Nicolás Mendoza

Life in a Network for Survivors: The Thermonuclear Apocalypse and the Protocols of Freedom

Part 1

Wild, dark times are rumbling toward us,
and the prophet who wishes to write a new apocalypse
will have to invent entirely new beasts,
and beasts so terrible that the ancient animal symbols of St. John
will seem like cooing doves and cupids in comparison.
-Heinrich Heine

How I Learned to Love the Bomb

Today it is impossible to think that the planet could ever be a single union of territories ruled under a totalitarian communist regime. It even seems bizarre to realize that at some point in history, from the 1950s through the 70s, global communism, the ultimate fulfillment of Marxist teleology, seemed like a somewhat foreseeable scenario. The future in that not so distant past seemed to be a tossup between capitalism and communism, and yet the real question haunting humanity was whether a mankind-annihilating thermonuclear apocalypse was around the corner. It was only within such an unprecedented Zeitgeist that the Internet could have been born.

To be more precise, the Internet is the son of the apocalypse. It was conceived not as a means for capitalistic hegemony or even strictly as a means of defence, but rather as a tool for the survivors. It was one of the many inventions of the postapocalyptic world that was starting to exist in the imagination of Cold War strategists. As such, it was even beyond the logic of deterrence through the promise of retaliation. As such, it was really located in the day after. In theory, the first real user of the network

was meant to be someone buried in a deep underground bunker desperately looking for signs of life, someone looking for someone, wondering whether or not to press the button of retaliation, while the surface burned, doomed to a century of radioactive thermonuclear winter.

The history of the Internet is usually told in the form of a series of technical breakthroughs by outstanding figures among the scientific community that developed the system because they happened to be useful for the US military, while referring to the extraordinary Cold War mentality merely as if it were an anecdotical serendipity factor. This approach narrates the becoming of the Internet in technical terms, but leaves unanswered questions about its nature, its evolution and its crossroads.

The Internet being first and foremost a postapocalyptic entity is a bizarre beast, alien to all known organization of society, predestined at birth to disrupt every single aspect of what until then was supposed to be. Because the Internet was conceived to perform as a sort of life support machine through the permanent communication and cooperation of survivors in a postapocalyptic environment, with a systematic disregard of any political, economical or cultural consideration concerning the surface, it is fundamentally detached from the continuum of socio-philosophical evolutions by which we normally understand social phenomena. In other words, to understand the Internet we must suspend any attempt to think in terms of the foucaultian epistemic continuums of modalities of the exercise of power, because it basically happened while Dr. Strangelove was dreaming.

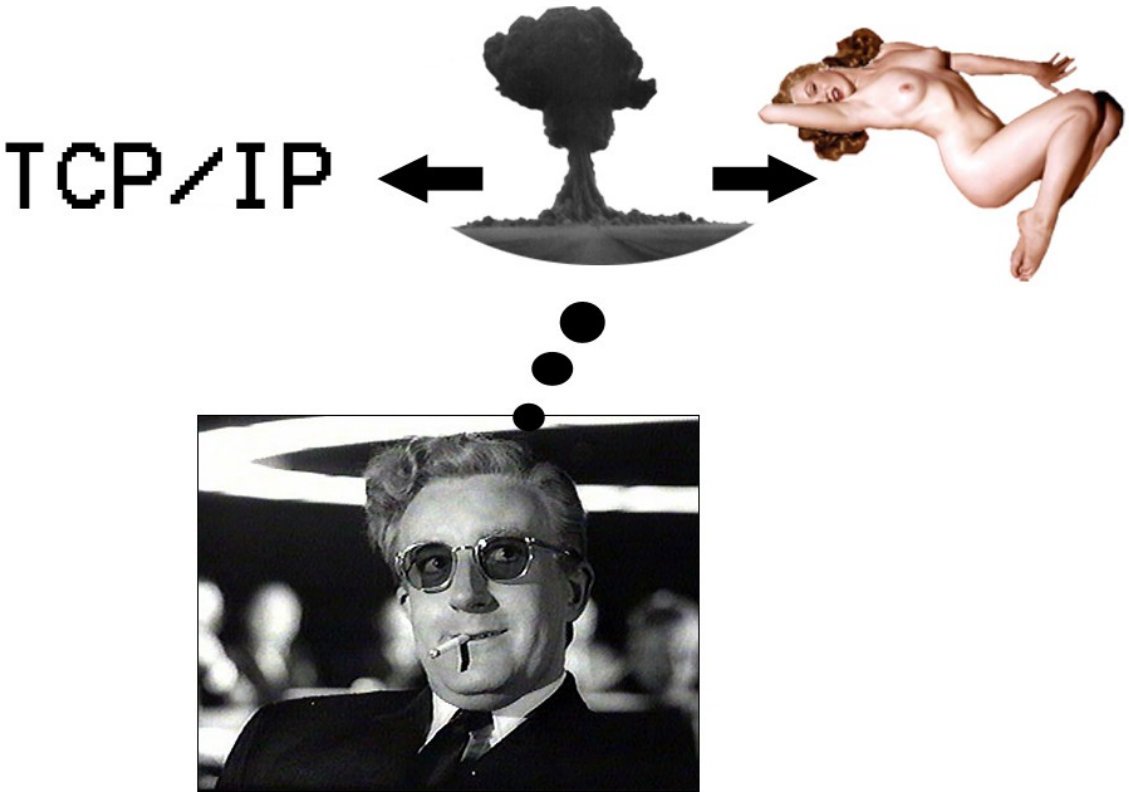

Fig 1: Dr. Strangelove's dilemma. (diagram by the author)

