first form of abuse is to keep the photographs for yourself. This is plunder. Another form of abuse is to establish the belief that the images do not exist, or to establish the opposite belief, that they do exist, and then to say: "but we are not going to let you see them." Or else to establish the belief that the archive is about the past, when archives are really about the present, always.*[27]

According to Azoulay, if we simply wait to be granted access to documents, we bestow upon those who have a monopoly over human history the power to manipulate information. It is even the case that archives about the past and the present history of individual citizens are used by tech companies who now have the power to do so and to control the data travelling through the cloud.

5. The Cloud's Digital Half-Light

As the journalist Inaki Gabilondo stated in an episode of his interview show *Cuando ya no esté: El mundo dentro de 25 años*, we "need a new vocabulary" to talk about connectivity. In that show, which has been on the air since 2006, Gabilondo interviews major national and international figures to discuss their understanding of what the world will be like in two or three decades. In the second season (2007) Gabilondo had a conversation with Parag Khanna, geostrategic advisor to the United States Armed Forces and leader of the World Economic Forum.[28] In their conversation they raised questions that lead us to rethink the world through a new terminological map that transcends political cartography and promotes a dialogue about connectivity understood as a new model for tracking changes in the nature of societies due to their interactions in different environments. Here Gabilondo argues for a new set of terms that we could use to create a broader understanding grounded on the political but reaching further.

During the interview Khanna defines connectivity and introduces the premise of a "connectography" based on a new worldwide organization of networks of connected cities. Khanna then outines three models of connectivity. The first model is that of a country that aims for cities to create greater economic value in order to drive the country forward. The second is the international model of connectivity, where several countries share their resources and thus go beyond the political map that has prevailed since the nineteenth century. The third is internet connectivity.

As Khanna explains, connectivity entails a supply chain infrastructure that traverses oceans and mountains (oil, gas, and transportation networks), but there is also another side: a monster that struggles against such connectivity and has been doing so for centuries, an infrastructure that has been built under exploitation and that has left a colonial legacy of borderlines, nationalisms, corrupt governments, and unemployment. That infrastructure is not different from the current one, which in fact perpetuates procedures inherited from the colonial legacy, with the sole difference that exploitation and slavery are now carried out at a massive scale. The infrastructures that power internet connectivity are based on a chain of processes that exploit natural resources and humans, from supplies onwards.

An art project by Kate Crawford and Vladan Joler reveals the workings of the infrastructure that underlies the creation of an Amazon Echo unit; titled *Anatomy of an AI System* (2018), the work is a diagram representing in scale the magnitudes of resources that go into one of these artificial intelligence devices (Fig. 1).

This map is not simply an illustration, but rather an image that depicts the entire chain of natural resources in relation to the expansion of big tech infrastructures and the social disparities that they have generated. The diagram shows the workflows that connect the mines from which minerals are extracted, manufacturing processes, hardware assembly lines in Chinese factories, and the informal laborers who clean up toxic waste dumpsites.

Crawford and Joler's work directs our attention to the genealogies of digital material discussed by theorists like Jussi Parikka, who has argued for an ecology of media. According to Parikka, our use of minerals to consume media content is determined by a specific set of policies, since "a range of European mining companies have had their own dubious part to play, including funding the war efforts in order to secure the extraction of the mineral."[29]

The war over resources mentioned by Parikka plays out over an infrastructure of new forms of slavery that, as Sergio Martínez has argued, make up the most significant form of contemporary "neocolonial" oppresion.[30] According to Martínez, hyperconnection entails a dubious dichotomy, since when we find ourselves in the virtual sphere we are in no way compelled to inquire into the physical materials that give life to the digital image. Nonetheless, in the material realm of the digital, a segment of the population is the victim of forced disappearance and mass murder as the result of a struggle for control over raw materials in the "era of the digital revolution."[31]

There is thus no way to argue that connectivity is a source of unity and benefits from a geographical point of view. The work *Farm* (2015) by the Dutch artist John Gerrard presents spectators with a twin simulation of a server farm in Oklahoma in order to visibilize the enormous amounts of energy consumed by these sites where data is physically stored.

Bearing in mind that 97% of the information that circulates on the Internet travels through submarine cables that cross the oceans and connect with these server farms,[32] the data stored in the latter can be regarded as structuring physical-digital pathways that include cloud communities.

Cloud communities are internet-based and difficult to map, since they arise out of data that shuttles across the globe at the speed of light.[33] These communities are creating new identities that cannot be drawn: although we can trace a map of the submarine cables, the latter only determine localized connections that cannot be used to track cloud communities (Fig. 2).

