

CONNECTED INTELLIGENCE FOR THE CIVIL SOCIETY: THE INTERNET AS A SOCIAL LIMBIC SYSTEM



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DEFINITION

THERE ARE SO MANY DEFINITIONS OF INTELLIGENCE that it may be wise to return to the term's origin in etymology. From the Wiktionary, we have this proposal: Latin *intellegentia* (the act of choosing between, intelligence), from *intellegō* (understand), from *inter* (between) + *legō* (choose, pick out, read). However, on the Online Etymology Dictionary¹, we can read both *intellegentia* and *intelligentia* as the given Latin origins of the contemporary word. The difference is important because the latter version would indicate a different etymology based on “inter” and “ligare”, which means to bind, to connect.

There are no strong reasons why “ligare”, a more logical term, would not be considered as a possible alternative to “legere”. In all modern languages derived from Latin, none have adopted the phonetic radical of <inter-legere>. In any case, even if ligare were not to be part of the true etymology, at least the proximity of the words and the subsequent shifts in the distinguishing phoneme invite the implicit notion of connecting as a connotation of the act of selecting more than a

single item. Another word for understanding, “comprehend”, reflects even more the notion of connecting things together².

All cognitive technologies from the telegraph to the Internet and social media derive their properties from carving specific connecting routines in the Internet to delve into selected modalities of relationships and knowledge. The present trends of information and cognition technologies have been based and guided on connecting people and things in various configurations to improve awareness, intelligence and knowledge. Hence we are back to a core meaning of intelligence: making the right connections mental, social or technological is what gives people improved access of their intellect to pertinent information. The case of Big Data is perhaps the best example of available cognitive potential that is only revealed by collecting and connecting the pertinent data. In Big Data, there is no answer before the question is asked. Big Data simulate a kind of total understanding that requires only the focus of a query to be manifested.

All technologies of data-tracking are presently converging very fast to be absorbed by and into Big Data. The commercial and social pertinence of knowing everything about us – to say nothing about security issues – makes that trend irreversible. Our destiny as a society immersed into digital culture worldwide is to become transparent. This is the exact opposite of the effects of literacy that made people individually opaque by internalizing and privatizing thinking. The ethics of opacity that guaranteed privacy were long in coming from the time of extortion and “question” during the Spanish Inquisition to the separation of Church and State and the rise of the private individual. This long-term trend is being reversed today. A new ethics based on transparency appears inevitable. It will probably give precedence to community over individuality.

CONNECTED INTELLIGENCE

Connected Intelligence is the active personal and collective cognitive environment that electronic technologies have weaved in and around us via the Internet in particular and electricity in general. It functions both as an extended memory and a processing

intelligence for each one of the users of electronic technologies from the telegraph to “cloud computing” and Twitter. It brings people together instead of separating them as alphabetic literacy did and it allows for any number of individual entries in a fluid information space definable for individual as well as collective and connective needs. It can take many forms whether pooling individual resources in services such as Google, Wikipedia and social bookmarking or externalizing and objectifying imagination in fictional but live 3D environments such as Second Life.

What I find intriguing about Second Life and other 3D virtual environments is that they emulate our imaginary processes but outside our heads on a screen. That externalization itself is already a surprising cognitive phenomenon, projecting the fictional universe in front of our eyes, instead of behind them. But, what is more, these simulations are allowing other people to share into them. The reason I call it “Objective Imaginary” is that it occupies a hybrid position between theatre (which is not directly affected by how we interpret it), and participative thinking, the way we actively participate in realizing in our minds the figures, places, sounds and other sensorial features of novels, merely to read them.

Let us consider all the intellectual resources we have learned to process in the intimate isolation of our own mind, such as planning, sorting, classifying, remembering, designing, calculating, most if not all of such cognitive operations are being taken over, expanded, connected, verified and distributed on line and via screens that “objectify” the processes themselves submitting them to our estimation for approval. Imagination is next. What is beginning to happen now is the opposite of what happened at the time Cervantes wrote *Don Quixote*. In that benchmark novel about a cognitive revolution, what changes the mind of the hero is his excessive reliance on reading medieval romances and his nostalgia for heroic times. Its all in his mind, of course, because it is in his mind that he processes the words of the novels he reads. Virtual Reality for him is in his head not on a screen. The difference is that today most people share their minds with a screen for any duration from 2 to 8 hrs a day.

