The Art of Paolo Cirio: Exposing New Myths of Big Data Structures

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Abstract: This article examines the work of Internet activist and artist Paolo Cirio, whose practice intersects with matters of copyright, privacy, transparency, and corporate finance. His project *Loophole for All*, for example, exposes the practice of tax evasion in the Cayman Islands by counterfeiting Certificate of Incorporation documents. An important aspect of Cirio's work is how he names himself in the process. Placed within our contemporary 'data turn', his work is framed critically in this article in terms of a 'new structuralist' account of culture and society. The article attends to the view that power increasingly comes through the algorithm, but argues we risk reifying so-called generative rules, which may simply be algorithms out of sight. Cirio's art practice helps focus on what it means to *make* a critique of contemporary and ubiquitous algorithm structures. As part of which, the article considers how 'anonymity' underlines subversive art practices of the twentieth century and contemporary protest groups, but which arguably undermines attempts to affect change.

Keywords: Anonymity, Art Practice, Big Data, Paolo Cirio, Structuralism

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This article examines the work of Internet activist and artist Paolo Cirio, whose practice intersects with matters of copyright, privacy, transparency, and corporate finance. His web-based project *Loophole for All*, for example, revealed the practice of tax evasion in the Cayman Islands by counterfeiting and selling Certificate of Incorporation documents. An important aspect of Cirio's work is how he *exposes* data systems and crucially how he names (and implicates) himself and other users in the process. Cirio is not an anonymous hacker, but a self-declared curator of data. Placed within our contemporary 'data turn', his work is framed here in terms of a 'new structuralist' account of culture and society. In doing so, the article attends to the view that power increasingly comes through the algorithm (Lash, 2007: 71), but argues we may risk reifying so-called generative rules, which may simply be algorithms out of sight. Instead, from a structural and informational point of view we can look to ways of accessing and opening-up hidden architectures. Focusing on the work of an artist such as Cirio can be seen to take up Beer's (2009: 999) suggestion to focus both on those working with and designing applications, and on the applications themselves as material entities; as well considering those who engage at the everyday level. Furthermore, an underlying account is how 'anonymity' underlines subversive art practices of the twentieth century and contemporary protest groups, which arguably undermines attempts to affect change.

Internet Photography and Anti-Social Media

Paolo Cirio can genuinely be described as a *contemporary* artist. His work is situated directly within the nexus of our legal, economic and semiotic systems of the information society, for which he has a growing (and controversial) reputation. He has had numerous exhibitions at international venues, is regularly invited to give talks at notable museums and institutions, and has won numerous art awards (including, for example, the Golden Nica, first prize of Prix Ars Electronica, a prominent award for socially engaged media art). Cirio is a 'contemporary' practitioner in that his palette, his medium and his situating of work are all primarily based upon the Internet and its inner machinations. He has described his practice as 'artistic research' (Cirio, 2014a), which consistently engages with contemporary problematics of copyright, privacy, transparency, and corporate finance. The work he produces for exhibition is formulated through artefacts, photographs, installations, and videos, but all of which relates to a form of public art or activism (his work is frequently the subject of legal threats, and in some cases even death threats). Framing a number of his works as 'Internet photography', he refers conceptually to the idea of positioning the camera *inside* the Internet, offering a 'photography' (or exposure) of its databases, algorithms, screens and networks. Not unlike Victor Burgin's (Bishop and Cubitt, 2013) conceptual account of 'camera' as object and process**,** for Cirio '*Internet Photography* is not about the production of new photos, instead it investigates the renewed role of the photographic medium impacting the understanding, memory and formation of personal and social reality' (Cirio, 2016).

As part of his 'internet photography', recent works have included *Obscurity* (2016-2017), *Overexposed* (2015-2017) and *Face to Facebook* (2011-2016, co-authored with Alessandro Ludovico), with exhibitions in numerous venues around the world, including Berlin's Museum of Fotography; NOME Gallery in New York and Turin; Museum of Modern Art of Rio de Janeiro; ArtScience Museum, Singapore; China Academy of Art, Hangzhou; National Fine Arts Museum in Taichung; the 7th Seoul International Media Art Biennale; the Photographers' Gallery in London; and the International Center of Photography Museum, New York. *Obscurity* is based on over fifteen million mugshots of people arrested in the U.S. The work undermines the data of these records by cloning six mugshot websites, blurring their pictures, and shuffling the data. Viewers to the work are invited to make their own judgements upon the individuals by deciding whether to keep or remove their criminal records. Typical of much of his work, Cirio has been subject to legal threats from the owners of mugshot websites, but has also received support from victims of mugshot extortion. *Obscurity* is concerned with a heightened case of information ethics, but as a form of 'performance hacking' and as a social participatory experiment, it underlines broader concerns about our own personal digital footprints. Indeed, as part of this work Cirio devised the Internet privacy policy *Right to Remove* (see https://right2remove.us), advocating for the legal right to remove personal information from search engines. This work feeds into a wider movement, which, for example, at the time of writing, was prominent in the British news media, following a government announcement for an overhaul of data protection laws, including control measures aimed at social media corporations.