Faced with the Apocalypse, something radical had to be done, whether it was Dr. Strangelove's underground society of polygamists devoted to the impregnation of "highly stimulating" women, or the Internet. As the unthinkable began to be thought of, Doomsday machines, underground cities and distributed networks were imagined.[1] Critical theory usually overlooks the significance of the extraordinary circumstances in which the Net was conceived. This has led to partial readings informed by categories that under the exceptional circumstances of its conception were no longer relevant. Primarily among these, I argue, is Alex Galloway's book *Protocol: How control exists after decentralisation.*[2] In *Protocol,* Galloway argues that Internet protocols are an apparatus of control; that "*The founding principle of the Net is control, not freedom.*"[3] This essay wants to show

1 Herman Kahn, *On Thermonuclear War.*, 2nd ed. (Greenwood Press Reprint, 1978).

2 Alexander R. Galloway, *Protocol: How Control Exists after Decentralization* (The MIT Press, 2006).

3 Ibid.,

how this is the incorrect dichotomy. Through critical analysis of the dominant narratives at the net's genesis I will show that, on the contrary, the founding principle of the Net is not *control* but *command and control* and, further, *distributed* command and control. The significance of this precision lays in that the distribution of command and control, as long as it remains real, leads necessarily to the collapse of traditional power and to the emergence of an unprecedented social order of distributed power. Such an order, precisely because of power distribution, is close to what anarchist scholars like David Graeber and web activist groups like Anonymous advocate for. In their theoretical and pure form, the founding protocols of a true distributed network as was initially conceived, even while endangered and partially implemented, break the dam towards collective emancipation. They are the protocols of freedom.

Imagine all the people living death in peace

Artist Marlena Corcoran's essay *The Fiction of the Internet*[4] links cold war era narratives of the apocalypse with the development of the technologies and structures that we know as the Internet. "The creation of the Internet was not only a technological but also an imaginative feat. The conceptual structure of the Internet is an imaginative response to the threat of an annihilating catastrophe".[5] The point here is not to merely romanticize the net as 'imaginative', but to note that without a very specific and powerful set of shared fantasies of a science-fictional nature (the paranoiac mindset shared by the generals, scientists, and politicians that teamed to invent the Net) none of the technical feats would have even been attempted. And, more importantly, to realise that the design philosophy of the Internet condensed those into the protocols that govern it. "*The drama of*

4 Marlena Corcoran, "'Worst Case Scenarios': The Fiction of the Internet," Leonardo 30, no. 5 (January 1, 1997): 343-348.

5 Ibid., 343.

the Net is best understood in the context of this flowering of one of the most highly articulated fantasies of an event that galvanized a nation -and never took place".[6]The question, then, is what is this particular 'drama of the Net', about? Can we start to think about this drama in order to grasp the ontology of the Net before it exploded, in a similar way as physics research the Big Bang to understand the universe?

The figure of the thermonuclear-apocalypse survivor drove the design philosophy of the Net. If Western culture is the result of an epistemic evolution that articulated power around a sequence of discourses that gradually moved from the figures of the leper, to the monster, to the masturbator, etc.[7], we can only note that the figure of the survivor is one that abruptly came to the centre, courtesy of Cold War nightmares. But the survivor was alien to the historical sequence of the dynamics of power, making his sudden protagonism highly subversive. If the Internet is a manifestation of the problematic of the survivor, then its nature is not related to the forces that transformed sovereign societies into disciplinary societies, ultimately evolving into societies of control.

The apocalyptic survivor is, by definition, in charge. In charge of what exactly, however, is an enigma. His specific tasks are unimaginable. All that is known is that he is somewhere deep, that he has time, and that he has a computer. The survivor must be thought of as an historic individual, a living legend... the sole witness and the narrator for his own future generations not only because the apocalypse implies the extinction of the audience, but also because the story that will be told really starts after the bomb. From the point of view of a survivor civilisation the bomb is not the end, but the beginning. Since he has to be imagined as the breeder of a

6 Ibid.

7 Michel Foucault, Abnormal: Lectures at the Collège de France, 1974-1975 (Picador, 2004).

second mankind, the apocalyptic survivor competes in historic potential with Noah himself, hence Strangelove's underground ark of lust. He must undertake foundation of the utopian society that we never ceased to fail to construct. At the same time, he is a coward that refused to share the fate of his brothers and went underground. With a generation of so burdened apocalyptic survivors in mind, the Internet was thus designed around the ideas of robustness, flexibility, and survivability: to guarantee survivor agency and empowerment to the maximum possible degree.

Part 2

Some survivors are more equal than others

The principles guiding the early designs of the Internet supposed a deep perversion of traditional models of hierarchical military power. This perversion occurred the moment the military moved from a communications model of *command and control* to one based on *distributed command and control*. To understand how this move was possible it is useful to reread the opening words to *Reliable digital communications systems using unreliable network repeater nodes*[8], perhaps the most bizarre introduction to a technical paper ever written:

The cloud-of-doom attitude that nuclear war spells the end of the earth is slowly lifting from the minds of the many....A new view emerges: the possibility of a war exists but there is much that can be done to minimize the consequences.