CYBERSPACE AS A SHARED SPACE

As Pierre Lévy famously said, “Internet is not *in* space, it *is* space”.

Concluding on preliminary observations in the introduction of a very influential book, *La production de l'espace*, Henri Lefebvre defines space as constituted by three distinct but interrelated spaces:

“physical space : nature, the Cosmos, mental space (including logical and formal abstractions), and finally social space”³. Inspired by Lefebvre, sociologist Anna Cicognani adds cyberspace as yet another distinct but complementary kind of space :

“Online Virtual Communities (VCs), in particular, represent an increasing resource for people using the Internet as a tool for various purposes, among others, information exchange and storing, communication, socialisation. More and more frequently, these communities are populated by a variety of citizens who look for more interactive aspects of online tools. Apart from obtaining information, there is the possibility of interacting with other users and ultimately to “leave a trace” of themselves in the online community”⁴.

The “Always-On” generation (by which I mean not just the younger citizens but anyone who carries a cellular phone) is defined by being permanently accessible via mobile contraptions. It is a condition of trust and availability, a kind of incessant dialogue with the world. The “wired” generation of connection junkies circulate and recirculate information from the biological mind to that of the networks. The always-on generation builds its identity on line via social media and become dependent on the reputation its members acquire in such manner. This so-called “reputation capital” is garnered by manicuring profiles and connections. It is quite literally “plugged-in” the cognitive environment available via networks. For this generation the world is both global and geolocalized at the same time. Wherever you are, you are potentially in touch with the whole world.

As Doug Rushkoff already noted, children do not merely watch the television these days, as their grandparents did, they play with it. They multitask, they can handle several “windows” at once. Their intelligence relies on connecting to a perpetually refashioned hypertext of relationships and tag clouds, a hypertext of which they are themselves the central node. Young people are “friends” at 3 to 4 degrees of separation, while their grandparents needed to at least shake a person’s hand a few times before considering oneself as a “friend”.

Cyberspace is a sort of “computer-supported” social space that bridges the physical and the mental spaces. It is primarily a shared environment. Cyberspace, by definition, is shared via networks. It is entirely dependent on technological connections based on the refined management of electricity⁵. These networks are configured so as to ensure specific connections. The architecture of these networks differs in patterns and complexity depending on the numbers and the kinds of interactions required⁶. Connective intelligence can be assessed both in the creation of such networks and in the effect they foster.

With the exception of mental space, all four kinds of space are shared and up to a point, one could

argue that even mental space can be shared as in a classroom or seminar situation where the course material and the instruction diffuses in the student body a shared intellectual space. On the other hand, mental space is still deemed to be private although that very privacy is being threatened in all manners by digital data collection and cross-referencing, thus, on line at least, even that intimate recess is made public.

SHARED EMOTIONS ON THE INTERNET: THE SOCIAL LIMBIC SYSTEM

In his seminal approach to intelligence, Daniel Goleman⁷ has added a critical element, which is its emotional component. This element proves important for social activism more often than not motivated by indignation, anger, fear, or a feeling of social solidarity as in so many examples since the world movements of Indignados, Occupy Wall Street, Anonymous or the Arab Spring. The Internet has a very important emotional dimension. People increasingly feel the need to share more and more personal details about themselves, their thoughts, feelings and ideas with the wider world, as part of their online existence.

This is true not just for the “friends” on Facebook, or for couples using match-making sites, but also for the whole of our lives as lived on this medium. It is true for how we share our politics via Twitter or our viral videos on YouTube. Social media act as the agent for conveying and sharing emotions. The online world works as an integrative system of impulses, desires and frustrations, which is moving at the speed of light. The grassroots activist sites such as Usahidi or Avaaz articulate collective emotions and connectivity amongst peoples across borders and cultures.