Overexposed is similarly a controversial work. It is composed of nine unauthorized photos of high-ranking U.S. intelligence officials implicated in Edward Snowden's revelations. The images were identified by monitoring photographs (including selfies) published on open public platforms. Following which, Cirio adopted a more conventional, 'low-fi' technique of reproducing the images as graffiti street art (using his own 'High Definition Stencils' method), so disseminating the images very publicly throughout major cities. The artist describes the work as a satire of 'ubiquitous surveillance and overly-mediated political personas'. The artwork's deliberate appropriation of materials and play of differing modes of circulation (not least with 'Big Brother' style artworks in city streets) places Cirio's work within contemporary narratives and angsts over 'Fake News', the fine line between the liberating and coercive effects of social media in political elections, and the rise of political hacking (whether of lone individuals or states). With key works dating back to the early 2000s, Cirio's practice has been highly prescient, very much attuned to the nervousness around Big Data and privacy. A recent study of credit card data, for example, shows that 'it takes only a tiny amount of personal information to de-anonymize people' (Bohannon, 2015a:468; De Montjoye, et al., 2015). The steps required to undertake such an operation are precisely the kind that Cirio is well-versed in and indeed deploys in his work to 'artfully' show and, more importantly, draw our participation into the machinations of data structures as they 'openly' yet obliquely function around us. The conceptual and *practical* skills he brings to his work are arguably ever more important if we are to maintain critical engagement, given increasingly rapid developments in how we handle data. Just

as one example, new software developed at Standford University, Face2Face, now allows the manipulation of video footage of public figures, whereby a second person (not least an impersonator) can literally put words in their mouth, in real time. While a 'fun' tool on the face of it, the implications for fake news and political propaganda are significant (particularly when combined with highly sophisticated means of synthesized voices). Our ability to authenticate material is quickly elided (Solon, 2017).

In 2013, Cirio established *Loophole for All,* an artwork or art project based on his investigations of offshore financial systems, which publicized for the first time a list of all companies registered in the Cayman Islands. The project sought to illuminate the practice of tax evasion by counterfeiting Certificate of Incorporation documents. Cirio exposed otherwise anonymous company ownership by selling the ownership of companies for 99 cents. Because the real owners do not wish to declare themselves, Cirio was able to issue ownership documents in his own name, which then technically would allow him to claim tax deductions against 'his' company. The website for the project carefully detailed Cirio's methodology to allow anyone to do the same. Having sought to expose/re-purpose 215,000 anonymous companies, the site states: 'Loophole for All democratizes the use of offshore centers. It provides a service to the middle class and small businesses who don't want to pay more taxes than they should' (www.loophole4all.com). Unsurprisingly the project soon came to the attention of the Cayman authorities and global banks, prompting legal threats by international law and accounting firms and local businesses. As both an act and performance of hostile corporate finance, which uses metadata to expose

identities, Cirio's project connects directly with ongoing concerns about 'reidentifiability' (de Montjoye et al., 2015) and inevitably generated widespread national and international media attention (Cirio, 2014b).

Again resonant of Cirio's conceptual account of 'Internet photography', *Loophole for All* places its 'camera' or critical lens directly into the very system it wishes to expose, so using these dominant, integral (if opaque) data-systems to reveal for 'themselves' how they operate *as* systems. As will be discussed further on, Cirio's work (in this case re-structuring corporate finances) can be said to bear similarities to structuralist analysis in that data-based patterns enable us to see underlying structures, which in turn drive systems of signification. While not linguistically based, indeed often being imagistically based (benefiting for example from the complex data patterning of image and facial recognition systems), Cirio's metadata approach is not dissimilar to Lévi-Strauss' use of language (as data) to reveal myth as a second-order system of signification. The point to make is that akin to Lévi-Strauss' (1993) tabular arrangements noted in his work of structural anthropology, Cirio is not simply representing or re-presenting data, but rather re-ordering structures as to reveal how data flows *across* media, not simply appearing in it. In other words, in works such as *Obscurity*, *Overexposed*, *Face to Facebook* and *Loophole for All*, Cirio is always looking beyond merely exposing specific data in the various systems (in fact he is usually appropriating freely available data). Instead, he is working with and often extending (through the means of hacking and coding) the affordances of the systems to reveal how they work and how we work them, whether knowingly (as with social media) or unwittingly (as with surveillance and/or

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private data systems). Analogous in many ways to the laying out of synchronic accounts of diachronic narratives, Cirio's artworks can be said to help re-focus how we *look at* contemporary data structures and in doing so – as if a digital form of structuralism - provides us with new heuristic tools.

