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The Visual Imaginary of Global Media

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ABSTRACT: Since the explosion of cartography in the European expansion of the 15th century, globalisation in its many variants has always depended on media, but it has also pictured and otherwise visualised the media of its planetary reach, and very often done so in imagery that picks at the gap between the persistence of the local and the deracination of the global enterprise. Through an overview of historical medals, logos, stamps, poems, paintings and engravings, the paper focuses on the visual imaginaries employed to mythologise and to make sense of the reach and power of global media, noting in particular the reduction of land and sea to blank canvases on which communication media superimpose their networks. The paper serves as a genealogy of internet cartography and infographics, attending to the problematic relations between text, numbers, diagrams and pictures and their displacement of environments and localities.

KEYWORDS: communications, graphics, stamps, emblem, logo, symbol, global, media, mediation, *terra nullius*

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The Visual Imaginary of Global Media

PREAMBLE The ecocritical approach to the contemporary media must be historical. The collision of natural and human history in the Anthropocene that Chakrabarty (2009) observes may imply that history is a process without a subject, to echo Althusser (1969: 121), but it does not mean that there is no history. It may be the case that at origin, or as foundation, there is no distinction between humans and their environments, but in the historical actuality, that difference is all too palpable. Among the most important recent interventions in ecocritique are historical works, for example those by Malm (2016), Milun (2011) and Moore (2015). Here I want to take up the challenge of one such historical analysis, Mirzoeff's 'Visualizing the Anthropocene' (2014), extending it from artworks to the work of emblems and other graphic and image media, specifically some used to promote or simply imagine global communication.

For ecocritique the gap between mediation and communication is fundamental to any understanding of what we can mean by 'environmental'. Out of the primal flux, where everything mediates everything else, where there are no objects but nodes that mediations flow through, there arose communication. Communication distinguishes sender from receiver, message from noise. It distinguishes itself from what it is not and excludes what does not fit its order. Those exclusions are what we call the environment: they are what environ, what surround the human order of communication. Humans distinguished themselves historically from their environments by communicating. The claim for global, even universal communication that emerged in the later 19th century required a special effort to distinguish itself from the globe and the universe it aspired to subsume into its ambit. Tracing something of the history of how our species has tried to imagine – to give an image of – its global media reveals something of the history of our evolving alienation from our own planet.

[INSERT FIG.1 <https://www.flickr.com/photos/itupictures/16620839656>

CAPTION: International Telecommunication Union commemorative medal, 1866. ITU Pictures.]

ONE Figure 1 is a photograph of the commemorative bronze medal struck by the Paris mint in 1866 to celebrate the first meeting, a year earlier, of what would become the International Telecommunication Union (ITU), the oldest international organisation in the world, now part of the UN system. The ITU lost a great deal of its significance when, during the first wave of neo-liberal governments in the 1980s, national telecom infrastructures were privatised, just

as the internet was about to explode as a mass medium. As an inter-governmental body, the ITU was wrong-footed when it came to dealing with non-governmental telecoms media (MacLean 2011). There sprang up an alternate, madly complex, improvised system of internet governance that persists to this day. The BRICS countries - Brazil, Russia, India, China and South Korea - dislike these arrangements and strongly support ITU (and governmental) control. Some aspects of internet and other media standards do fall under ITU rules. They are still a significant player, and may become much more so. This is one reason to appreciate the new media terrain's continuities with legacy media. In the same way the three minute pop song still conforms to the constraints of 78 rpm records, and streaming video still respects the program segment architecture dictated by advertising practices on terrestrial broadcast TV, so a serious proportion of the standards and technologies involved in digital media owe their familiar form to older practices.

A surprising number of them come from the late nineteenth and early twentieth centuries. The qwerty keyboard from the 1870s, scanned images from the 1920s, the landscape layout of the standard screen from the cinema around 1906, and from 19th century Boolean algebra, library catalogues and the global communications networks that kicked off the electronic revolution with what Tom Standage (1998) memorably described as the Victorian Internet, the telegraph. If we want to argue that digital media have revolutionised society (or are symptomatic of a revolution in society) then we need to understand where precisely they differ. Precisely because it is so hard to give ourselves a mental picture of the internet, a history of the visual imaginary of global communications can help understand how it was imagined in the era of its birth, how that imaginary influenced its childhood and adolescence, and how in its maturity it finds itself so estranged from the planet it tries to contain but which in the end contains it.