We share global emotions all the time, but we don't always realize it. Certainly we share a sense of the horror of crude decapitation, whether we have seen it on Internet or not. But we also share more latent emotions, such as the global dismay regarding the revelations – and subsequent treatment of Edward Snowden – and simultaneously experience a subconscious solidarity with the multitude on this topic. The era of transparency throws light on scandalous practices from trusted institutions. A global unease sets in making people ripe for local flare-ups. Throngs of persons are involved in and with Ukraine or Syria and everybody has an opinion. The scandals attending the Sochi Games gave mixed feelings about Putin and Russia to many people.

The immediacy of social media enables the individual to get involved on an emotional level with

current social and political issues. The readiness to respond emotionally to external public events results from the perception on the part of social media users, that they are connected personally with others sharing their own political views, with whom they are willing to share information and news in real time.

I like to use the organic metaphor of the human limbic system to describe this new system of social interaction. By using this metaphor, I want to explore the conditions surrounding the creation, communication and development of emotions on the Internet in order to throw light on the relationship between technology and psychology. It is important to understand this interplay before trying to analyse the ways in which the media modify our environment and how people are changed by the use of the media they are exposed to on a daily basis. This is especially important when it comes to a technology that transmits language, and which therefore becomes an interface between the technology and the mind of the user. Furthermore, in exploring the relationship between knowledge and the media, we can also examine the ways in which new technologies affect our conscious and unconscious processing of information and our affective responses.

When a medium is connected to the Internet, there are many emotional and cognitive events being transmitted from person to person, which in turn motivate the sharing of experience and also the call to political action. It is clear that today's geopolitical map of the world has been changed by the arrival on the political scene, via the Internet, of a new class of mass political activists, who are no longer the “Silent Majority”.

So now that the majority is silent no more, the result is a kind of interactive human ‘massification’ consisting of the connections between many individuals who respond to some current issue as a significant collective. The Spanish network sociologist Manuel Castells called this the collaboration of many “mass individuals”. Castells identified that the relationships that are established between individuals on a personal basis, from one person to another, are much more complex and articulated than those that come out of the reactions of the crowd or the anonymous mass. We can therefore imagine that the result of this endless interaction between individuals on the Internet is equivalent to the infinite multiplication of conversations over a cup of coffee.

These changes in the way we interact and relate to others in a mass social context are directly reflected in how we use contemporary media. In particular we can expect a redefinition of the distinction between public and private in the conversational context of the sites connected to social networks, as well as the emergence of new

forms of intimacy and the expression of emotions that reinforce both individual action and social interaction. This new experience of real-time sharing of information, emotions and opinions by individuals rests on what I call the emotional limbic system.

The limbic system regulates emotions in to the human body (as it does in all mammals). It is a complex set of smaller brain structures which occupy the inner part of the brain and is repeated in the two hemispheres. It was formed hundreds of millions of years ago, and is present in many other animals that are less evolved than man. This region of the brain, which is closely connected to the cerebral cortex, or grey matter, regulates and process information that conditions biological rhythms, and emotive responses such as, for example fear and aggression, or love.

We can more or less correlate the various elements and functions of the emotional network of the Internet's 'central nervous system' to biological organs. The screens and keyboards, and all the technical equipment of PCs, tablets and mobile phones, co-ordinated via the Internet, act like the thalamus transmitting information in order to bring about action. Similarly, data aggregators work like the hippocampus to combine information from different media and sources, and thus enable the system to grow. Social media, like Twitter in particular, can be equated to the amygdala, which plays the role of an accelerator and determines the amount and size of the emotional response to an event. Twitter stimulates its followers to instantly experience a wave of shared feelings with the crowd. Twitter is at once both very individual, touching everyone personally and revealing their inner being, while also extending the influence and impact of the crowd. Social media, the hippocampus of the Internet, carry and store images and text that stimulate emotions and allow the aggregation of information and the sharing of facts and opinion in real time. Facebook, Twitter, chat rooms and forums, as well as other sites are highly regionalised, like Orkut in Brazil. They make people react in emotional waves that can bring people from different cultures, religions and social backgrounds together.