Prior to *Loophole for All*, Cirio established a witty, though again controversial project, *persecuting.us*. In this project, conducted during the US presidential election of 2012, Cirio re-purposed (or as he puts it, 'secretly stole') data from Twitter, and using his own algorithms determined the political affiliations and social connections of over one million of its users. As Cirio explains: 'Persecuting.us offers a platform where everyone can take part in a participatory model pushed to extremes, engaging people in surveying and persecuting each other in a form of info-civil-war of political polarization, which can potentially erupt into defamation, intimidation and oppression of domestic enemies' (http://persecuting.us). Cirio describes *persecuting.us* as 'anti-social media', and applied the same methodology in *Face to Facebook*, in which data is 'stolen' from one million Facebook profiles (http://www.face-to-facebook.net). In this case, Cirio filtered profile images through face recognition software and then re-posted them on a custom-made dating website, matching people by facial characteristics. Again, Cirio received international media coverage, as well as lawsuit threats, and even five death threats. As Bohannon (2015b) explains, while computers are now very good at *detecting* faces (as distinct from objects etc), *identifying* faces is a much more difficult task. It is this act of identification that Cirio's hacking and 'mashing' of data achieves. As such, *Face to Facebook* taps into a genuine anxiety about privacy, online identity and also artificial

intelligence-based ID and surveillance systems (not least concerns raised by Facebook's 'DeepFace' system – said to be 97% accurate, compared to 85% for the FBI's 'Next Generation Identification' system (Brandom, 2014) – which Facebook argues is about protecting individuals by alerting them to the appearance of their face in any one of the 400 million new photos that users upload daily (Bohannon, 2015b: 492)).

Cirio's re-creation of databases exacerbates a panoptic logic, using people's own online behavior to pose a new regulative framework, or system of identification. As Featherstone (2013) notes, new technologies have enabled new architectures of visibility (and invisibility). Massive datasets remain the preserve of a company or state, invisible to the majority of users. While at the same time, these datasets typically accrue through an architecture that is deliberately and willingly based upon the hyper-visibility of individuals (as we have with Facebook). Importantly, however, unlike the anonymity of the panopticon, there is an open, declarative aspect to Cirio's work. In contrast to a related tradition of art strategies (discussed below), Cirio is not suggesting a new language (or the dream of a new language). Nor does he attempt to disseminate, dissipate or escape through the *play* of structures. Instead, he reveals and implicates us in the *weightings* of data, both in terms of its computational structures and its infrastructures of ownership and control.

Beyond the Art of Anonymity

Paolo Cirio's work can be placed within, but be said to differ in important ways from a tradition of artistic strategies of the twentieth century onwards that have sought to intervene in the dominant structures of society and thought. The surrealists, the pop artists, the situationists and the conceptualists have each sought to disrupt our ways of understanding the world from *within*, like hackers in amongst the flow of code. André Breton's (1987) *L'Amour Fou*, for example, is a kind of wild, erotic structuralism, re-wiring both the mystery and revelations of significations. The unsettling of authority and authorship is borne of the 'anonymity' of the unconscious (which can never be categorically declared). In his essay on surrealism, Walter Benjamin (1979) draws attention to the transformative and revolutionary prospects of surrealism as 'profane illumination'. In the final, memorable line of the essay he writes how the surrealists 'exchange … the play of human features for the face of an alarm clock that in each minute rings for sixty seconds' (1979: 239). In sketching out what Mirzoeff (2014) calls a 'history of the anonymous', Benjamin's essay is the key reference. Mirzoeff presents an analogy between the Surrealist 'chance encounter' and counter- or horizontal visuality, which – relating primarily to contemporary photo-sharing – he argues is 'an apparatus to name and organize the anonymous' (201):