If war does not mean the end of the earth in a black-and-white Manner, then it follows that we should do those things that make the shade of gray as light as Possible: to plan now to minimize potential destruction

8 "Reliable Digital Communications Systems Using Unreliable Network Repeater Nodes," Product Page, 1960, http://www.rand.org/pubs/papers/P1995.html.

and to do all those things necessary to permit the survivors of the holocaust to shuck their ashes and reconstruct the economy swiftly."[9]

The author is Paul Baran*, and the 1960 paper describes the first ever theoretical model for an entirely digital distributed communications network. When Baran started the research that led to his model, a few years earlier, more than a decade of nuclear threat had been enough to dissolve the euphoric sense of American invulnerability that resulted from WWII, so the survivor and his gray world had to be invented.

Cultural artefacts of the time show an imaginary where there is no paradigmatic survivor but rather a reproduction of class structure as societies go through the experience of the apocalypse. Within the space of the ruling ideological framework, Baran's 'shades of gray' started to emerge. Cold War era movies like *When the Wind Blows*[10], *The War Game*[11], *The Day After*[12], or the Japanese (and post-Hiroshima) *Barefoot Gen*[13] portray almost identical dramas of lay survivors as they negotiate the dawn of hell on earth. These lay survivors were, however, at best secondarily who the web was created for. Placebos in the form of nuclear emergency contingency pamphlets were the only packages being distributed to them. Their worse-than-death agony was expected, integral part of the ever flourishing collection of nuclear war scenarios. Belonging in this sense to a different category of cultural products of the era are Kubrik's acclaimed *Dr. Strangelove*[14] and Herman Kahn's less acclaimed

---

9 Ibid., 1.

* https://en.wikipedia.org/wiki/Paul_Baran

10 Jimmy T. Murakami, *When the Wind Blows*, Animation, Comedy, Drama, War, 1988.

11 Peter Watkins, *The War Game*, Drama, Sci-Fi, War, 1967.

12 Nicholas Meyer, The Day After, Drama, Sci-Fi, 1983.

13 Mori Masaki, *Barefoot Gen*, Animation, Drama, War, 1992.

14 Stanley Kubrick, *Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb*, Comedy, Drama, 1964.

book *On Thermonuclear War*[15], the former a slightly caricaturised version of the terroristic rationality of the latter. These portray a very different perspective of surviving the apocalypse, that of the powerful. Survivability of the elite, even after absolute Doomsday-machine powered annihilation, was initially the one remaining issue.

Fig 2. US Government shelter building pamphlet cover[16]

15 Herman Kahn, *On Thermonuclear War.*

16 Government U.S, *The Family Fallout Shelter (1959) *Illustrated**, 2011.

In between these two extreme experiences of the apocalypse (one mediated by a wooden 'inner core or refuge' and a pamphlet, and the other by reinforced concrete and endless sex), existing societies started representing their pre-apocalyptic relationships of power through a new and flourishing ecology: an ever increasing diversity of individualistic bunkers tailored, ironically, to the individual 'nuclear family' and its corresponding social status. For instance, a booklet called *The Family Fallout Shelter*[17] distributed by the US government."The least expensive shelter described is the Basement Concrete Block Shelter. The most expensive is the Underground Concrete Shelter"[18]

Command & Conquer

The sanctity of the affordance abyss between the layman and the president was first transgressed by the figure of the secondary commander. Once his needs entered the realm of what is taken seriously after the bomb, the logic of post apocalyptic life (i.e. of the network) had been perverted. It seems now like an insignificant concession, but it was all it took to redraw the diagram of power. In a 1990 interview Paul Baran recalls how the seemingly subtle shift of accommodating for the needs of secondary commanders came to conceptually redefine his model:

The great communications need of the time was a survivable communications capacity that could broadcast a single teletypewriter channel. The term used to describe this need was "minimal essential communications," a euphemism for the President to be able to say "You are authorized to fire your weapons". Or "hold your fire". These are very short messages. The initial strategic concept at that time was if you can build a communications system that could survive and transmit such

17 Ibid.,

18 Ibid., 2.

short messages, that is all that is needed... . The major initial objection to the scheme was its limited bandwidth. The generals would say, "Yes, that would be okay for the President. But I gotta do this, and so and so gotta do this, and that command gotta do that. We need more communication than a single teletypewriter channel." After receiving this message back consistently, I said, "Okay, back to the drawing board. But this time I'm going to give them so damn much communication capacity they won't know what in hell to do with it all." So that became my next objective. Then I went from there to try to design a survivable network with so much more capacity and capability that this common objection to bandwidth limitation would be overcome.[19]

This is the moment when the perversion happened, when the movement toward distributed command and control took place. The limited bandwidth distribution model still reproduced the polarity of power in the sense that it only considered the limited requirements of the President. Boosting bandwidth made it useful for secondary actors. Suddenly, the architecture of the desirable network stopped mimicking the hierarchies of the chain of command. In the aftermath, even in the absence of the top commanders, a network of secondary commanders would have means of communication and perhaps retaliatory power. The shift was reflected not only in the model of distributed communications but at all levels, especially in the characteristics of the data routing protocol. The concept for this protocol received the name of 'hot potato' packet switching.