In the Paris medallion, then, the female figure representing the electric telegraph stands between two Bréguet telegraph terminals (the one on the left has been carefully earthed), surrounded by a motto that translates roughly as 'Signalled by hand, Voice encircles the globe'. As Marina Warner (1985) pointed out years ago, female figures constantly allegorise countries, virtues and technologies (Britannia, Justice, Rolls Royce's Spirit of Ecstasy). Photographs of the ITU's founding committee show a hirsutely patriarchal group of a certain age, who nonetheless elected to have themselves collectively depicted as a young woman *en déshabille*. Already some strange ambiguities percolate into the always unstable structure of

nineteenth century allegory, which always had a tendency to overflow its intended meanings. The personification of the telegraph (or perhaps of the Union) is winged, not at the heels like Mercury, but at the shoulder, like an angel, the messengers of God, whose speciality was to carry messages between incommensurable worlds. Angels are also without gender, unlike the spirit of the telegraph on the medallion. One might think her gendering serves then to unsettle the sociologically masculine corpus of men celebrated by the medal and the almost exclusively male body of engineers and bureaucrats they represented; and the genderless theology of communication they aspire to. Unless somehow the figure is not the telegraph but *Vox*, in Latin and the Romance languages a feminine noun; but then why would *Vox* appear simultaneously with prominent hands busy converting *Vox* into signs?

The design cleverly avoids making the telegraph lines look like a fence, but no fence is needed because the ground she steps up from is a featureless plain, a world without features, barring the telegraph lines. There is still ground: it is operationalised in the earthing of the electrical device; but otherwise it is the *tabula rasa* of a communicative regime that no longer needs it. *Vox*, if it is she, neatly poised, one foot aloft, one on the ground, connects earth and air, courier between visible and invisible worlds. Less poetic and more confusing is that she appears to be both sender and receiver. In the vocabulary developed by engineers about eighty years later, we would say she is neither of those, but either message or channel. If she is *Vox*, then she is a symbol for all messages, the telegraph being restricted until well into the 20th century to sending writing and mathematical symbols. If on the other hand she is the spirit of the telegraph, she is the channel. These however are not just different but contradictory aspects of communications. A channel is no passive carrier. The physical infrastructure is also a receiver, collecting signals not only from senders but from the electromagnetic and physical environment, and frequently from mechanical, electro-magnetic and quantum by-products of its own operation: the technological environment. Noise is the antagonist of message in Shannon and Weaver's (1949) mathematical theory of communication that grounds modern telecoms engineering. The channel is an actor in a dramatic narrative where the heroic engineer struggles to ensure that the message arrives undamaged at its destination, despite the vicissitudes of its traverse through a landscape barely tamed by the insertion of telegraph lines. The message, in this account, is entirely passive. The feminisation of *Vox*, or channel, is by no means an innocent act.

[INSERT FIG.2 <https://www.itu.int/en/history/ImagesITUlogo/2011-ITU-logo-official.png>

CAPTION: ITU logo 2002. ITU History Portal.

TWO But it can be simplified. The 2002 adopted version of the ITU logo (Figure 2) colourises and adds a highlight to an older monochrome design with a slightly less prominent lightning flash. The earlier version is described on the ITU History site thus:

The logo was intended to symbolize the speed of communications, equal to that of lightening, and to illustrate the fact that ITU promotes the development of the world-wide network through its regulation, coordination, planning and standardization activities (ITU 2019).

and the more recent colour version is explained as follows:

The globe represents the universality of ITU. The lines of the globe represent the telecommunication networks. The lightning bolt represents electricity, which makes it possible to transmit telecommunication signals (ITU 2019).

giving us two meanings of the flash – speed and electricity – and two for the grid of lines – standards and networks. Mapping these two interpretations over each other is easy enough: the speed of electricity is effectively the speed of light, and networks can only work if they are regulated, coordinated and planned. But there are differences between the physical properties – electricity and infrastructure – and abstract ones – speed and regulation. Leaving aside the two hundred year old debate in the theory of communications over the balance between anarchy (the free hand of the market) and control, two features are worth observing. There is no longer a human figure, and the world depicted is blank, its materiality dissolved, and measured by what to an untrained eye look like lines of longitude and latitude.

The disappearance of the world from communication was prepared for in the visual imaginary of the 1886 medallion, but the disappearance of the human is new, even prophetic.. Since 2011 when the new colour logo was adopted, the proportion of telecommunication taken up by human-to-human messages has diminished rapidly: a majority is now machine-to-machine, dominated by computer-based algorithmic trading in the finance sector, surveillance systems, the internet of things, health data, the internal processing of social media data capture and other data platforms among other exchanges that require no human observer. Perhaps without their thinking of it (least of all in the early versions of this logo from the 1940s), the dehumanising of the pictorial imaginary of global communication matches this new trajectory. At the same time it confirms the gradual disappearance of the postman from the history of the mail, a token of the cultural immaterialisation of delivery systems that would allow later commentators to claim, wrongly, that communicative labour is essentially immaterial.