There is interplay between the personal and the public spheres in the views and arguments posted by anyone about current issues such as the global financial crisis, and the growing call for greater transparency and responsibility by large financial institutions⁸. The collective response via social media to issues such as these raises the growing indignation of the crowd. In the past, people tended to have more tolerance of corrupt governments or firms because there was a lack of accurate information, but now, especially after Wikileaks, there exists via social media a sort of permanent state of

alertness that can trigger a collective cognitive response. The Wikileaks case was the start of a new political reality, where transparency *has a value*, information is currency, and where awareness and responsibility have become an ethical concern.

Indignez-vous!, a small book by Stéphane Hessel, published in France in 2010⁹ started the international movement called 'Los Indignados'. The 28 pages spread virally via social media first in Spain and then in many other countries, producing over a thousand emotional waves beyond the borders of France. To quote Hessel:

The real outrage is not borne by hating, but by empathy and solidarity with others, and in this sense it is a natural effect of interconnectivity associated with real political and social unrest. It moves beyond the need of the individual to be communal experience, something more universally human.

The Internet and Web 2.0 tools introduced into civil society a real possibility of unstructured expression, without hierarchies, participatory and collaborative. Through the process of sharing, in a spontaneous and emotional way, a "global village" was enabled.

That said, on the other hand, collective political participation online has also been derided as so-called "clicktivism" (from the contraction of the word 'activism' with the verb 'click'). This means the simple act of clicking on *like*, which can be seen as a lazy way of belonging to the group, and not a real social membership. See Micah White:

"In promoting the illusion that surfing the web can change the world, clicktivism is to activism as McDonalds is to a slow-cooked meal. It may look like food, but the life-giving nutrients are long gone¹⁰."

This rather harsh judgement of the political impact of social media based movements ignores the fact that people did get involved through demonstrating in the streets. Emotion on line can readily turn into "e-motion", that is, the tendency to drive people into active and public protest. The Occupy Wall Street movement, for example, clearly goes beyond mere clicking and involves real mobilization of people at the physical level.

From the Arab uprisings to the protests in Iceland, people have progressed from what began online to a street movement that powers and connects heterogeneous communities. The Indignados from all over the world, the *aganaktismenoi* of Greece, The Anonymous, the M-15 in Spain and all other facets of the *Indignez-vous* current are clear examples of this new phenomenon.

The American sociologist Zeynep Tufekci, who has thoroughly studied the various stages of the Arab Spring, has called this phenomenon "network effects"¹¹, by which she means the impact of network communications on the behaviour of the mass in times of crisis.

The Internet changes the structures and forms of social networks, increasing the speed of communication – modifying and restructuring the public sphere.

In my view, the most important thing to understand and study in these examples is the fact that the Internet allows individuals to extend their impact beyond the confines of their own room and go global. As Tufekci pointed out, there had been more than seven street protests in Tunisia before the event that gave the starting signal to the Arab Spring. For example, in Gafsa, a town in the deep south of Tunisia, there were protests in 2008, which were followed by brutal repression¹², not only of individual protestors, but also of information. Tufekci notes that, in 2008, there were only 28,000 Facebook users in Tunisia. But after the self-immolation of Mohammed Bouazizi in 2010, the protest movement was launched that became viral. And by this time there were two million Facebook users in Tunisia. This shows that the impact of the network is so strong that it can challenge even extremely brutal repression.

We must also understand, however, that the phenomenon of social mobilization was not born yesterday or even three years ago. There are precedents that can be interpreted as stages in the technological maturation of the social limbic system. Even before the expansion of the Internet, as early as 1989 Chinese dissidents were able to use faxes to send news and images of repression at Tiananmen Square in Beijing, despite government censorship and control of the press and the mainstream media.

In 1994, when the masked Subcomandante Marcos appeared on the Internet as the face of the rebellion in the Mexican state of Chiapas, this was the start of public opinion evolving from local to global. It was no longer possible for the world to ignore the injustice done by the Government of Mexico against the farmers in that region in the name of multinational food companies.