> It is first an extension of the body, whose signature gesture is the young woman photographing herself using her phone at arm's length. This self-portrait is the counter to the ubiquitous surveillance of the age of the

closed circuit television (CCTV). It asserts a presence and autonomy, from which can be derived the right to be seen and the right to look (Mirzoeff, 2014: 201)

Mirzoeff (2014: 197) notes that the history he is trying to tell 'is not simply what was called "history from below"', but rather 'the history of autonomy, a project without end'. A problem, of course, is that a project without end can leave many existing structures untouched and unchanged. The examples of photography he provides, regardless of their aesthetic regimes, can be taken to represent rather than operationalize horizontalism. Arguably, Mirzoeff relies on a certain romantic notion of the intensity of aesthetic experience. In the end, like Dali's signature, both the surrealists' adventures into anonymous realms of thought and the horizontal visuality of contemporary photo-sharing return to us *as genre*, as coded forms, that represent rather than affect the structures they exist within. By contrast, the argument made here with reference to the work of Paolo Cirio, is that in the contemporary context of data and computing it is more important we *operationalize* strategies of identification and re-naming or coding, rather than rely on tactics of subversion and anonymity. In this respect, the artist must also be engineer, designer, hacker, and coder.

With pop art, the use of code and systems of meaning is more explicit. Never simply an engagement with tangible things (cutting up magazines and appropriating items of consumer culture), pop art engages directly with a *system* of signs, with the relationality of 'cultural data'. As with the surrealists, however, despite a re-ordering of codes, it is not always easy to determine the critical

import of the work. As if simultaneously satirical and celebratory, critical and complicit (Foster, 2010), pop art is generally understood as more a commentary upon reproducibility itself than the elements reproduced. Objects look out towards us shorn of their original context and we realize this does not matter, as everything becomes equivalent, all as items of exchange; systems of objects held by an anonymous or arbitrary 'language'. The Situtionists were similarly engaged head-on with the rise of mass media, but presented a darker vision of its conditioning and constraint, referring to the rise of 'spectacle' as a condition of life. Two main strategies against spectacle emerged: 'One was the playfully disruptive principle of *dérive* (drift), which might involve Situationists mapping alternative routes through the city in accordance with their desires rather than civic prescriptions'. The other strategy was *détournement* (division), involving 'the rearrangement and derailing of existing routines and sign-systems' (Hopkins, 2000: 163-164). Here again we can observe an adherence to a semiotic and structural 'reading' of society and culture. Again, the contribution of the situationists to our thinking about the everyday seemingly revolves around systems of both exchange and anonymity – the latter a tactic to unsettle the former. As Sheringham notes, in reference to *détournement*, the situationists 'called their free newssheet *Potlatch*, referring to the transgressive gift economy, based on moments of pure expenditure' (Sheringham, 2006: 162). An expenditure, as it were, that goes without name, operating to arbitrarily or anonymously upend the prescribed weightings of the system.

More broadly, the move to conceptualism in the late 1960s and early 1970s leads to a dematerialization of the artwork. Daniel Buren's 'sandwichmen' walking

through the streets of Paris with stripe motifs from his paintings was an attempt to give leave to the paintings, in favour of asking questions about art's dependence on intellectual and institutional structures and systems. Douglas Huebler's *Duration Piece #13, North America-Western Europe* (1969) is even more explicit about entering into systems of exchange, in this case monetary exchange. Huebler initialed one hundred US $1 bills before sending them out into the North American and European markets. The 'work' was to have a duration of 25 years, after which time the project would be 'complete' if someone were to place an advertisement in an international art magazine offering to sell the bills for a $1000 each. Inevitably, one of the problems of conceptual art is its inherent critique of art itself, which overrides its wider social and political considerations. The work is predicated on the anonymity of the banknote in circulation, which is only redeemable if folded back into the workings of the art market (it is notable, for example, that Huebler's work is considered complete if the appropriate advertisement appears in an *art* magazine, as if that is the only context in which the work can be validated and understood).

Structures of anonymity also provide a frame for the emergence of opposition groups such as Occupy and Anonymous, which, in appropriating the modality of a spectacle politics, have their roots in situationalism. As a response to the status quo, these groups are not so much organisations, but a series of networked, non-hierarchical affiliations. In Hardt and Negri's *Empire* (2000), these groups equate to the idea of an autonomously constructed 'counter-Empire', as alternative political organizations undermining existing power structures. *Empire* proved highly successful in defining a central problem about the perceived distance