The grid organising the planet is intriguing in its own right, an older system of organisation. In the same way a calendar sets out a grid of days ahead whose contents we do not know, but whose existence in a numbered chronology we are assured of; so the cartographic grid assures us that, whatever has happened, is happening or will happen in any cell, the cell itself will always give us a map reference to locate it. The designers have been either utopian or disingenuous in not giving any indications of which way this Earth is oriented: because they are egalitarian, or because they wish to appear so. So the Greenwich meridian is invisible here, and with it the regulation of time by longitude. The abstract network overwritten on the surface of the globe denies its own temporality, claiming global synchrony in the same moment that it erases the geographical, geopolitical and geological actuality of its territory. The absence of clear markers of time might be read as a democratic impulse: a utopian aspiration for a world without time zones might also be a world without combined and uneven development. But since that world is a world without a human face or figure, it appears instead as the evidence of an assassination: communication has eradicated time and place from the face of the planet. The anthropocentric utopianism of the ITU globe paradoxically loses its *anthropoi*. As the Fields argue, multiracial is still racial (Fields and Fields 2012: 147): the apparent supersession of anthropocentrism in this logo is still a humanism.

[INSERT FIG.3

https://en.wikipedia.org/wiki/Universal_Postal_Union#/media/File:Universal_Postal_Union_Logo.png

CAPTION: Logo of the Universal Postal Union. Wikimedia Commons.]

THREE: A democratic aspiration seems to inspire the logo of the equivalent body for cooperation in international mail: the ambitiously named Universal Postal Union (Figure 3), like the ITU now a UN organisation, founded, slightly surprisingly, a decade after the ITU in 1874, largely to handle the problem of sharing out the revenue from international postage. Surrounded by laurels, perhaps evoking the muse of poetry, five figures pass the parcel around the world, all ungendered barring a Native American figure. I haven't been able to track this logo's history or even a definitive version (the laurels appear and disappear in various iterations) but the maintenance of the human-to-human chain as a defining characteristic suggests its importance to the idea, if not the actuality, of the mails. President Trump pulled the USA out of the Universal Union in 2018 as part of his trade war with China, claiming, not without reason, that the system favoured postal delivery of internet orders from China over US

competitors. Taiwan was excluded from the Union when the People's Republic was recognised in 1972. This is still an inter-*national* body, with all the frictions that produces. The *fraternité* of the pass-the-parcel logo is certainly an idealised version of reality, but no single ideological reading explains the visual language of the UPU logo. Still less can a single reading, even an ecocritical one, give a unified account of the attempts to visualise global communications. It does bear observing that the globe in the UPU logo is blank: again suggesting indifference to distance and time, but also implying the inconsequentiality of terrain and oceans to the passage of communication. Its world is exclusively human, and the humans float free of the ground, disconnected from the planetary ecology, and equally from the physical infrastructure of sorting offices, transport systems and the financial arrangements the UPU has itself put in place. As an image of pure cooperation, the logo aspires to the communal good; but the good it aspires to is deracinated and gravityless. Like the ITU's, the UPU's logo is internally contradictory, and in its emphasis on the human, the UPU contradicts the technical automation of the ITU's vision. There has been, for a hundred and fifty years or so, a consistent work of visualising this phenomenon that resists visualisation.

FOUR: These lines in the second stanza of Guillaume Apollinaire's *Le Pont Mirabeau*, from the 1913 collection *Alcools*, the same year as his *les Peintres Cubistes*, seem to capture an important element of this attempt to visualise the invisible.

SOUS

Le pont de nos bras passe
Des éternels regards l'onde si lasse

[*under / the bridge of our arms passes / the lazy wave of eternal looks*]

The Seine flowing under the bridge forms the central motif of the poem, juxtaposition of the flow of love and permanence or at least slowness of life, and there's little doubt Apollinaire intended literal waves on the water's surface. Equally intriguing is the possibility that, as in *Zone*, perhaps the most famous poem in the collection, with its relentlessly modern aircraft hangars and automobiles, the city is absolutely of 1912, the year of the poem's composition, and that the waves are also *ondes radiophoniques*, radio waves, so that not the everlasting gazes of the lovers but the lazy wave that carries them, between the lovers or away from them, is the core here, the medium not the message.

Hearing Apollinaire's voice, recorded the year of *Alcool's* publication, is for me at least a

similar experience¹. I hear first the crackle, then the unfamiliar hundred-year-old accent, and hear syllables first, then gradually words, but most of all the tenor of the voice, or what Barthes (1977) called its grain, here however indistinguishable from the grain of the recording apparatus, and the re-recording from, probably, a wax cylinder, probably via a vinyl intermediary, into the MP3 digital format that treats the voice and the surface noise equally as sonic information. It is as much a recording from 1912 as it is a record of Apollinaire, and more so than it is a recording of this poem. The channel, the noise of the channel, is not in the end distinguishable from the contingency of the reading. We have, no doubt, a complex of inauthenticities: the voice that reads rather than speaks, the horn that listens in place of a listener, and so on to the moment of playback here in the specific acoustics of a room or of headphones, which separate the sound recording from the rest of the sonic environment. What remains in every playback is the undeniable presence of these sounds, more particularly these sound waves *plus* the perceptual-psychological experience we have of hearing them. The wave form, and noise, remain central to digital transmission, which employs a variety of tools to produce square waves (corresponding to zeros and ones) so as to control otherwise continuous waves, which, because they cannot be described in the whole or counting numbers (they are described by 'real' numbers, infinitessimals, rather than integers), appear as noise to a digital device. Analogue sound recording is continuous where digital recording is discrete. The triumph of discrete, integer-bound form is a hallmark of the digital, and one of the challenges of imaging or imagining it.