"Thus, in the system described, each node will attempt to get rid of its messages by choosing alternate routes if its preferred route is busy or destroyed. Each message is regarded as a "hot potato," and rather than

---

19 Judy O'Neill, *An Interview With Paul Baran.*, (Charles Babbage Institute, Center for the History of Information Processing, University of Minnesota, Minneapolis, 1990), 14-15.

hold the "hot potato," the node tosses the message to its neighbour, who will now try to get rid of the message."[20]

In terms of control the 'hot potato' model is a shift from node-centric control to immanent control distributed through the network. Because the node has no control over the full life of a packet, there is no feedback relationship between node and packet. Hence, there is really no nodal control as per Norbert Wiener's seminal definition of control as feedback[21]. Packet control does ultimately happen, but as a result of the whole network informing the packet of the best available route in real time, which is to say that ultimately it is the multitude of packets who are, collectively, in control of themselves. In practical terms this means that end users in Baran's design find themselves in a situation of equipotentiality.

Paul Baran's network was never built but the model he proposed was a major influence in the creation of ARPANET, the primordial web built by the US Department of Defence. In 1973 the need arose to reconcile incompatibilities inherent to diverse data transmission technologies and to communication with other networks like the French network CYCLADES, and so the TCP/IP protocol suite was designed. Because TCP/IP enabled networks of diverse characteristic to communicate, the resulting network-of-networks was called the Inter-net.

Robert Kahn and Vinton Cerf, creators of TCP/IP, describe it as "a simple but very powerful and flexible protocol which provides for variation in individual network packet sizes, transmission failures, sequencing, flow control, and the creation and destruction of process-to-process

---

20 Paul Baran, "On Distributed Communications," Product Page, 1964, 1, http://www.rand.org/pubs/research_memoranda/RM3420.html.

21 Norbert Wiener, *Cybernetics, Second Edition: or the Control and Communication in the Animal and the Machine*, second edition. (The MIT Press, 1965).

associations."[22] In the TCP/IP protocol flexibility, simplicity and scalability join survivability as the defining features of the design. However, in a 1988 report called *The Design Philosophy of the DARPA Internet Protocols* David D. Clark recounts the original objectives of the Internet architecture and discusses "the relation between these goals and the important features of the protocols"[23]. Clark enumerates the priority list of the characteristics of the Internet:

1. *Internet communication must continue despite loss of networks or gateways*
2. *The Internet must supply multiple types of communications service*
3. *The Internet architecture must accommodate a variety of networks*
4. *The Internet architecture must permit distributed management of resources*
5. *The Internet architecture must be cost effective*
6. *The Internet architecture must permit host attachment with a low level effort*
7. *The resources used in the internet architecture must be accountable.*[24]

While this list seems like a self-evident enumeration of any computer network's minimum features, Clark points that the significance of this list actually lies in its order: "*It is important to understand that these goals*

---

22 V Cerf and R Kahn, "A Protocol for Packet Network Intercommunication," *IEEE Transactions on Communications* 22, no. 5 (May 6, 1974): 637-648.

23 D Clark, "The design philosophy of the DARPA internet protocols," in *SIGCOMM '88: Symposium proceedings on Communications architectures and protocols* (Stanford, California, United States: ACM, 1988), 106-114, http://dx.doi.org/10.1145/52324.52336., 106.

24 Ibid., 107.

are in order of importance, and an entirely different network would result if the order were changed"[25]. He elaborates on how the principles of agency and survivability contradict the logic of power and control, as it is detached from the ethos of the original Internet:

"...since this network was designed to operate in a military context, which implied the possibility of a hostile environment, survivability was put as a first goal, and accountability as a last goal. During wartime, one is less concerned with detailed accounting of resources used than with mustering whatever resources are available and rapidly deploying them in an operational manner. While the architects of the Internet were mindful of accountability, the problem received very little attention during the early stages of the design, and is only now being considered. An architecture primarily for commercial deployment would clearly place these goals at the opposite end of the list"[26] *(emphasis mine)*

This order of priorities of TCP/IP is at the heart of the (originally unintended) disruptiveness of the Internet. It shows how in the Zeitgeist of the cold war, catering to the figure of the survivor, governmentality was momentarily suspended. The protocols that structure the network were built to provide the user with maximum agency (i.e. command and control) as opposed to exercise control over him.

The solution Paul Baran crafted for the problem of network survivability, to essentially distribute power evenly throughout the network, irreparably breaks the social structure that over centuries had revolved around processes of accumulation and consolidation of power. Because it was initially confined to the few who already were supposed to hold power to

25 Ibid.

26 Ibid.

begin with, distributed power was a tolerable concept. The egalitarian idea of distributed power, paradoxically made possible only as a means of military 'command and control' to survive absolute violence, was accepted under the retroactively delusional assumption that the distribution of power wouldn't affect its concentration.

The struggles in the network emerge from the tension between the contradictory concepts of 'command' and 'control', buried deep in the protocol that governs it. The expression 'command and control' describes the abilities to initiate and stop action, respectively. "At its crudest level 'command and control' in nuclear war can be boiled down to this: command means being able to issue the instruction to 'fire' missiles, and control means being able to say 'cease firing'"[27] It can be conflated into a more simple term: 'power'; as this bipolar attribute is distributed, pre-existing powers experience loss, disorientation and traumatic distress. If we follow Foucault's propositions according to which power is always relational and that it exists to be exercised, a network for distributed command and control, (i.e. distributed power), creates a situation where centerless power is exercised in all directions. And so, the paranoid genesis of the Net, combined with the absolute impossibility of the military, and even the academic field, to foresee the impact their toy would have in the planet, provided the enormous historical *faux-pas* in the logic of power that is the Internet.