between ordinary people and global, networked systems of power. But counter-Empire defines a *form* of change, not its content. In this way, movements such as Occupy and Anonymous make a virtue of *not* making demands or seeking political authority. Without stipulating new structures, theirs is a deliberately anonymous, as yet undefined, politics (as with Mirzoeff's history of autonomy, or project without end). It can be argued that underlying much of the rhetoric of recent protest movements is the quasi-Hegelian notion that while people might be crushed or censored, *ideas* are unstoppable. The dilemma for Occupy was for the movement to become a mere 'occupation' of perpetual revolution; in other words a form of work or even servitude to the Idea of Occupy. Similarly, while Anonymous represents a politically powerful idea, the dilemma is that their actions only replace one anonymity with another. Even if we take Coleman's (2014) insider view of the group, which portrays its hacktivisim as being against wrong-doing, we are still presented with Anonymous as a social fact. Through its representations and actions we seemingly trade the faceless, unapproachable banks and corporations for an equally unknowable consortium of technology savvy activists and hackers.

The various strategies of the Surrealists through to contemporary protest groups attempt to re-order the structures of our thinking and habits, and they do so by resisting attempts to be hardwired into these structures. However, perhaps, the task today is less to resist and upend structures, then to fully *declare* them. In recent years, national elections have led to unpredictable outcomes, and have been based upon a new performative politics, which draws heavily upon social network tactics (and indeed fake news). With arguably an increasingly

fragmentary social context and a much more rapid and personalized (and echo-chamber-like) media, we can ask what, if anything, is the appropriate response from artists and activists. The suggestion here is that a form of analytical art is necessary, which in turn requires a new degree of knowledge about the inner workings and *coding* of contemporary social and informational structures. In Cirio's case, there are empirical, data-driven and algorithmic methodologies that underpin much of his practice, and which arguably marks him out from the aforementioned subversive art practices of the twentieth century. He is as much a maker as thinker, creating digital instruments for an operational and participatory aesthetic. As already suggested, and explored further in the section which follows, there are parallels with a structuralist approach to knowledge found, for example, in Lévi-Strauss: 'His treatment of myth is operational to the extent that it is seen as a working model of specific processes of human thinking' (Johnson, 2003: 96). The result is a process of negative feedback, meaning 'the continual self-adjustment of mythical discourse in order to approximate the resolution of (real) contradictions'; an autonomous system, then, in which myth is both regulated and regulating (101). Similarly, in his refashioning of data and databases, Cirio establishes a regulated and regulating system, perpetuating a *model* of enquiry. And importantly, rather than seek to outplay or merely jam current data structures, Cirio implicates us further in the what was suggested above as the 'weightings' of data. The term has an important resonance in information theory, whereby the priority is to optimize the transmission of information against the effects of entropy and 'noise'. The solution to this problem is to build in 'redundancy', which as Johnson (2003: 95) explains, is the 'price to pay for the protection of the message […] It increases the "weight" of the

signal, so to speak, but ensures that the receiver converts the signal into the most likely approximation of the original message'. Notably, redundancy provides Lévi-Strauss with a way of explaining the *repetition* of myths; they become 'over-coded' to guard against distortion (Johnson, 2003:100). Redundancy similarly allows for latent affordances within contemporary data structures. It is what requires us to keep 'feeding' the social media networks (Dean, 2010), to keep us all primed to read the 'real' news of advertisers, or conversely it is what allows whole swathes of data to be decoupled from its original form and authorship to be pushed across varying platforms. Such redundancy is also, however, what enables an artist/activist such as Cirio to harness and re-author, as a means to expose, undergoing algorithmic processes. Thus, like Lévi-Strauss laying out myth for all to see, Cirio places at our disposal the underlying patterns of the interfaces and relational effects we otherwise typically only relate to as a means of communication; as a one-way architecture of visibility.

The Work of the Artist in the Data Turn

At the core of Cirio's artwork is a high degree of labour, involving extensive research, programming, and tracking. As Cirio (2014b) explains, he works 'with flows of social, economic, and cognitive structures, literally using these networks as materials to create ... artworks'. Reference here to 'cognitive structures' is suggestive of a comparison with Fredric Jameson's (1991) notion of 'cognitive mapping'. Jameson suggests two different strategies as a means to undermine postmodern depthlessness and the 'cultural logic of late capitalism'. The first

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strategy is to adhere to the very 'postmodern political aesthetic' that one wishes

to confront. Such a counter-aesthetic 'would confront the structure of image

society as such head-on and undermine it from within'. Jameson describes this as

a 'homeopathic strategy … undermining the image by way of the image itself, and

planning the implosion of the logic of the simulacrum by dint of ever greater

doses of simulacra' (1991: 409). Andy Warhol is taken as the exemplar of such an

approach. The problem, of course, is that the remedy can soon become its own

malady. The appropriation of codes leaves us still with the anonymity of the code

itself – ending up a piece of tradable art, as in the case of Warhol; or as a critique

merely of the art world.