That it is Apollinaire's poem about invisible waves that he chose to read for the phonograph and that comes to us in invisible waves of sound through the invisible Fourier transform of continuous to square waves is in itself, even without his words, a meditation on and mediation of the fundamental transformation that occurs in poetry between the written and the spoken word. How do we know which comes first? Does a poem begin with writing implements or a mouthful of air? Prosody, the poet's toolbox of accent and rhythm, is itself a wave-form, and part of its delight emerges from the oscillation between two technological platforms, writing and speaking. In our case there is to the oscillation between presence to our perception and absence of the recorded origin. This is not a phone call. It embraces, erases and re-emphasises the time between then and now, omits the hundred years of love and architecture Apollinaire would not live to experience, but whose invisible waves he celebrated in his verse and his recording of it. Invisibility is then not a cultural impossibility, but it demands a more subtle

¹An MP3 of the recording is available at http://www.writing.upenn.edu/library/Apollinaire_Mirabeau.html

approach than allegory.

INSERT FIG.5 https://commons.wikimedia.org/wiki/File:Gallery_of_the_Louvre_1831-33_Samuel_Morse.jpg

CAPTION: Samuel Morse, *Gallery of the Louvre*, 1831-1833. Terra Foundation for American Art, Daniel J. Terra Collection, Wikimedia Commons

FIVE Samuel Morse, whose Morse code was the first of these binary communication systems, began life as a painter. In a delightful essay, Jennifer L Roberts (2012) traces a line from Morse's academic painting seeking evidence that the telegraph might have had some impact on the visual culture of the nineteenth century. Here is Morse's *Gallery of the Louvre* from the 1830s (Figure 5). You could try to make a case that the discrete frames are pre-echoes of the discrete dots and dashes of his more famous Code, but this genre of gallery views stretches back to the Rococo, echoed in the little erotic drama playing out in the centre foreground, so there is little to support the argument. Instead we have a virtuoso display of his capacity for multiple genres, and for the dramatic perspectival effect in the canvas depicted on the left hand side.

[INSERT FIG.6

https://upload.wikimedia.org/wikipedia/commons/0/0f/American_Progress_%281872%29_by_John_Gast.jpg

CAPTION: John Gast, *American Progress*, 1871. Library of Congress, Wikimedia Commons]

SIX It would appear natural to look towards the United States, especially to the heroic period of westward expansion, for some visual account of the telegraph's impact. John Gast's naive, but all the more historically revealing *American Progress* of 1872 shows a sturdy Aryan Columbia dragging the railroad and the telegraph across *terra nullius*. It is as close to indefensible as an image can come. It is truly propagandistic, devoted to erasing the historical origins of the progress it lays claim to. Across the Old World, steam trains, needing the same water, followed routes laid down from oasis to oasis two to three thousand years before along the Silk Road. The telegraph followed the railway and the internet followed the telegraph. The transoceanic cables carrying intercontinental data traffic follow the navigation routes established by Breton fisher folk and Vikings in the North Atlantic, and the Polynesian migrations in the Pacific, making the most of trade winds and seasonal currents. The saving grace of the picture's joy in the genocide of the First Nations is that the allegory is so clumsy that it shows the consequence of the telegraph, steam and the prospectors heading West to

drive its inhabitants out and devastate the land in search of gold. There has never been an empty globe. Gast's picture of *terra nullius* exposes the devastation required to produce the *tabula rasa* of an empty grid which erases all that existed before its imposition (cf Milun 2011): truly Borges' map the same size as the territory, that obliterates the lives it covers over.

[INSERT FIG.7 <http://www.the-athenaeum.org/art/full.php?ID=51542>

CAPTION: Asher B Durand, *Progress (The Advance of Civilization)*, 1853. Tuscaloosa Museum of Art]

SEVEN Roberts points towards another landscape, much the same in theme but more morally uncewrtain, by Asher B Durand, an associate of the Hudson River School. This one, called *Progress*, from 1853, shows a band of Native Americans in the gloom of the woods to the left watching the growth of a city, trade and westward expansion, symbolised by the telegraph poles at lower right. This verges on the allegorical, and invites a wholly different viewing today to that we can infer from contemporary accounts of this painting: the characteristic settler colonist's regret for the cultures they eradicated in the mass genocides of the Americas and Australia, the Anthropocene foreshadowed exactly where Durand centres his account of progress as the rising sun, greeted with smoke and steam that within a century would transform the clear air into a place of anxiety, even dread (Mirzoeff 2014; Sloterdijk 2009).

