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# Reintroducing the Cyborg Concept to Explain Internet-Related Safety Issues

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## Abstract

This paper advocates a re-introduction of the notion of cyborg in order to acquire a new perspective on studies concerning the development of human cognition in highly technological environments. In particular, we will show how the notion of cyborg properly engages cognitive issues that have a powerful resonance especially as far as social cognition is concerned, and may consequently provide a new tool for tackling the emergent safety issues concerning sociality mediated by the Internet, and the moral panic occasionally surrounding it.

**Keywords:** Cyborg; Social Network Websites; Cyber-Bullying; Internet Safety; Distributed Cognition.

## A Quick and Critical History of the Cyborg

The concept of cyborg was not coined in science-fiction, but by two scientists at the Rockland State Hospital, Orangeburg, N. Y.:

For the exogenously extended organizational complex functioning as an integrated homeostatic system unconsciously, we propose the term “Cyborg.” The Cyborg deliberately incorporates exogenous components extending the self-regulatory control function of the organism in order to adapt it to new environments. (Clynes & Kline, 1960, p. 27)

Cyborgs (obtained by endowing men with transparent implants) were advocated for allowing man’s adaptation to new environments – think of outer space – that either could not be adapted, or would require a major genetic (hence hereditary) adaptation, spontaneous or induced. It is important to note that since the beginning the notion of cyborg was connoted by what, today, could be seen as an *ecological-cognitive* necessity (Magnani, 2009). The cyborg’s eco-cognitive nature derives from the stress on adaptation and on the cognitive functions: the artifactual additions have always been considered as something that ought to be transparent to one’s cognition and often capable of expanding one’s cognitive capabilities (Pino, 2010).

We will now briefly review two insightful positions in cyborg-related studies, which will be crucial for the rest of our argument: Donna Haraway’s feminist theory (Haraway, 1991) and Andy Clark’s cognitive-oriented approach (Clark, 2003).

## Haraway’s Uncomfortable Cyborg

The untarnished fertility of Haraway’s *Cyborg Manifesto* was recently shown by a paper interestingly exploring the cyborg-like features of Facebook (Waite & Bourke, 2013). While

we will later return on its recent use, it is worth sparing a few words on the Haraway’s contentions. As presented by Haraway herself, the theory is deeply embedded in Feminist arguments. Nevertheless some of her takes may be discussed and accepted regardless of one’s sharing the ideology they are meant to support. Haraway inserted in her definition of cyborg a trait that was seminal (or concerning an elite) at the time of her writing, but that is fully developed now: the strict dependance of our cyborgian nature on social cognition.

A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction. Social reality is lived social relations, our most important political construction, a world-changing fiction (Haraway, 1991, p. 149).

Haraway’s further insight about the relationship between cyborgs and boundaries is perhaps the one that is most useful to the actual discourse. Her pivotal claim is that high-tech culture, epitomized by the actualization of the cyborg, openly challenges the dualisms that have been determining the practical and intellectual lives of human beings for millennia: “some of those troubling dualisms are self/other, mind/body, culture/nature, male/female, civilized/primitive, reality/appearance, whole/part, agent/resource, maker/ made, active/passive, right/wrong, truth/illusion, total/partial, God/man” (p. 177). With this respect, it is extremely interesting to consider how the actual “being cyborgs” impacts our perception of the World, the way we make sense of our perceptual judgements and how we direct attention: it is the issue explored by Verbeek as *augmented intentionality* (2008), essential to phenomenology and cognitive science. As noticed by (Waite & Bourke, 2013), this denotation of the cyborg is most fitting to investigate actual phenomena such as the use of social networking websites (SNS), considering to what extent they habitually collapse dualisms and dichotomies such as the *real/virtual* one, which was left relatively unharmed in previous modalities of virtual pro-sociality (i.e. forums, chatrooms) which would foster a juxtaposition of different social worlds rather than a homogenous blend.