The work *Personal Photographs* by Eva and Franco Mattes (2012) examines this thin boundary between the physical and the digital by showing how a user who is connected to the cloud will fail to perceive the entire framework that allows them to access digital images through their connected devices (Fig. 3).

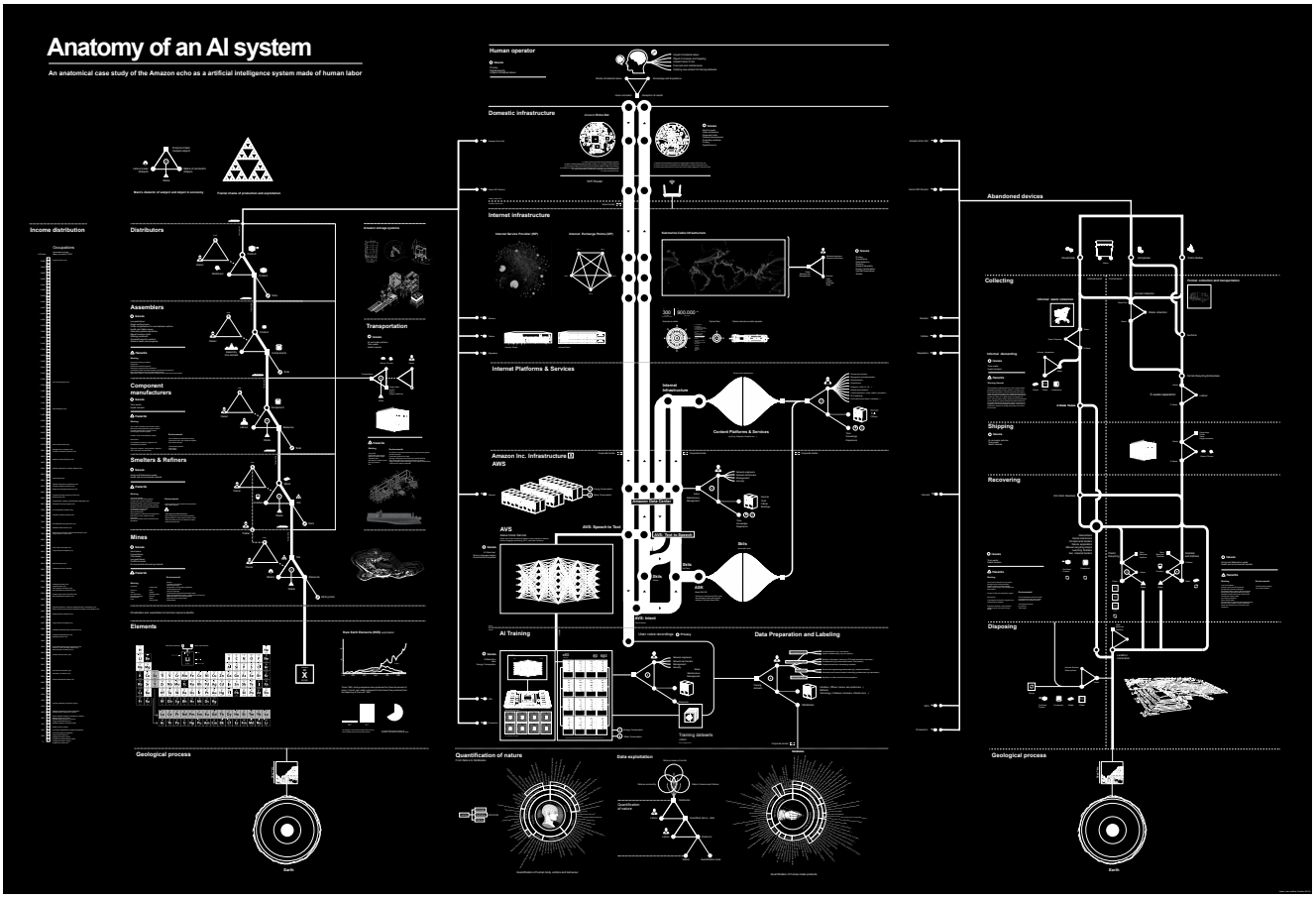

Figure 1. Kate Crawford and Vladan Joler, Anatomy of an AI System (2018).