It is not these pictures of telegraphs, or even photos and movies showing the infrastructure and the lives of its agents, like DW Griffiths' *Lonedale Operator* of 1906, that interest Roberts, but the formal properties of engraving such as this *Ariadne* that Durand cut between 1831 and 1835, having bought John Vanderlyn's oil painting, on which it was based, for a not inconsiderable sum of six hundred dollars in order to reproduce it.

[INSERT FIG.8 <https://www.metmuseum.org/art/collection/search/394535>

CAPTION: Asher B Durand, *Ariadne*, 1834, engraving, fifth state. Metropolitan Museum of Art.]

EIGHT Roberts is especially fascinated by

Ariadne's body, which dissolves into the pulsings of the abstract notational code of line engraving: arcs, dots, dashes, and lozenges, all tracking along the independent linear paths of the burin. Every fleshy swell and hollow is summoned from slight variations in the pressure and direction of this grid or net of line. As viewers we might look through Durand's marks to the narrative image they conjure, but we might just as easily be trapped, losing ourselves in the meandering filigree, trying to trace or reconstruct the

logic and order of the figure's mysterious construction.

Roberts traces an elegant interplay between Morse's code, Durand's work with his brother on steel-engraved bank notes and Ariadne's part in the myth of the labyrinth. I would like to add a detail: in the background of the engraving, Theseus is busy embarking for his homeward journey. Readers may recall that when he arrived home, Theseus had an arrangement with his father that the crew would fly a black sail if he had survived and a white one if he had not, but in his excitement, Theseus forgot this binary signal, and his father, in dismay, threw himself off a parapet to his death. In the fine detail of the engraving is an atlas of the engraver's craft: loops, patterns, lines. But in the darkest passages, where the detail of tree and leaf gives way to the murk of the forest, the marks become random. These dark zones had to be pitted all over to get the ink to stick without bubbles, either by rapid darts of the burin or using a rocker covered in sand to cut through the protective wax. Roberts is entirely right to foreground the labyrinthine patterning of dots and dashes; ecocritique only needs to add that the natural world, from which the human matters of disloyalty and failed communication lift themselves, is not blank, as in the UPU logo, or mapped, as in the ITU's, but chaotic, noisy.

[INSERT FIG.9 https://2.bp.blogspot.com/-cDPP4GAxl0/WepHK1PoaxI/AAAAAAAAjvE/M5uLmsZC_uAnFceqo7lFOziUscXAH5KRgCLcBGAs/s1600/BelCongoC6-perf.jpg

CAPTION: Belgian Congo 30 franc airmail stamp. Image by 'Big Blue' Jim Jackson and 'Deep Blue' William Steiner]

NINE This is probably nowhere more obvious than in another use of engraving concerned, like the Durand brothers' banknotes, to obviate forgery: postage stamps. The visual imagery of telegraphy and the mails as genealogical ancestors of contemporary network media matters because the history of letters is impoverished if it does not include a history of their delivery, and because the internet is fundamentally a distribution medium, and transmission therefore is probably more significant in digital culture even than the impact of electronic forms on production techniques we just saw in the Durand *Ariadne*. It is unnecessary, in this context, to go over the paradigmatic colonial iconography of this 1931 airmail stamp from the Belgian Congo (Figure 9): the symbol of modernity par excellence, the biplane, overflying a column of benighted Congolese bearers and their gang boss, picked out in white, as they file into the distance carrying their burdens on their heads in a suitably exotic scene of obedient orientalism. The earthbound bearers are picked out in black; the plane shares its burgundy colour with the official components of the frame: the words inscribing the colonial relation in

languages unfamiliar to their African subjects, who in any case were disciplined away from literacy, pictured on an official sigil of their oppression that they will never use themselves. The legacy of binary codes lies in this distinction between picture and text, which the aircraft bridges as the angelic messenger between worlds; while a third component, the price in francs, is once more in black, giving away the secret of the whole composition: that the lives of the colonised are counted in cash, while those of the colonisers are told in words and planes: technologies of communication.

Counter readings are also possible. The column of bearers, the closest of whom are standing rather than walking, form a kind of resistance to the techno-rationalist modernity that defines them by exclusion. Alternatively, we could emphasise that their column shows a collaborative and sociable mode of communication which, unlike the lonely escape of the plane from the ground, engages them in the reality of the grassland they traverse, with the background tree not shrugging off the ground but linking it to heaven. The shading lifting the lettering from the surface, like the flight of the plane, separates it from the scene: the bearers are in and of the place. The standing poses show how they are not governed by the regulated schedule of flying. In this reading the bearers are the free ones, and the pilot becomes the slave.

[INSERT FIG.10

https://www.thecinetourist.net/uploads/7/0/9/9/7099213/9580172_orig.png

CAPTION: *Night Flight*, Clarence Brown, 1933. John Barrymore as Riviere.]