The special case of the Philippines gives evidence to the differing capacities of the Internet, SMS and Twitter to provoke an emotional response from the people. For a couple of years (1999-2001) it was known that the Estrada government was involved in many corruption scandals. But an initial protest in 2000 on the Internet had not resulted in a mass impact because, although there were a million Filipinos connected in the world, only 50,000 of these were in their own country, the rest living as expatriate workers in other countries. In 2001, perhaps because the use of SMS in the Philippines was still free, it was possible to contact thousands of people with just one message, and those with mobile phones raised enough anger and indignation amongst the populace to bring down the Estrada government.

In Iran in 2009, the use of Twitter raised awareness of electoral fraud, threatening to invalidate the re-election of the government, but was stopped because of repression:

Twitter, [...] especially because of its integration with mobile phones [...] is in fact the only channel more or less open or open intermittently, through which news and information can get through about what is happening in the Islamic Republic after the disputed Iranian presidential election that saw the victory of Ahmadinejad¹³.

As commented by the *Washington Post*:

What we are seeing is the flickering flame of freedom. People are willing to risk their lives to protest a system that oppresses them and denies them fundamental human dignity. Those who say none of this matters – that it is a feud between factions of the ruling class and that it has no chance of bringing about real change – are missing the point. The people of Iran are exercising their sovereign right as a people to stand before their rulers and say “no more”. They are commanding the attention of a world that seeks to make deals with their oppressors. That Iranians are telling us they yearn to be free¹⁴.

What lessons emerge from these examples? This new phenomenon of bottom-up political activism, not organized by political parties, but by ordinary citizens, has demonstrated that it will be very difficult to suspend democratic constitutions and hand over power to members of the same family or the same “caste” as has been the case before. In that regard, I am particularly impressed by the conclusion that Esther Dyson, chairperson of EDventure Holdings, an active investor in a variety of start-ups around the world, gave to her reflexion on Wikileaks:

In the long run, WikiLeaks matters for two reasons. The first is that we need a better balance of power between people and power. Information – and specifically the Internet’s power to spread it – is our best defense against bad, unaccountable behaviour.

Second, we *do* want to trust our governments and institutions. The point of openness is to make those in power behave better – and to make us trust them more. Rather than viewing them as enemies, we should know what they are up to, and perhaps have a little more say in what they do¹⁵.

Esther Dyson’s voice is the voice of Civil Society, not revolutionary, not class bound, not exclusive, just plain common-sense, a view of democracy that Franklin and Jefferson would have shared. Democracy is not only based on equal rights and proper representation of the individual by power and institutions, it also based on sharing a vast mental space, that is, the awareness – at different degrees of intensity – of belonging to a common situation bound neither by physical nor mental space, but including the social in the mental space as a kind of background intuition. Cyberspace adds a global extension to all the other spaces to allow a

‘global social being’ to emerge at the subconscious level of everybody.

The concept of the social being is not just a new metaphor. It began as part of early tribal culture, but nowadays even in a modern city, where people are part of the connective social being, they are continually subjected to the emotional currents of the moment from the neighbourhood to the globe. The great theorists of the crowd, Gustave Le Bon (*The Crowd: Study of the popular mentality*, 1895), Elias Canetti (*Crowds and Power*, 1960) and Jacques Ellul (*Propaganda: Shaping the attitude of men*, 1973) have all made similar relevant observations about man’s social being. Similarly, it is also understood that where people have physical and social needs in common, an emotional exchange also occurs as part of the interaction. The arrival of real-time media, radio, television and now the Internet, magnify this process and speed it up more than ever before. In summary, therefore, we can say that the Internet has mimicked the biological limbic system of the individual body to extend its influence to the social body.

However, as Zeynep Tufekci said in a recent TED conference:

“The problem with social movements today is not that their participants lack heart or that they fail to forge true bonds among themselves, as some have argued. Like startups that grow too quickly movements need to learn to scale beyond the fast participation that’s made possible from online networks. All these good intentions and bravery and sacrifice by themselves are not going to be enough”¹⁶.