In the installation spectators encounter a weave of cables that allow the images to travel through a space that condenses the physical matter of web environments.[34]

In fact, the so-called "cloud or cloud computing, with its nearly-celestial dimension or designation, beyond the server farms that are scattered all over the planet's surface, names an unquantifiable amount of knowledge that might seem to be placed under divine omnipotence and to be capable of informing and directing the course of the world in the best possible way."[35]

Participation in new contemporary forms of viewing images in a space that feels ethereal—as the word "cloud" suggests—allows for ways of handling and processing data that have led to the spread of image spam with its capacity for unpredictable motion.

For this reason, the cloud has become an ideal location for image spam. Now, its existence within a machine that allows us to see images of all sorts does not mean that image spam does not also inhabit the physical locations from which raw materials are extracted. In fact, the digital waste discussed by Steyerl encompasses all of the trash that is left behind by the supply chain required to create the virtual world, and these include the relationships between the humans who work extracting the material, the toxic waste that is produced, and the people who clean these dumpsites.

Remarkably, if we follow the whole length of the chain that begins with the physical labor of mineral extraction we can state that "the Internet has become the great electronic memory of the world" and "the biggest image archive ever created,"[36] and it is there that 80% of image spam is found. It is thus problematic to understand this electronic memory through a comparison with the rigorous method of a traditional archive, since the unique temporality of image spam always situates it in the present: "when we share photographs in social networks we are committing to the now, to our present situation" which is "different from the customary uses of analog photography condemned to function as evidence of the fleetingness of time."[37]

Daniel Rubinstein and Katrina Sluis argue along similar lines in their discussion of the Twitter platform and its inability to archive the content that is published in it, since "the real experience of using Twitter is one of continuous flow in which you can never go back and revisit something that was already spoken."[38]

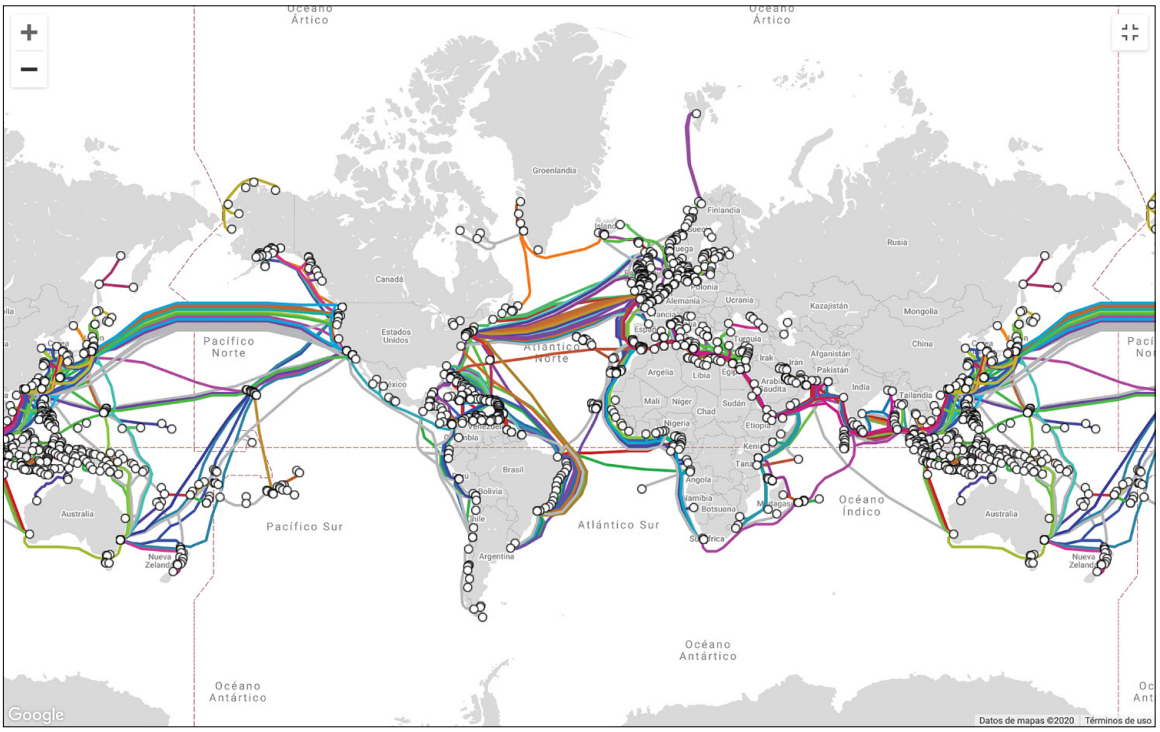

Figure 2. Screen capture. Submarine Cable Map y TeleGeography website.