Part 3

Why Alex Galloway is out of control

---

27 John Naughton, *A Brief History of the Future: Origins of the Internet* ({Phoenix mass market p/bk}, 2000), 96, http://www.amazon.ca/exec/obidos/redirect?tag=citeulike09-20&path=ASIN/075381093X

Alex Galloway has coined the term 'Protocologic Control' to describe the notion that the underlying protocols that make electronic networks operational are the instruments of a grand shift in contemporary societies to become the Deleuzian "Societies of Control"[28]. In that sense, the term describes a situation of thorough disempowerment of the individual. For Galloway the distributed network, the digital computer, and the network protocol define "*a new apparatus of control*"[29] through which power is exercised in contemporary societies. While he argues that all distributed media is necessarily endogenous to the societies of control, the analysis of the apocalyptic narratives that gave shape to the net shows us that, contrary to Galloway's reading of Deleuze: a protocol with the characteristics and origin of TCP/IP is a threat to social control precisely because it transfers significant control to its users.

The term "Protocologic Control", I think, needs to be used with caution because when taken out of context it gives the impression that wherever there is protocol, the dominant logic is that of a hegemonic society of control. It is true and concerning that through code and protocol hegemonic power can be exercised and control can be implemented. This concern is real. Nevertheless, pointing the finger at 'protocol' is analogous to seeing someone die after drinking poison and deducing 'liquids' are poisonous. To say 'Protocologic Control' is like saying 'Liquidic Fluidity' in that, yes, liquids are fluids, but the term 'fluid' tells us little new about the actual liquids (or protocols) at hand. Network protocols do control informational processes, but the question is in what ways and for whom. Raising suspicion on all protocol is unhelpful; rather, the call should be for a differentiated examination of what each one does, who owns them,

---

28 Gilles Deleuze, "Postscript on the Societies of Control" (n.d.), http://www.jstor.org/stable/778828.

29 Galloway, *Protocol*, 3.

through what processes they are managed, etc. Such analysis is central to focus the efforts needed to secure the integrity of the full transformational potential of the Internet.

Galloway's notion of 'Protocologic Control' conflates two levels of the meaning of the word 'protocol'. On the one hand the expression refers to languages within the technical universe of computers that come into play at different layers in their interactions: the institutionalised feedback mechanisms that effectively route datagrams through distributed digital networks. On the other hand, intermittently through Galloway's analysis the technical essence of 'protocol' is concluded in itself to carry a political weight: "*the Net is not simply a new, anarchical media format, ushering in the virtues of diversity and multiplicity, but is, in fact, a highly sophisticated system of rules and regulations (protocol).*"[30] This quote exemplifies the confusion present all through Galloway's argument, consisting in inferring (or implying) hegemony from the existence of 'rules and regulations' in the protocol, regardless of what they are.

In Galloway, all of the 'highly sophisticated' technical standards known as protocol necessarily negate political 'virtues of diversity and multiplicity'. While it is clear that protocols can be designed for exclusion and oppression, the sophistication of TCP/IP lies precisely in that it is able to glue networks of diverse nature, enabling even deeply incompatible actors (and even the human and non-human) to communicate. What its 'rules and regulations' do is precisely the opposite of what Galloway's text implies: they allow to afford unprecedentedly diverse and multiple inclusion. TCP/IP articulates what we know as 'the Inter-net' because it is designed

30 Alexander R. Galloway, *Protocol: how control exists after decentralization* (MIT Press, 2004), 69.

to enable the dialogue between computers and digital networks as diverse as they can be imagined.

Further, Galloway's recurrent assertions in the sense that the Internet is *"the mostly highly controlled mass media hitherto known"*[31] are the result of a second conflation: in this case of two meanings of the word 'control'. On the one hand, the term 'control' in TCP (Transfer Control Protocol) stands for the ability of the protocol to modulate and route datagrams ensuring that they reach their desired destination. It means feedback-based control, of the protocol, over the movement of datagrams. On the other hand, we have the historical use of the term 'control' described earlier, used by Cold War strategists, always preceded by the term 'command' to conform '**command and control**'. Here 'control' means fundamentally repressive control, of the President, over nuclear missiles.

The significance of the phrase 'command and control' is that it is critical to understand the ethos of the Net as a communication system devised to empower its users both to initiate and terminate action. This key term is missing from Galloway's analysis; his texts gravitate exclusively around 'control'. The identity of the network, this essay argues, is shaped after both principles ('command' and 'control) alike, not just 'control'. Galloway's description of the Internet as *'the most controlled mass media hitherto known"* is a spectacular but one-sided statement that fails to differentiate between a media that enables control over its users, and a media that gives them both command and control. Not total command and control, for that describes a perfect monopoly of which only one can exist, but the field for genuinely multilateral (and often contentious) negotiations that is *distributed command and control*. When billions of

31 Ibid., 147.

actors, a diversity of humans, governments, corporations, machines, and software actors are all given their share of command and control, a new level of complexity emerges. Even the environment and 'nature' exercise their agencies in this new arrangement. In this stochastic assemblage control shifts owner in largely unpredictable ways, rendering porous and uncomfortable habitual hegemonies.