TEN This was the theme of *Night Flight*, Clarence Brown's star-studded adaptation of Antoine de Saint-Exupéry's 1931 novel *Vol de Nuit* based on his experiences a few years earlier as director of Aeropostale, a trans-Andean airmail company based in Argentina. The central character, Rivière, is the embodiment of an existential commitment to duty, and to the achievement of freedom and greatness through submission to the demands of a goal beyond the self. This emptying of the will in order to achieve the goals of the schedule is more than sacrificial rite. The messenger who flies between worlds belongs to neither of them. In its own, somewhat different way to the ITU's 2002 logo, *Night Flight* foretells another departure from the centrality of the human.

The secret honour of the network manager is grounded in a refusal of chaos. 'Rivière felt he was wrenching something from blind fate, he was reducing the area of uncertainty' (de Saint-Exupéry 1971:113); "What we ask is not to see acts and objects abruptly lose their meaning.

The void surrounding us then suddenly yawns on every side” (ibid:166). Even with its challenge to the absolute value of humans and human life, *Night Flight* stands for order as the instrument of becoming human, a project that is only achieved by individual acts of self-subordination to a collective task, even the absurd one of delivering postcards, as one of the characters in Brown's film complains. A humanity only achievable by submission to an inhuman network is not paradoxical, or merely ideological: it too can articulate a utopian aspiration, as indeed it did for Gramsci (1971: 302–3). It remains as difficult today as it was around the time of his disappearance on a reconnaissance flight, to say whether Saint-Exupéry was a Free French patriot or a fellow traveller of Vichy. The pressure of accusations drove him to drink and probably to his final crash. The system had rejected its servant. Or perhaps the angelic flier between worlds of the Congolese stamp became suicidal because of the instrumentalisation of flight in wartime, when his personal liberty becomes the vehicle of terror, his escape an immunity that not only extracts him from community, but makes him its enemy. Saint-Exupéry could not, it seems correct to say, bear dishonour, whether aimed at himself or at aviation, in which he had found a justification, as absurd as Camus' Sisyphus but nonetheless satisfying the need for faith. Such a form of absurd honour beyond the self informs the secret ethics of the hacker, and traverses the visual discourse of global networks with its conflicted vision of escape and service.

* * *

A fuller survey would require a book to cover the later 19th and early 20th century's attempts to picture or otherwise imagine communication networks, from Firth's enormously successful oil painting *The Railway Station* showing the first arrest assisted by the telegraph, and *Dracula*, Bram Stoker's novel that Kittler reads as a transition from epistolary novel to telegraphic, telephonic and typewritten text, via Kafka's 1913 letter to Bauer proposing a telephone answering service and Sonia Delaunay's delirious illustration of Balise Cendrars' *La prose du Transsibérien* to the eroticisation of communication networks extending as late as Makavejev's *Ljubavni slučaj ili tragedija službenice P.T.T. (The Switchboard Operator, 1967)* and Menzel's *Ostře sledované vlaky (Closely Observed Trains, 1966)*. The same reasons of space demand leaping over the rich history of telephony in film and popular music. Even more reluctantly, we bypass the science fiction of imaginary media in order to come to the crux: creating visual representations of digital media. I propose that this project has resulted in four modes of imaging which not only draw on the iconography and thematics of the historical

legacy sketched here, but replicate its internal and mutual contradictions in new ways.

The first is photography. During the first decade of the present century, scholars over-emphasised the difference between analog and digital image capture, believing that there was more difference than there is in the technical arrangements. The significant difference between analog and digital images lies not in the arithmetic enumeration of digital picture elements but in the difference between random scatter of silver halides on traditional negatives and their strict adherence to a grid in the digital. In itself, this might mark only a formal difference of the kind Rosalind Krauss (1979) argues when she identifies the grid as a key visual marker of modernity. More significant is that opening the shutter of any camera exposes the whole plate simultaneously, but draining the accumulated charge into a file introduces a temporal element to digital still photos that traditional negatives do not have. Every digital display is organised on the scanned grid, even 'still' images; and this temporality, in which the image is never complete across the field of vision, but always fading, always coming into being, has significant ramifications for the sub-perceptual structuring of vision, and for the ontology of the photographic image. Nonetheless, digital images (and in many instances, as with the MP3 version of the Apollinaire audio file, digital mediations of analog images) are still capable of conveying the authenticity of witnessing.

[INSERT FIG.11 https://d2drhpw56bvoc4.cloudfront.net/wp-content/uploads/2014/04/04151743/uni119178_zambia.jpg

CAPTION: UNICEF health worker volunteer in Zambia's Southern Province using SMS technology known as Remind MI (Remind Mother and Infant) with clients of the rural health centre. 2011. UNICEF.]