Figure 3. Eva & Franco Mattes. Personal Photographs, September 2019. Cable tray, ethernet cables, digital images, Raspberry Pi single-board computers, micro SD cards, USB flash drives, custom software Dimensions variable Installed at Fotomuseum Winterthur Photo by Melania Dalle Grave and Piercarlo Quecchia for DSL Studio

The digital half-light thus brings together a range of events that begins with exploitation and concludes with the creation of spam subjects, running through a chain of digital waste that is crucial to defining the events of a culture that is based on the error and the accident, a trash culture, a media culture that represents itself as image spam.

6. Conclusions

Image spam is an error in itself, since it has a fleeting existence within a culture that is already defined as trash. I have argued in this essay that images are explicitly subjected to hierarchical distinctions when a set of images linked to relevant and important events in human history is selected as worthy of enduring in high definition. Allowing those in power exclusive access to these images has led to all other images being catalogued as poor images undeserving of an HD status—which would allow them to live longer—because those in power believe that their content has no place in the exclusive history of humanity.

The first error of image spam is to deny spam subjects participation in the course of history, and it amounts to an absence of visual representation, a referent, and a context. The second error is caused by the erasure of the archives of a collective memory, which deprives us of the right to be historical witnesses, or to be a witness who sees but who is not necessarily seen (as in the case of the WikiLeaks platform, where it is in fact convenient for the witness not to be seen).

The third error is produced by the erasure of events such as those that took place during the war in Afghanistan, which automatically transforms eyewitnesses into spam subjects. If hegemonic history has invented the erasure of facts, it has also created its own kind of waste: trash culture. Although the spam subject is not represented in hegemonic history, trash culture does represent it through a growing number of unanchored and floating images that, in social terms, correspond to a growing number of individuals who are deprived of rights, who are rendered invisible or even caused to disappear. These disappeared or absent people in fact coincide with the direct causes of the digital revolution. The exploitation of mines, the traffic of minerals, and all of the manufacturing processes that allow these infrastructures to continue working imply that the number of spam subjects will continue to grow as information companies gain further control over the chain of resources that they require to sustain themselves in the era of hyperconnection.

NOTES

The article is part of the investigation of the Master's Thesis "The latent desire of the spam image" in the Master's program in Art and Creation Research from the Complutense University, Madrid.

[1] Hito Steyerl, *The Wretched of the Screen* (Berlin: Sternberg, 2013), 161.

[2] Diego Matos Agudo and Pablo Rey García, "El *spam*: Una polémica genialidad." *Revista científica de la Facultad de Comunicación* 2 (2019): 170. Arpanet (Advanced Research Projects Agency Network) was created in 1969 by the U.S. Department of Defense to establish communication links with other government agencies. The network was originally a military experiment that achieved the first instance of communication between two computers in distant locations. See: "¿Te acuerdas? Hace casi 40 años que nació Arpanet, el padre de Internet," Rtve a la carta (video), 3 m 03 s, November 30, 2008, http://www.rtve.es/alacarta/videos/te-acuerdas/acuerdas-hace-casi-40-anos-nacio-arpanet-padre-internet/351858/.

[3] Matos and Rey, "El *spam*", 170.

[4] Jean Baudrillard, *El complot del arte, ilusión y desilusión estéticas* (Buenos Aires: Amorrortu, 2006), 32.

[5] SPAM first appeared in 1937 as the name for a canned food product manufactured by Hormel Foods, founded in 1891 in Austin, Minnesota. "SPAM," Wikipedia, February 5, 2020, https://es.wikipedia.org/w/index.php?title=Spam_(alimento)&oldid=126730771.

[6] Javier Cordero, "¿Cuál es el origen de la palabra SPAM?," *Javier Cordero* (website), February 5, 2020, https://www.javiercordero.com/origen-palabra-spam/.

[7] Hito Steyerl, *Duty Free Art* (London: Verso, 2017), 105.

[8] Steyerl, *Duty Free Art,* 105-106.

[9] I find a connection between the first use of spam in Arpanet in 1978 and the events from the 1980s described by Steyerl: "In the 1980s, the term spam was literally used as a type of invasion within MUD (multi-user dungeon) environments" by being used "as an inert material, capable of physically blocking out unwanted information." Steyerl then adds: "Nowadays, spam has become more of a commercial calculus. Bulk email messages with commercial or fraudulent intent are flooding data communications worldwide." Steyerl, *Duty Free Art*, 104.