While Cirio's approach might similarly be understood as homeopathic, there is a

way in which as a *work* of art it aligns with Jameson's second and supposedly

'more modernist strategy' of cognitive mapping, which attempts to foreground

the pedagogic and didactic functions of art as a means to achieve new forms of

consciousness. For Jameson, the point of cognitive mapping is to find a means to

navigate the unsystematic conditions of postmodern, multinational capitalism,

not by removing oneself from it (which would not be possible anyway), but by

staying within its 'logic', yet, concurrently, seeking to achieve a 'breakthrough to

some as yet unimaginable new mode of representing … in which we may again

begin to grasp our positioning as individual and collective subjects' (Jameson

1991: 54). There are certainly a number of problems with this proposal, not least

the bid to work towards a totality within the relativity of postmodernism, along

with the fact that we are never given working examples. Nonetheless, a

distinction can again be made between earlier 'anonymous' forms of art (as

relayed in terms of surrealism through to conceptualism) and Cirio's *contemporary* algorithmic art. The *desires* of twentieth century art practices can invariably be described a quest for the un-imaginable, the un-speakable, the un-representable; clinging to the hope that the artwork can be positioned outside of determined structures and/or offer a refusal of the structures of alienation. Cirio's art*work*, by contrast, is a contemporary form of labour, or re-labouring, to achieve breakthroughs in codes, security systems and anonymous structures. The hyper-efficiency of such work stays within the logic of the system precisely in order 'to grasp our positioning as individual and collective subjects'.

Nonetheless, Jameson's 'image' of a map, or mapping, always presented a dilemma. The very strength of its formulation is also its weakness. As he explains, the phrase 'cognitive mapping' is meant to have had a kind of oxymoronic value, 'to transcend the limits of mapping altogether', but in the end, the concept is seemingly 'drawn back by the force of gravity of the black hole of the map itself' (1991: 416). Oddly, then, once we know what cognitive mapping is *driving at*, we are then meant to 'dismiss all figures of maps and mapping from [the] mind and try to imagine something else' (409). This is the same problem outlined here for the prior, twentieth century art practices, and even for contemporary protest movements. Similarly, however, Cirio's work might necessarily have an oxymoronic value, which must steadily lose its value as the shock and delight of the work starts to reveal that it cannot in the end replace data structures, but only re-direct them temporarily. Having been himself 'persecuted' for attempting to de-anonymise corporate loopholes Cirio can perhaps be forgiven for turning his attention to a less controversial topic. In his

project *ArtCommodities.com* he offered a platform for the economic analysis of how value is created in contemporary art. Here, not too dissimilar to Douglas Huebler's democratizing (and problematizing) of art through the signing of dollar bills, Cirio offered a model to allow anyone to invest in art. Taking the well-worn path of many a conceptualist, the project looks inward at the contradictions of art, rather than pursuing an art of contradictions. We might judge this as Cirio having hit against his own limit, yet his more recent work, noted previously, such as *Obscurity*, *Overexposed*, and *Face to Facebook*, marks a continuation of art as activism. Again, his underlying practice represents the sheer hard-work required not simply to jam the system (as we see with protest groups) but to fabricate new algorithms and to re-align existing datasets as an analytical and heuristic endeavor.

Beyond a postmodern framing, Cirio's work might more usefully be considered in terms of a 'new structuralism', particularly as it involves the empirical and relational handling of data. While structural analysis is broadly associated with the 'linguistic turn' (Rorty, 1973), Cirio is an artist whose social, algorithmic practice is attuned to what we might now term the 'data turn', or, to use Burkholder's (1992) phrase a computational turn (the former however has the benefit of refering to a broader data phenomenon, extending well beyond the realms of what in the everyday we term as computers). In keeping with Rorty's history of philosophy as a series of 'turns', starting with medieval philosophy concerned with things, enlightenment philosophy with ideas, and, modern philosophy with words (Rorty 1979: 263), the data turn is not simply about a greater propensity to use computers or accrue data. Rather, it refers to how data

has come to affect change in the way we think and behave; how it underlines a new epistemology and ethics. As boyd and Crawford (2011) explain: 'Just as Ford changed the way we made cars – and then transformed work itself – Big Data has emerged a system of knowledge that is already changing the objects of knowledge, while also having the power to inform how we understand human networks and community.' Data, then, has profoundly changed our 'constitution of knowledge, the processes of research ... and the nature and the categorization of reality' (boyd and Crawford, 2011). Or, as du Gay and Pryke put it: 'accounting tools ... do not simply aid the measurement of economic activity, they shape the reality they measure' (2002:12-13). In the data turn, Cirio can be said to re-*account* for certain contemporary structures by staking out new formulations of data and himself reprograming or diverting systems that accrue data. The effect of which has been to *de-anonymise* what goes on in the 'black box' of financial and social systems. The argument to make, then, is that in the data turn a 'new structuralism' is ever more pertinent.