ELEVEN A genre that catches the difficulty of picturing global networks are the kind of photographs associated with Information and Communications Technology for Development or ICT4D. This UNICEF shot of a health worker in Zambia in 2011 using an SMS service designed to help mothers of newborn babies (Rutstein 2014) belongs to a genre of development photography whose audience is twofold: development professionals and funders. Given the long history of technological fixes failing to help development (Wade 2002), and given the increasingly vocal post-development perspectives within aid organisations and the UN (Sachs 1992), photography has the benefit of describing successful fieldwork in a unique instance. For local workers, the albino child pictured presents a special and difficult case, but the village setting, the laundry drying and the neat fields in the distance all speak to a

success story premised on a small detail of the shot, the mobile phone, and all that we cannot see, the cellnet masts and the invisible EM spectrum. The problem of this kind of photo is what otherwise gives it power: its uniqueness. Instead it tries to imply a certain universality through the application of global standards, demanding conformity to those standards through a paradoxical denial of the local that the photograph otherwise captures, in order to prove the value of aid as a way to secure a global order of communication. Since aid agencies must be in the business of persuading, they need more than anecdotal evidence.

[INSERT FIG.12 <https://www.submarinecablemap.com/>

CAPTION: Internet Submarine cable map, 2019. Telegeography.]

TWELVE. The first recourse will always be to maps, here a combined geographical map of the world with a topographic map of undersea fibre optic cables. The long narrative of cartography's involvement in imperialism now embraces its part in globalisation (Thrower 1996). This 2019 map abandons its finely detailed demarcation of political borders on land in favour of bold and largely rectilinear accounts of maritime territory. Once out of territorial waters, the open oceans are in a certain legal sense, with Antarctica and Outer Space one of the three last great commons. All nations have an equal right to the sea, and equal obligations. Unfortunately Hardin's 'tragedy of the commons' (1968) – which, contra Hardin, occurs only under capitalism, not as a characteristic of human nature – applies here. 325 million kilometers of fibre were laid last year (Finch and Mack 2019) , much of it replacing older installations no longer fit for the latest high-speed, high-volume traffic and left where it lies. No-one knows the chemistry of decaying optical fibre and its plastic coating in the deep ocean. The lack of precision in mapping where it lies is part of a global disdain for the environmental consequences of network communications.

[INSERT FIG.12 <http://www.martingrandjean.ch/wp-content/uploads/2016/05/airports-map-small.png>

CAPTION: Air traffic network diagram, 2016. Martin Grandjean with data from OpenFlights.org]

THIRTEEN Keeping with the aviation theme, here is a data visualisation of the air traffic network. Panofsky (1991) borrowed Ernst Cassirer's term 'symbolic form' (Cassirer 1953-7) to claim that perspective was a visual syntax of sufficient complexity to allow an effectively infinite number of visual statements to be made, in every genre from scientific illustration to oil painting. In the 1970s, apparatus theorists in cinema studies argued that this syntax had been built into the design of lenses, and through them, into the whole system of photographic

and cinematic capture, replication and projection. It might well be possible to argue that data visualisation is a new symbolic form. Its most recognisable tropes, notably the horizontal time or t axis and bar and pie charts, appeared at the end of the eighteenth century. Underpinning it is the grid which also spreads into the characteristic media of domination of the 21st century: spreadsheets, databases and geographic information systems. Martin Grandjean, who designed this transportation clusters visualisation, includes in his original blog post (Grandjean 2016) a motion graphic that transforms between data-loaded and map-oriented versions of the information gathered from OpenFlights.org data. Integrating cartographic and infographic data, and in this instance using a force-directed algorithm to weight and orient the lines, Grandjean constructs his graphic in three dimensions (hence the position of the Pacific Islands, as if seen through a transparent planet). Data visualisation is an amazingly rich visual language, scarcely two hundred years old. In the static version of the network diagram, it spatialises time, a characteristic not of the classical modernity of progress myths but in what might appear increasingly like the viewpoint of finance, for whom past transactions are usable data and future transactions are the site of present profit through futures trading and the derivatives market. In this fiscal sense, data visualisation is always speculative, generated as often to simulate future scenarios as present situations, but without the subjunctive capacity of photographs to hint at other possible conjunctures off frame or in the past or future of the shot. Everything in the Grandjean image is determined by external sources: to that extent it acts just like a photograph, gathering information from the world, recording and re-presenting it. Nothing from the data source is omitted, no matter how aberrant. Yet the world below the lines marking flights is plunged in darkness, nullified, transparent to a perception that is beyond human, but also we must presume beyond nature, beyond environment, for whom the physical world is again abandoned by the purity of communication.

The subjectivity that data visualisations produce falls along a spectrum from the ideal, collaborative subject Science – which knows every specialism and judges the values of individual scientific actions – and the perspective of an entirely non-human consciousness. Man replaced God, Science replaced Man, and databases are now replacing science with machine-learning, artificial intelligence and scales, speeds and processes of pattern-recognition and hypothesis formation way beyond human capacities. Data is for machines. Data visualisations allow humans to get some inkling of what a machine 'sees' as it contemplates the data it contains.