The political effects arising from the use of networks are evolving rapidly and while the first events caught power structures by surprise, with consequences that have not always been positive (in particular with the Arab Spring that seem to have changed things for the worse in several countries such as Syria and Lybia), government – and businesses – have quickly reacted to the threats and seen the opportunities for increased control on the social body. In a recent paper, Tufekci describes in great detail how Big Data and what she dubs ‘computational politics’ are turning things around in favour of the very institutions that were put into question by the Civil Society. As she concludes this important essay:

The methods of computational politics will, and already are, also used in other spheres such as marketing, corporate campaigns, lobbying and more. The six dynamics outlined in this paper – availability of big data, shift to individual targeting, the potential and opacity of modeling, the rise of behavioral science in the service of persuasion, dynamic experimentation, and the growth of new power brokers on the Internet who control the data and algorithms – will affect many aspects of life in this century. More direct research, as well as critical and conceptual analysis, is crucial to increase both our

understanding and awareness of this information environment, as well as to consider policy implications and responses. Similar to campaign finance laws, it may be that data use in elections needs regulatory oversight thanks to its effects on campaigning, governance and privacy. Starting an empirically informed, critical discussion of data politics now may be the first important step in asserting our agency with respect to big data that is generated *by* us and *about* us, but is increasingly being used *at* us¹⁷.

CONNECTED INTELLIGENCE TO DEFEND THE CIVIL SOCIETY

The history of the Internet has demonstrated at every turn that all attempts at controlling it have engendered swift countermeasures to protect netizens. In this regard connected intelligence on and off line will prove effective to defend civil society. In activism it is important to know or sufficiently know about the other participants to trust them. That present the obligation to connect in the right way. Many applications exist already to strengthen and sustain activism, but I have no doubt that customised and democratised Big Data mining applications will soon give even more powerful tools than anything invented so far. My general trust (and thrust) is that in the end the Internet and cyberspace will continue to self organize and eventually fashion all of society into a tolerable shape and that the Civil Society extended and respected globally will prove to be the only tolerable shape humanity should strive for in the era of transparency.

APPENDIX TOOLS FOR ACTIVISM¹⁸

I have taken the liberty to add a graphic and a few suggestions that I gleaned on the Net of tools for connecting activists safely and intelligently. The graphic presents a very advanced articulation of the different components of collective intelligence. It is a fascinating read and I propose a little exercise to make it even more fun: in perusing the various categories that are proposed, I suggest that wherever you see the word ‘collective’, substitute it with ‘connective’ and judge which one reflects better the need for connecting specific configurations and relationships in a social activism project.

CROWDVOICE - Similar to the social media aggregating service Storify, but with an activist bent, CrowdVoice spotlights all content on the web related to campaigns and protests. What’s different about it? Founder Esra’a al Shafei says “CrowdVoice is open and anyone is a contributor. For that reason, it ends up having much more diverse information from many

more sources.” If one online activist comes across a spare or one-sided post, he can easily supplement information. Furthermore, campaign participants can add anecdotes and first-hand experiences so that others can check in from afar. CrowdVoice makes it easier for far-flung audiences to stay abreast of protests and demonstrations, but it also helps organizers coordinate and stay abreast of other activist movements.

SUKEY - During London’s UK Uncut protests this year, police used a tactic called “kettling,” or detaining demonstrators inside heavy police barricades for hours on end. In response, UK Uncut activists created a mobile app to help one another avoid getting caught behind the barricades. The tool, Sukey — whose motto is “keeping demonstrators safe, mobile and informed” — helps people steer clear of injuries, trouble spots and violence. Sukey’s combination of Google Maps and Swiftriver (the real-time data verifying service from the makers of Ushahidi) also provides a way for armchair protesters to follow the action from afar. Users can use Sukey on a browser-based tool called “Roar,” or through SMS service “Growl.”

OFF-THE-RECORD MESSAGING (OTR) - A software hat can be added to free open-source instant messaging platforms like Pidgin or Adium. On these platforms, you’re able to organize and manage different instant messaging accounts on one interface. When you then install OTR, your chats are encrypted and authenticated, so you can rest assured you’re talking to a friend.

CRABGRASS - A free software made by the Riseup tech collective that provides secure tools for social organizing and group collaboration. It includes wikis, task files, file repositories and decision-making tools. On its website, Crabgrass describes the software’s ability to create networks or coalitions with other independent groups, to generate customized pages similar to the Facebook events tool, and to manage and schedule meetings, assets, task lists and working documents. The United Nations Development Programme and members from the Camp for Climate Action are Crabgrass users.