## Andy Clark’s Brilliant Intuitions and the Explosion of the Cyborg Concept

One of the largest debate in cyborg-related studies has been on where to set the line dividing what is a cyborg an what is

not (yet) a cyborg. Inclusive and exclusive positions would argue about the use of extensions to one's physical and cognitive capabilities (esthetic or prosthetic) and the possibility (or lack thereof) to detach the extension. The most remarkable and successful attempt to go beyond this debate (and its dangerous scholasticism) was carried out by philosopher and cognitive scientist Andy Clark. His fundamental goal was to perform a gestalt shift and discard the iconic view (highly influenced by decades of sci-fi interweaving with philosophy and cognitive science) of the cyborg as an esthetically intriguing mixture of man and machine, and rather focus on the fact that:

what is special about human brains, and what best explains the distinctive features of human intelligence, is precisely their ability to enter into deep and complex relationships with nonbiological constructs, props, and aids. This ability, however, does not depend on physical wire-and-implant mergers, so much as on our openness to information-processing mergers. Such mergers may be consummated without the intrusion of silicon and wire into flesh and blood, as anyone who has felt himself thinking *via* the act of writing already knows (Clark, 2003, p. 5).

Clark's contention, explained by the oxymoronic expression depicting human beings as "natural-born cyborgs," is coherent with his studies concerning the extended mind and the distribution of cognition (Clark, 2008), and cannot be overlooked firstly because of the *naturalization* of the cyborg he performed. From his view we can sensibly contend that, if we look for a cyborg, a student massively relying on her iPhone should be a satisfactory instance. From the perspective of distributed cognition, we can admit that there is indeed no qualitative shift from using pen and paper to spell out a complicate choice, to relying on one's smartphone to evaluate the best course of action.<sup>1</sup>

Nevertheless, our epistemologically critical view on Clark's theory is that albeit being coherent from a cognitive perspective, his convincing expansion of the concept of cyborg eventually *exploded* it, defusing the explanatory power concerning a cyborg that is not made of human plus *any* kind of cognitive enhancement, but rather depending on a peculiar kind of highly-technological endowments.<sup>2</sup> In the next

<sup>1</sup>(Magnani, 2007) carried out a thorough reflection about the increasing hybridization of human beings, considering its philosophical and cognitive implications. One of the cores of the analysis, resonating in this paper, concerned the lack of knowledge possessed by users facing with ever more intelligent devices – a lack of awareness coupled with a similar lack of the necessary technical skills that would humans to responsibly navigate the technological present.

<sup>2</sup>Paradoxically, Clark himself anticipated certain scenarios that materialized a decade later, such as the "Datagate" scandal concerning the NSA, or the ethically arguable conditions of Amazon workers, whose efficacy is measured by tracking devices they have to wear and which monitor their movements. The paradox rests in the fact that the concept of cyborg was not used to achieve a better understanding of these situations, while it could have been of great use, as claimed by this paper.

two sections we will first define this kind of cyborg (whose main characteristics are being *diffused* and being hybridized with forms of *artificial cognition*), and then show some of its possible applications in reframing a common safety concern such as cyber-bullying.

### Introducing the Diffused-AC Cyborg (DACC)

The Internet, and those devices that rely on it to the point of being meaningless offline, empower us to become this peculiar kind of cyborg.

Thanks to the Internet, our "selves" today largely consist of an externally stored quantity of data, information, images, and texts that concern us as individuals (sometimes produced by ourselves, sometimes not), and the result is a "cyborg" of both flesh and electronic data that relate to us. The "implant places" of this kind of cyborg consists in a series of devices we use actively and passively (from smartphones and computers to GPS receivers and highway cameras), which contribute to create a mutual interaction between our offline and online presence, making the two less and less separable. To have a better picture of this mechanisms, we could say that most alterations (of any kind, physical, geographical, emotional) of our offline variables provoke a modifications in our online presence, which first of all cause in their turn a series of modifications of the original physical variables,<sup>3</sup> and secondarily (but not of least importance) they interfere with other online presences causing modifications in the physical variables of other people.