The emergence of a structuralist account of society and culture (dating back to the 1950s) was broadly concurrent with the various art movements of the twentieth century discussed above. It turned our attention to the unseen and *unnamed* patterns that belie daily life and forms of thought. As part of which we might suggest 'anonymity' relates to the underlying linguistic account of systems of signification, with its mantra of the 'arbitrary nature of the sign'. Crucially, of course, it is the careful analytical work of the structuralist that brings a new understanding to bear. In his 1955 essay, 'The Structural Study of Myth' (1993), Lévi -Strauss realigns the elements of narrative across a large 'database' of

stories to *show* structural knowledge. What emerges from a seemingly oblique view of realigned units of a story – 'treated as an orchestra score' (Lévi -Strauss, 1993: 213) – is a whole new picture of cultural understanding and memory. Lévi-Strauss' 'operational' technique relied upon the humble use of index cards, which he would use to write, sentence by sentence, the components of a story. Each card would show a 'certain function' of the story and crucially each 'constituent unit' could be understood to consist of a *relation*. The index cards were a means to make tangible the synchronic and diachronic relations of the given components of a story. The significance of this work was not its microscopic treatment of units of meaning, nor even their immediate relational properties, but rather the ability to generate large datasets and to plot cross-cultural patterns. 'The true constituent units of a myth,' wrote Lévi-Strauss, 'are not the isolated relations but *bundles of such relations*, and it is only as bundles that these relations can be put to use and combined so as to produce a meaning' (1993: 211). Laying the index cards out on a large board, Lévi-Strauss was able to utilize the spaces in-between to *move* and realign elements of cultural expression to plot sustained structures of thinking and meaning. It is worth noting that while structuralist linguistics clearly underlines the approach, Lévi-Strauss was interested in the formalistion and mathematization associated with the then newly developing areas of information theory and cybernetics (Johnson, 2003: 92-102); indeed, the aforementioned concepts, 'of information, message, noise, redundancy and feedback … all play a role in his conceptualization of the nature and function of myth' (93).

We can relate Lévi-Strauss' methods to today's handling of so-called Big Data. As boyd and Crawford (2011) explain: 'Big Data is notable not because of its size, but because of its relationality to other data. Due to efforts to mine and aggregate data, Big Data is fundamentally networked. Its value comes from the patterns that can be derived by making connections between pieces of data'. Further to which, however, Lash (2007) has argued that code, algorithms and interfaces are part of a shift to what he calls post-hegemony, whereby the hegemon is suffused through the everyday rather than impressed upon it; a view that chimes with numerous accounts of new technologies (e.g. Graham, 2004; Thrift, 2005; Hayles, 2006). 'When media are ubiquitous', Lash writes, 'interfaces are everywhere. The actual becomes an interface' (2007:70). The algorithm governs the interface, and by extension the actual. Furthermore, he argues, the rule-based structure of the algorithm, which previously would be either constitutive or regulative (e.g. either what establishes the rules of the game, or those that regulate the activity once underway), has largely been superseded by *generative* rules:

> ... as it were, virtuals that generate a whole variety of actuals. They are compressed and hidden and we do not encounter them in the way that we encounter constitutive and regulative rules. Yet this third type of generative rules is more and more pervasive in our social and cultural life of the post-hegemonic order. They do not merely open up opportunity for invention, however. They are also pathways through which capitalist *power* works (Lash, 2007: 71)