PIDDER - A private social network that allows you to remain anonymous, share only encrypted information and keep close track of your online identity — whether that identity is a pseudonym or not. While it’s not realistic to expect anyone to use it as his primary social network, Pidder is a helpful tool to manage your information online. The Firefox add-on organizes and encrypts your sensitive data, which you can then choose to share with other online services. It also logs information you’ve shared with external parties back into to your encrypted Pidder account.

¹ See <<http://bit.ly/17l0oRC>>.

² Another angle on the meaning of intelligence comes from Roy Ascott’s suggestion that the brain is not an organ that *produces* consciousness, but one that *perceives* it, just as the eye does not produce vision but perceives the visual object. This bold and interesting hypothesis implies that consciousness is not internal to the body but available everywhere and that different types of bodies are equipped with different types of cognitive apparatuses. Of course there is no scientific proof of that hypothesis and it may not even have an immediate bearing on the nature of intelligence. However it begins to be useful when it is related to technology. Taking the example of the eye, glasses help to refine the precision of vision. In the same way, ICT technologies might be deemed to help improve and share access to matter and awareness.

³ “De quels champs s’agit-il? D’abord du physique, la nature, le Cosmos — ensuite du mental (y compris la logique et l’abstraction formelle) — enfin du social”, Lefebvre Henri. “La production de l’espace”, in: *L’Homme et la société*, 31-32, 1974. *Sociologie de la connaissance marxisme et anthropologie*: 15-32. Full text at <<http://bit.ly/1DoQhZs>>.

⁴ Anna Cicognani, *Defining a Design Language in a Text-based Virtual Community* <<http://bit.ly/1Av01jw>>.

⁵ Indeed, it may be relevant to point out that electricity is the true ground of all electronic media. Digital and virtual technologies are but one of the many forms taken by electricity.“

⁶ Zizi Papacharissi proposes the term Virtual Geography to describe the specifics of network architecture: “Certainly, each social networking site serves a unique purpose, so network architecture is essential to meeting these unique objectives. [...] They gain relevance as they help to declare the situational geography of the network to its members, thus explaining how the network will serve as a social setting for interaction. Because virtual geographies are founded upon a fluid premise of evolving connectivity, they are situational and not static. [...] Because the offline and online worlds operate in synergy rather than in isolation, a flexible architecture permits online social systems to form organically and not as colonies of their offline equivalents” <<http://bit.ly/1tMBa3i>>.

⁷ Goleman, Daniel (1995). *Emotional Intelligence: Why It Can Matter More Than IQ* (New York: Bantam Books).

⁸ See *Inside Job*, a documentary about the collusion between the US government and the big financial groups.

⁹ Indignez-vous! — or translated into English as Time for Outrage!

²⁰ Micah White, *Clicktivism is ruining leftist activism*, *The Guardian*, August 12, 2010.

³¹ Tufekci, Z. *Big Questions for Social Media Big Data: Representativeness, Validity and Other Methodological Pitfalls*, *Proceedings of the Eighth International AAAI Conference on Weblogs and Social Media* (Palo Alto, CA: The AAAI Press): 505-414 <<http://bit.ly/1HScoqG>>.

¹² Tufekci calls this brutal instant repression “Wack a protest”.

¹³ Reported July 25, 2009 by Luke Alagna <<http://bit.ly/17n5gpj>>.

¹⁴ See <<http://bit.ly/1x04Aeq>>.

¹⁵ Esther Dyson “WikiLeaks’ Flawed Answer To a Flawed World”. On line comment at <<http://bit.ly/1xIGzhf>>.

¹⁶ <<http://bit.ly/1HSconR>>.

¹⁷ Tufekci, Z., *Engineering the public: Big Data, surveillance and computational politics*, *First Monday*, 19(7), 7 July 2014 <<http://bit.ly/1BOz5sk>>.

¹⁸ See <<http://on.mash.to/1xUECQt>> and also <<http://slidesha.re/1xU73Li>>.