The "traditional" idea of cyborg focused on the connection between a human being and high-tech artifacts. Andy Clark suggested that the *high* in high-tech is not qualitatively crucial in defining a cyborg. Our take is that two elements, relating to contemporary available technologies, do indeed matter in the individuation of at least a peculiar kind of cyborg concept whose explanatory power could much benefit the current debate. These are:

1. Technologies that diffuse and de-localize the activity of the subject, yet without transporting her in a cognitively separate world;
2. Technologies that let the user rely on more or less complex forms of artificial cognition.

This can be summed up by the notion of a *Diffused and Artificially-Cognizing Cyborg* (hence *DACC*). Let us analyze it in greater detail, starting with its *diffused* nature.

Since the early 2000's the virtualization of the Internet usage, first understood as the creation of a decoupled universe, witnessed an inverted trend. Popular websites and services such as MSN, Myspace and later Facebook and Twitter dramatically impacted our cyborean nature in a way that would

<sup>3</sup>Consider this example. You develop an interest in apiculture (offline), and browse for some manuals on the internet (online). Being intercepted by some e-seller, your new interest modifies your online profile, and makes the e-seller's algorithms recommend you a book on mead brewing. You would have never thought of that but you buy it and become a passionate mead brewer (offline).

not affect our virtualization but rather the organism-side of the cyborg. Indeed, the text-and-image-based interfaces of websites such as Facebook, Twitter, Amazon, Wikipedia (or even the infamous Ask.fm) are scarcely impressing, and require far less ability than most video-games, no matter how intuitive the latter can be.<sup>4</sup> Yet, the former subtly play an incredible role in turning users into diffused cyborgs – not only at the cognitive level, but also at the perceptual and emotional one. As (Waite & Bourke, 2013) contend, referring to social networking sites:

In one instance, Facebook is a website clearly identifiable as virtual online space, but simultaneously, it is thoroughly embedded in, and informed by the material lives of the individuals without whom it would not exist in its current, recognizable form.[...] More than a 'space' or a 'destination', Facebook can be conceived of as a virtual network of interacting 'digital bodies' (p. 4).

Waite and Bourke, referring to a research they conducted in a Australian rural community, stressed the cyborgian nature of social networking itself: phones and computers are the gateways to a world that is not self-standing (as a Second Life, or World of Warcraft would be), but augments the material reality that people live in everyday. Anticipating some conclusive remarks of this paper, it must be acknowledged how the subtlety displayed by social networking websites, and other kinds of pro-social technologies, in determining our existence as cyborgs begs for a cognitive and philosophical analysis. If being cyborgs meant for instance carrying around powerful implanted weaponry, then the effects would be apparent to anyone: conversely, we are mostly unaware of the effects of our diffused social cyborgization apart from brief moments of wonder after some peculiar coincidences, or – we will see it in the next section – when the outcomes become violent. As already suggested by (Bertolotti & Magnani, 2013), evolutionarily oriented cognitive studies cannot be spared from having their said about the matter inasmuch as pro-social technology are effective by reproducing and simulating our social-cognitive affordances (for instance our inclination towards gossip), making the cyborgization of our selves utterly transparent.

Another reason justifying the cognitive interest in the diffused cyborg is still spelled out by (Waite & Bourke, 2013), in their contention that Facebook itself, as most SNS, can be conceptualized as a massive, loosely bordered, cyborg – blending human and cybernetic parts. In this sense, it may be valuable to add that the dualism-collapsing might of the cyborg does not only concern the human/machine dichotomy, but the self/other one as well. The diffused cyborg that pro-social technology is turning us into does not only absolve us from the physical boundaries – still replicating and augmenting a kind of sociality that is based upon the functioning of

<sup>4</sup>Cognitive correlations between culture and ease of use of determinate web design were proposed by (Faiola & Matei, 2005): these studies further corroborate contentions about the distribution of cognitive tasks between users and the Internet.