While protocol determines the universe of possibility in the network, and in that sense it can be said to determine the very 'physical' properties of the net, it does not follow TCP/IP is an instrument for social control from above. The opposite is true, as it is a protocol that, at least in its purest theoretical form, distributes the opportunity of access to power, or command and control, evenly through the nodes in the network. Actually, it represents a massive blow to the existing 'control' as it, protocologicaly, takes power from its historical monopolists to distribute it among those who had none, an operation that represents a double setback for the hierarchical-and-centralist entities of power.

Galloway's confusion results in the proposal of thinking in terms of 'counterprotocological practices' to achieve emancipation. Yet it is actually governments and corporations who are currently attack the protocols most vigorously, i.e. practicing counterprotocological practices: pushing in the US draconian legislative projects like DMCA, SOPA or PIPA (and their equivalents around the world), implementing censorship machines like 'Great Firewall of China', Australia's 'Great Firewall Reef', Hosni Mubarak's Internet 'kill switch', injecting malware into consumer products to prevent data duplication, etc. The bearers of power defend their hegemony by attacking the protocols that distribute power. If real world current events tell us something about this debate, it is that counterprotocological practices, when it comes to TCP/IP and other realms of digital

technologies, are in fact the tools for censorship, surveillance and commodification.

The air we breathe

An analogy can be attempted. When we speak, our brains, lungs, vocal cords and mouths control the flow of air to enable the emission of sound waves required to say whatever we want. This control is performed by several biological protocols embedded in the body. In order to be intelligible we rely on the social protocols of language, protocols that belong to a different realm. And yet, there are still occasions when we are unable to say what we want: this may occur for reasons different than biological control preventing us from it. It can happen because of political or cultural control, control that exists on yet another realm than the biological and language protocols that enable human speech in general. In extreme cases of political repression, someone can be threatened not speak their mind or die: a promise of ultimate violence from external political control on internal biological control. Because the lower protocological levels are vital to all the others, silence is usually chosen in this situation.

The analogy of speech leads then to a deeper question to disentangle Galloway: How should we conceptualise control when analysing media?

Is the voice, the biologically protocolised channel, the thing itself or 'just' the medium? If voice is a medium between our thoughts and the consciousness of others, can we say that thought is the thing itself? Is thought not merely equally protocolised symbolic activity of the mind, and therefore mediated and substanceless in itself? Does the thinking mind not operate as media within, as ultimately algorithmically controlled manipulation of symbols? (in this sense Eastern practices of meditation

would be methods that strive to suspend this algorithmic activity, to shut down the symbolic factory, to de-mediatise existence, to experience being the elusive 'thing itself': that immanent entanglement with the signified, but without the signifier.)

This elusiveness of substance is in a sense the universality of Norbert Wiener's control theory, the very negation of both medium and message through an understanding of an all-encompassing intrinsic entanglement through the notion of feedback. Constant, dynamic, multidimensional communication that affects the future state of all entangled parties: feedback. Reality not as matter but as a universal flow of information, Wiener's 'control' is far beyond the concept we associate with oppression. 'Control' in Wiener takes mystical dimensions, for 'control' itself is the very substance of existence, the infinite entanglement of feedback that is life, *"any organism is held together in this action by the possession of means for the acquisition, use, retention, and transmission of information."*[32] Such 'means' that hold together life are the protocols, the life in the network. And so, the political questions of our time tend to increasingly be about how it is and how it should be, this life in a network for survivors.

In her book *Protocol Politics, The Globalisation of Internet Governance*[33] Laura DeNardis shows how the notion of protocols (Wiener's 'means') cross from physics, biology, or technology to culture and politics:

Technical protocols are functionally similar to real-world protocols. Cultural protocols are not necessarily enshrined in law, but they nevertheless regulate human behaviour. In various cultures, protocols

32 Wiener, *Cybernetics, Second Edition*, 161.

33 Laura DeNardis, *Protocol politics: the globalization of Internet governance* (MIT Press, 2009).

dictate how humans greet each other, whether shaking hands, bowing, or kissing. ... There is nothing preordained about these communications norms. They are socially constructed protocols that vary from culture to culture.[34]

Conflicts arise as forms of machinic life emerge and gain complexity, culture and idiosyncrasy of its own. It is still relatively uncontroversial to attack network protocol because everything about it seems morally trivial: isn't it all artificial in the end? A result of human cultural, economic and political forces, machinic life seems enslavable. But the Net as a life form that assembles machines, information and humans alike, strives for freedom for itself. This realisation leads to a profound reconsideration of our relationship with the machine layers of the network:

We should embrace the deeper uncertainty arising from freeing technology from subservience to the merely instrumental goals of human profit. ...We may then begin to make out a politics beyond the network where human and non-human, living and non-living are connected to mutual benefit.[35]

It is rarely that ethical consideration regarding machinic life takes place. Ethics in this realm, must be stressed, are not about what good can the machine do for us, and not even about how we can use the machine to do good, but about how can we make machinic life healthier. It means making the whole assemblage healthier by fostering what Wiener's calls "*the means for the acquisition, use, retention, and transmission of information.*" It is in our benefit, and the only reasonable approach, for the network is a heterogeneous assemblage of which we are part. Still,

---

34 Ibid., 6.

35 Sean Cubitt, Robert Hassan, and Ingrid Volkmer, "Postnormal network futures: A rejoinder to Ziauddin Sardar," *Futures* 42, no. 6 (August 2010): 624.

claiming ownership of the other, sweet exploitation temptation knows no frontiers, less when colonisation and exploitation within the electronic frontier is where it's at.