The purported shift in the post-hegemonic, from epistemology to ontology, leads to a curious position in which Lash views the algorithm as actual *being*, rather than as structural. The generative, he suggests, is 'metaphysical rather than physical' (71). However, the crucial phrase is surely that these rules are 'compressed and hidden'. The fact algorithms are ubiquitous and embedded in everyday practices makes for a complex and dynamic set of interplays, but this does not make them necessarily *other* and authorless. What is generative here is not biological, but computational (and so within the realms of cybernetics, or 'steerage', to reference its ancient Greek etymology). Cybernetics is about regulation and crucially, self-regulation. Central to which is the idea of the 'programme': 'the set of instructions that determine the nature and sequence of the operations a given machine is to perform, and of *feedback*, that is, the establishing of a circuit or loop of communication between the system … and its environment' (Johnson, 2003: 95). However compressed and hidden, we need to be careful not to reify the *existence* of programmes, but rather attempt to locate, understand and even re-tabulate their structures. In this respect, Lévi-Strauss' structuralist methodology offers interesting critical correlation to the methods of big data analysis (which typically otherwise remain the preserve of large companies and agencies). In this case, however, we can as likely turn to the 'work' of the artist (as coder, hacker, and designer), who, as we see in the case of Cirio, offers the requisite skills and 'medium' (analogous to Lévi-Strauss' 'medium' of the large drawing board) through which to un-compress and reveal what we do not readily understand or at least feel we have access to, i.e. to open up the underlying algorithms which nonetheless we operate (albeit blindly) when engaged in everyday contemporary social networks.

Coda

In thinking again of the parallels with the work of Lévi-Strauss, as he sought to establish a structuralist understanding of culture, it is worth recalling the similarly painstaking work and the need of significant, if then lacking, computational power. Lévi-Strauss describes, for example, how 'the task of analyzing mythological literature, which is extremely bulky, and of breaking it down into its constituent units, requires team work and technical help' (Lévi-Strauss, 1993: 228). He also wrote prophetically of using computers to conduct structural analysis. Yet, he could not have predicted how computers would become themselves the authors of these narratives and sign systems, and how the differing roles of a 'team' might easily be undertaken by a single operator using a personal computer, such as we can imagine with the work of Cirio. Today, as boyd and Crawford (2011) note, the term Big Data can be misleading, 'it has been used in the sciences to refer to data sets large enough to require supercomputers, although now vast sets of data can be analyzed on desktop computers with standard software'. The limited means at one's disposal are fast becoming a thing of the past, which in turn prompts the turn *in* data. Again, we need remind ourselves, what is important is not the size of data, but, as prefigured with Lévi-Strauss' work, the question of relationality – which in itself involves *choices* over what and how we combine data to form datasets and algorithms. Thus, as we find with Cirio's work, it is ever more important to democratize the very making of systems and structures.

Big Data, while a fashionable label, is of course part of the long-standing discipline of statistics dating back at least to the late 1700s, with work of William Playfair and others, and large datasets have been accruing for well over a century. Today, new technologies are making the demands to produce, share, interact with, and organize data both more ambitious and more accessible. How we handle data is of critical importance. Cirio's work is of particular interest regards the increasing automation of data collection and analysis. With algorithms now able to extrapolate from and inform us of patterns in human behavior based on massive and dynamic datasets, it is vital to understand the systems underlying and regulating these practices. However, as argued here, it is important not to reify what data *is*, but rather focus what it can do and *how* it does so. In this respect, Cirio is again significant for 'making' as much as presenting a critique of the systems he seeks to expose.

At the time when Lévi-Strauss was writing, the wider intellectual discourse was concerned with the 'alleged differences between the primitive mind and scientific thought' (1993:230). Of course Lévi-Strauss was firmly against such a distinction, and indeed his structural study of myth was an important means of demonstrating a consistency of rigorous thought over time. At the close of his essay he offers the memorable analogy of a stone and a steel axe. It is not that the latter is *better* than the former, he argued, but that they are *different* in material terms: 'In the same way we may be able to show the same logical processes operate in myth as in science, and that man has always been thinking equally well; the improvement lies, not in the alleged progress of man's mind, but in the discovery of new areas to which it may apply its unchanged and unchanging

powers' (Lévi-Strauss , 1993:230). There have always been cultural and social patterns. Big data is nothing new in itself, only our ability to capture and sort it. Today, as we witness the data turn, cultural data is being made and is making us in quite *different* ways. Yet, as with Lévi-Strauss's time, the task remains to understand our place among the structures we are party to. At the current conjuncture, in which digital technologies allow for ever more fluid and manipulated forms of 'reality', and where extended social networks are rapidly traversed by new media (allowing for the proliferation of fake news as much as good news), artists such as Cirio can be said to go beyond 'anonymous' forms of critique, to actually operationalize and 'expose' new ways of understanding. As both activist and artist-researcher, Cirio *intervenes* so as to expose new myths of big data structures and in doing so shakes the existing structures and powers that situate our lives in ever more opaque configurations.

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