[10] Juan Martín Prada, *El ver y las imágenes en el tiempo de Internet* (Madrid: Akal, 2018), 42.

[11] Steyerl, *The Wretched of the Screen*, 161.

[12] Steyerl, *The Wretched of the Screen*, 163.

[13] Steyerl, *Duty Free Art*, 102.

[14] Peter Krieger, "Búnker de imágenes." *Anales del Instituto de Investigaciones Estéticas UNAM* 270 (2000): 269-276._

[15] Krieger, "Bunker de imágenes," 269.

[16] Getty Images has published a small percentage of the images from this archive online.

[17] Rosa Menkman, *The Glitch Moment(um)* (Amsterdam: Institute of Network Cultures, 2011), 26.

[18] Menkman, *The Glitch Moment(um)*, 29.

[19] Paul Virilio, *The Original Accident* (Cambridge: Polity Press, 2007), 10.

[20] Space Imaging is a provider of very high resolution (VHR) global satellite images and related services for clients in Europe and North Africa. According to its website, it is the "only European satellite data provider to supply imagery at true 30 cm resolution and who own and operate its own multi-mission ground station for direct satellite tasking and local data downlink." See: https://www.euspaceimaging.com/about/.

[21] Vangelis Athanassopoulos, "Alfredo Jaar: Une autre version de l'invisible." *Art press* (2003): 32.

[22] I use the term "machine" here to refer to any technological device that allows users to see images of all sorts, spam or otherwise.

[23] Jacques Rancière, "Theater of Images," in *Alfredo Jaar: La Politique des images* (Lausanne: JRP/Ringier, 2008), 72.

[24] Prada, *El ver y las imágenes*, 122.

[25] Prada, *El ver y las imágenes*, 123.

[26] Jacques Rancière, "El teatro de imágenes," in *Alfredo Jaar: La política de las imágenes* (Santiago de Chile: Metales Pesados, 2008), 71.

[27] Mauricio Bernal, "Ariella Azoulay: 'Se puede saquear la vida de las personas a través de las imágenes,'" *El Periódico*, March 27, 2019, https://www.elperiodico.com/es/ocio-y-cultura/20190327/entrevista-teorica-fotografia-ariella-azoulay-se-puede-saquear-la-vida-de-las-personas-a-traves-de-las-imagenes-7377457.

[28] "Cuando ya no esté: Iñaki en Asia — Cartógrafo del futuro," YouTube video, 23 min 45 s, posted by #0, April 20, 2017, https://www.youtube.com/watch?v=1CHf2a2Sh-8&t=200s.

[29] Jussi Parikka, *Medianatures: The Materiality of Information Technology and Electronic Waste* (London: Open Humanities Press, 2011), 7.

[30] According to Martínez the new ways of exploiting resources in the twenty-first century can be understood as "neocolonial," since "the infrastructure of digitalization retains practices of exclusion, plunder, and violence endured by populations and entire territories throughout the globe." Sergio Martínez Luna, *Cultura visual: La pregunta por la imagen* (Vitoria-Gateiz: Sans Soleil, 2019), 228.

[31] Steyerl, *The Wretched of the Screen*, 175.

[32] Since 1989 the company TeleGeography has been mapping these cables in the context of their Submarine Cable Map project. See: https://www.submarinecablemap.com.

[33] Fiber optic is an extremely long and flexible filament made of glass. Its width is approximately twice that of a human hair. Laser light signals travel through it and are then deciphered at destination. The fibers are protected by a plastic coating and are wound into bundles that have the same width as a conventional cable.

[34] The work and the open source code that runs it can be accessed at the following links: http://0100101110101101.org/personal-photographs/ y https://github.com/huertanix/pi2pi.

[35] Éric Sadin, *La humanidad aumentada: La administración digital del mundo* (Buenos Aires: Caja Negra, 2017), 80.

[36] Marisa Goméz, "Internet como archivo visual y la estética del sueño: Vionnet y Solaas," *Interartive*, accessed on June 14, 2021, https://interartive.org/2011/02/internet-archivo-visual-vionnet-solaas.

[37] Prada, *El ver y las imágenes*, 37.

[38] Daniel Rubinstein and Katrina Sluis, "The Digital Image in Photographic Culture: Algorithmic Photography and the Crisis of Representation," in *The Photographic Image in Digital Culture*, edited by Martin Lister (Abingdon: Routledge, 2013), 30.

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