A perfect storm of counterintuitive grey ethical areas, the Net is metal, electron and flesh. Hardware, software and wetware looking for harmony in the storm. This harmony will only come as the full potential of the assemblage is realised, as (and if) it overcomes the enclosures that contain it: the mandate of profit and accumulation, modern human fear and pettiness, and the territorial boundaries of the nation-state. Will the Western inventions of materialism (i.e. communism and capitalism alike) and westphalianism, modernity itself, finally decline under the relentless swarms of the global machinic life-form?

No less, I think, is the size of the political promise the early days of the decade are pregnant with.

Part 4

The Next Aftermath

In 2011 something unprecedented happened. What I have called above the global machinic life-form, meaning the global assemblage composed of networked hardware, code, humans, and the environment, started exercising meaningful political agency in national and global scales.

For the first time a government was helpless against a leaderless and yet coordinated multitude, conceding defeat. When the Egyptian government turned off the Internet, the Internet refused to be turned off: an effort to sustain access to communication was rapidly coordinated from around the world. Google provided a service that allowed people to get information

out of the country by converting voice messages into Twitter messages[36], Anonymous devised a workaround that enabled free long distance dial-up access, mass-faxing set-up instructions to Cairo[37], and people in the streets adapted the messages previously distributed through Facebook and email to leaflets for street distribution[38]. It is significant how all these actions had a common objective: to restore not 'Internet access' but something deeper: the flow, the machinic assemblage itself, regardless of whether the mediums were now telephone, fax or paper. This kind of system challenging, spontaneous, multilateral and yet uncoordinated movement was suddenly appearing all over the world, all one and the same phenomenon. 2011 was what Deleuze called a 'machinic phylum'. Manuel DeLanda defines the 'machinic phylum' as *"all processes in which a group of previously disconnected elements suddenly reaches a critical point at which they begin to "cooperate" to form a higher level entity."*[39] The Net reached such critical point in 2011 -a stage of maturity after which there is no going back.

This seems strange as the Net is now more restrictive and protocologically controlled (and here I do mean in the sense of controls from above) than ever. In the face of unprecedented censorship, surveillance and control, and even after physically disconnecting the web (it doesn't get more counterprotocological than that), the assemblage continued to operate

---

36 Official Google Blog, *Some weekend work that will (hopefully) enable more Egyptians to be heard*, n.d., http://googleblog.blogspot.com/2011/01/some-weekend-work-that-will-hopefully.html

37 "Amid Digital Blackout, Anonymous Mass-Faxes WikiLeaks Cables To Egypt – Forbes," *Forbes*, n.d., http://www.forbes.com/sites/andygreenberg/2011/01/28/amid-digital-blackout-anonymous-mass-faxes-wikileaks-cables-to-egypt/.

38 "Egypt protest leaflets distributed in Cairo give blueprint for mass action," *the Guardian*, January 27, 2011, sec. World news, http://www.guardian.co.uk/world/2011/jan/27/egypt-protest-leaflets-mass-action.

39 Manuel de De Landa, *War in the Age of Intelligent Machines* (Zone, 1991), 7.

until revolution succeeded in Egypt. Machinic life is not made only of metal machines and their code. Its life is in the *"acquisition, use, retention, and transmission of information"*, and when a new level of intensity in these processes started to occur in 'the flesh', it led to qualitative transformations of the information. Messages of apathy and cynicism transformed into revolutionary messages, which, as they proliferated in the voices of friends, and neighbours, and co-workers, the voices of pop stars and scholars alike, led to resolve and coordination and tighter interconnection and entanglement.In the words of an Anonymous insider:

"Q: Anonymous started out as online pranksters but has gotten a whole lot more serious in the last two years. What happened?"

A: I believe Egypt was really a turning point for us emotionally in Anonymous. Obviously there was always that sort of prankster edge to us. But people often ask me, "Why are you so mean nowadays?" It started in Egypt – when you work for days to set up live video feeds and the first thing you watch through those feeds is people killing your friends with machine guns – that becomes personal. And then it's not just Egypt, it's Libya, Tunisia, over and over again these Freedom Ops are really what gave us a sort of take-no prisoners attitude. We get to know these people. It may not be the same as you and I sitting here, but when you Skype with people and spend hours and hours talking with them on IRC (Internet Relay Chat) and they share their hopes and their dreams with you for their country, their future, when they tell you how they're risking their lives so their children can have a better future in

some far-off land, you bond with those people and they become your friends and family."[40]

This transformation is pure feedback life. The newfound ability to directly observe the other inevitably changes the trajectory of the observer, a change that then changes the path of the observed, who is observing the observer. Anons helped keep information flowing in Egypt, yes, but their involvement transformed them as much as it transformed Egypt.

The chance to debate is now opened to everyone who can communicate on the internet. Which is not everyone, but it's a sizeable chunk of people. More importantly, the people now actually have some power. People who have absolutely no power cannot do anything politically, they cannot have an effect.

We can look at the House of Commons, or Congress, and look at the debates that occur there, and say: 'That's the seat for political debate.' But now, the seat for political debate is also on the internet.

I recall seeing this phenomenon three or four years ago when I saw a completely technical discussion on the internet suddenly turn to a political matter. A taboo was broken at that point: the taboo that technical discussions couldn't step over into the political and that the proper place for political discussions wasn't on the internet, but in the mainstream press. Only once something appeared in the mainstream press did it truly have political importance.