[INSERT FIG.14 (supplied by author)]

CAPTION: Results of a Google Image search for 'Nuremberg', 17 June 2018]

FOURTEEN The fourth and final mode of picturing is harder to see, being entirely machinic, but we can intuit its existence by doing a simple image search, here the results for a picture search for 'Nuremberg'. Google's database of images is probably the world's largest. The vast majority of the images collected in this screen grab are undoubtedly made by humans, but it is worth recalling how many similar pictures are produced by CCTV systems, how much of the database is 'read' not by human users but by the Google algorithms, and what a small part of the internet is taken up with human-to-human communications. We see here the result of my search, my search history, the popularity scores of the images and the sites they come from, which derives in large part from other searches, and from the number of links leading to each site and image, plus other factors like the location data from my computer. If you search the same terms you will not get the same results, and if I search again, nor will I. This is because we are looking at an epiphenomenon of an invisible architecture, and one that is not static. Early databases were hierarchical, like a library catalogue, with new categories inserted as sub-categories of the major terms. That has not been the case in database design since at least the 1990s (Munster 2013). Relational databases have dynamic topologies because what they value most is not the item of data but the relations between data (and a search is also a piece of data about new relations being formed between existing data and previous relations).

An IBM Marketing report in 2017 suggested that '90 percent of the data in the world today has been created in the last two years alone'. Storing it all demands energy, organisation and above all else compression. An image search calls up compressed sets of compressed images. Compression and decompression is integral to contemporary communications: conducted in real time, and founded on very similar algorithms to the force-directed vectors of the Grandjean airline graphic. Not all information is ever present in a display and vice versa, all information is never present; but it exists as a recuperable capability. I cannot use facial recognition and GPS data, or track users through cookies and pixels, to assemble the images of Nuremberg into a profitable data mosaic, but Google's algorithms can. Google, we need to recognise, is what cyborgs actually look like – not humans with bio implants, but vast computer networks with human implants: us. Even more than data visualisations, these interfaces with vast corporate databases place us at that threshold between order and the void, that Saint-Exupéry's *Rivière* so feared. But where the hero of *Vol de nuit* fought a lonely, existential battle to become human, the subject of a Google search is only very partially

composed of human users and in far greater degree of an inhuman network of computers that remake their viewers in the position of Empire, Science, and the Corporation. The composite image of Nuremberg shown here as a mosaic is a sketch of the total image of Nuremberg that Google, as corporate subject, can splice together from the metadata attached to the individual pictures. That total image, complete with date-stamps, increasingly composites a global picture that substitutes for the world its exploitable and unanchored data-image. For Google-as-subject, the world, including the donors who so readily supply images and relations, is entirely *terra nullius* open to endless exploitation. The logic apparent in the historical imaginaries of global communication traced here is that the world disappears as communication secures its purity. As ecocritics, we know that this is idiotic, with the etymological weight of the private self it had in ancient Greek. Yet this is not only the image of communication but its actuality, a picture that has become performative, the real abstraction on which it is our task to build a communicative universe that no longer requires genocide and ecocide in order to secure its purity.

The individual photo - even in an era when more are made by more people and more widely distributed than at any time in history - is lost in the crowd, not so much by sheer numbers as by the fact that they have already become the property of databases that know them, and assemble them together, in ways we can no longer comprehend. One of the great challenges of our time, as it has been over the hundred and fifty-odd years sketched in this article, is to create a way of imagining the forces of global communications which is not already in hock to those forces. The media of domination are in many instances easily assembled into complex but unified instruments like real-time geographical information systems, the congruences between maps and visualisations being relatively easy to manage. It is far harder to find examples bridging the differences between photography and database presentations. We have need of a new angelic messenger between these incompatible image worlds. Three possibilities: within each world, there are internal contradictions to exploit; there are contradictions between the four regimes that allow unexpected new imaginations of our network condition; and finally that we require an aesthetic politics for an age that is so broadly and thoroughly mediated. We cannot go back, so we have to try to build an ecocritical program for rethinking global communication. Like Apollinaire's lovers, we have to recognise that we are traversed and permeated by natural and technological waves. We must seize on the non-human capacities of new scientific instruments, and expand from Google's proprietary encyclopedia towards a commons which includes the non-human inhabitants of

this world. We need to recognise too that it is too late to stuff our metals and plastics back into the ground, and that they constitute the legacy of history which, though it weighs us down and restricts our choices, is nonetheless the ancestral condition for making history now. We have to repossess the collective work of thinking that Science once stood for. That I take to be the task for the *Journal of Environmental Media*.

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ANNOTATIONS FOR REWRITE

The map in the shot for Night Flight: the lights that trace the flight

ITU 2002 logo: simultaneously dematerialises communication and erases its infrastructure
(still visible in the 1866 medallion)

Speculative images: As speculations, they increase the distance between what is
communicated and the technological and natural environments they depend on but also
deny

First given as . . . dedicate to climate strike school students