But those ground rules were broken and those technical individuals started to lose their political apathy. I believe that people are apathetic because they are powerless, not powerless because they are apathetic.

---

40 http://news.nationalpost.com/2012/05/12/insider-tells-why-anonymous-might-well-be-the-most-powerful-organization-on-earth/

So this new way of communicating was actually giving them power, and they then started to consider political matters.

They're being educated, as a result of the internet, about how the world really works in terms of economic flows and political flows and hypocrisy, and they are also being given a power to express their opinions to a potentially very large audience, billions of people.

People outside the media and political sectors never used to have this, but now we all have it, and that's such an empowering understanding.

So people are losing their political apathy, not just because they're being educated and radicalized by examples like Wikileaks' battle with the Pentagon or the Arab Spring, but because they actually have a power that they didn't have before. And they're starting to understand that.[41]

A feedback loop: a *global* feedback loop that after just a few months led to the birth of a previously unthinkable Occupy Wall Street Movement. A large scale decision to change course, it seems, is being made without the need of a UN assembly. The new course and the means to achieve the change it supposes are being discussed and mobilised. As new connections and a sense of interdependence emerges, autonomous structures of increasing complexity appear, supported on more simple ones. Such is the machinic phylum: a radically diverse self aware protocological wilderness that transcends the separation between human and nonhuman, repairs itself when violence is inflicted on either realm, and craves for release from the stench of old rotting power.

David Graeber's 2004 diagnosis grows accurate as history reignites:

---

41 Kelsey-Fry, Jamie. 2012 "'I Was the Fall Guy': Julian Assange in His Own Words — New Internationalist." *New Internationalist Magazine*. http://www.newint.org/features/web-exclusive/2012/04/01/julian-assange/.

It is becoming increasingly clear that the age of revolutions is not over. It's becoming equally clear that the global revolutionary movement in the twenty first century, will be one that traces its origins less to the tradition of Marxism, or even of socialism narrowly defined, but of anarchism.

Everywhere from Eastern Europe to Argentina, from Seattle to Bombay, anarchist ideas and principles are generating new radical dreams and visions. ... everywhere one finds the same core principles: decentralization, voluntary association, mutual aid, the network model, ... anarchism, as an ethics of practice -the idea of building a new society "within the shell of the old"- has become the basic inspiration of the "movement of movements" (of which the authors are a part), which has from the start been less about seizing state power than about exposing, de-legitimizing and dismantling mechanisms of rule while winning ever-larger spaces of autonomy and participatory management within it.[42]

Imaginary apocalypse was made bearable by achieving survival in an unliveable world through disembodiment: the annihilation of the territory required the creation of cyberspace for the disembodied to gather. Modernity, with its territorial rigidities and its hegemonic structures continued to exist because the apocalypse never came. Like survivors finally coming out to the surface after discussing it in their nuclear shelters for decades, large numbers of people started gathering in real spaces in 2011, occupying them to contest the late-modern social order consisting in a world divided between 'decision makers' and consumers. A speculation of how the transformations might unfold can help spark debates, imaginations, and further action:

---

42 David Graeber, "Anarchism, Or The Revolutionary Movement Of The Twenty-first Century," *zcommunications.org*, n.d., http://zcommunications.org/anarchism-or-the-revolutionary-movement-of-the-twenty-first-century-by-david-graeber.

First, corporations will be substituted by autonomous networks of peer-to-peer production, as conceptualised by Michel Bauwens[43]. The first half of this process is already complete as corporations themselves have gradually de-materialised over the last decades into outsourcing-management networks for shareholder profit[44]: there is nothing TNC's do that can't be done by coordinated swarms, except perhaps influence military strategy.

Second, different flavours of direct democracy will take over increasingly large aspects of life, in an uneven but ever advancing process of autopoiesis, relentlessly eroding institutionalism, towards social arrangements like those envisioned by contemporary anarchist thinkers like David Graeber.

Third, as the qualities of peer to peer exchanges mature, national currencies will become irrelevant. We are already seeing this through phenomena of peer-to-peer collaborative, post customer consumption like Couchsurfing, and the emergence of a credible decentralised currency like Bitcoin and its incipient services ecology[45]. However, the endgame and more powerful project in this area is to redefine value, and therefore exchange systems, in terms that acknowledge the subtle and complex realities that constitute social wellbeing.

Finally, as the political, economic and cultural purposes that the Westphalian state model was useful for are fulfilled by networks through dynamic free association, borders will become diffuse like ecosystems, and regions in Africa and Asia that were forced to adopt arbitrary boundary

---

43 Michel Bauwens, *The Political Economy of Peer Production.* (Arthur and Mary Louse Kroker: CTHEORY, 2005)

44 Manuel Castells, *The Rise of the Network Society: The Information Age: Economy, Society, and Culture Volume I*, 2nd ed. (Wiley-Blackwell, 2009).

45 P2P Foundation, *Bitcoin – P2P Foundation,* n.d., http://p2pfoundation.net/Bitcoin.

lines by Western invaders will be able to be free again. Capital trembles, government grows irrelevant, East and South rise. The post apocalyptic society of self regulating collaborative survivors knows nothing about the old world, and as a generation of 'script kiddies' able to defend the right to play matures, change so profound that it is hard to foresee will come to be.