the “real world” one – but blends us in a real super-cyborg (just similar to the sociobiological notion of super-organism) not only as we epistemologically partake of an objectified shared knowledge base more real than any *collective unconscious* (real inasmuch it is hard stored on data servers), but also because by functions such as tagging and commenting one’s possession over texts and images becomes in some cases undistinguishable from the possession of other users.<sup>5</sup>

Such widening of the field of our analysis, and of the agent it concerns, requires the introduction of the second element defining the DACC cyborg, namely the reliance on forms of *Artificial Cognition*. The Artificial Cognition capabilities displayed by the technologies we connect through (and with) can be extremely modest,<sup>6</sup> still they represent the possibility to react smartly to modifications in one’s environment. Such cognitive capabilities to “make sense” of a given environment in order to pursue a certain scope may be perceived by users as *randomness*: this is especially true if we consider all of the cases in which an artificial system *suggests* something to the user, for instance, Amazon’s recommendations or Facebook’s *People you might know*.

The historical division between organic and inorganic – to rely once again on dualisms – would correspond to the division between constructor and constructed (in the lexicon of cognitive niche theory): decision making processes (connected with cognition) could be only ascribed to biological organisms. As shown macroscopically by the actual debate about the development of autonomous killer drones (Krishnan, 2009), the computational revolution introduced *constructed constructors*, artificially cognizing, non-biologic systems able to make autonomous assessments and forecasts, and initiate courses of actions (from simple safety recognition devices to elaborate financial applications capable of determining the fate of entire nations). The presence of such artifactual cognizers becomes further complicate once, as cyborgs, we start becoming hybridized with them, originating holistic beings that embed a biologic brain and several artificial forms of auxiliary cognition on which our primary cognition (often unwarily) relies. The awareness of being hybrid not only with artifactual extensions, but also with artifactual cognitive extensions interestingly relates with the cognitive literature concerning an agent’s will: according to Benjamin Libet, the results of his famous experiment suggested that initiating a voluntary act was an unconscious cerebral process put in motion before the person consciously knew that she wanted to act: an involuntary neural impulse would be the process, not free will, as was widely held (Libet, Gleason, Wright, & Pearl, 1983). From this perspective, an individuals feeling of conscious free will is just a superficial, after-

<sup>5</sup>This uncertainty is legally reverberated by the Terms and Conditions users must subscribe to, usually yielding the ownership of texts and datas to the SNS: albeit legally meaningful, this just enforces the notion of a super-cyborg (specifically a network-cyborg) transcending the individual (yet cyborgized) selves into a greater entity.

<sup>6</sup>It is why we prefer this expression to the more demanding *Artificial Intelligence*.

the-fact explanation of other internal processes and does not reflect the actual mechanism that generates action. It is then extremely thought provoking to read the hybridization of humans (whose will is already cognitively compound) with external artificial cognizers in the light of Daniel Dennett's review of Libet's experiment:

Once you distribute the work done by the homunculus (on this case, decision making, clock-watching, and decision-simultaneity judging) in both space and time in the brain, you have to distribute the moral agency around as well. You are not out of the loop; you *are* the loop (Dennett, 2003).

In agreement with Clark's takes, one could contend that the *loop* has not changed qualitatively, but just became wider so to accommodate the new artificial cognitive wirings that instead of being in the person's nervous system, or in the interplay between a person and some cognitive delegations around her (epistemic mediators such as paper and pencil), are diffusely allocated partially in her device and partially in some servers around the globe.

Consider the SNS user: we showed how it can be convincingly framed as a *diffused* cyborg, but that was not the end to it. In order to function, the super-cyborg relies on a series of standalone algorithms handling searches (and their priorities), reports, suggestions, order of the news. Facebook, for instance, actively impacts the "real lives" of its cyborg users (who in turn are users because of the impact that Facebook has in their real lives), but they are not necessarily aware of how, in their being cyborgs, their lives are partially determined by the artificial cognitive processes implanted in the network they holistically partake of, for instance deciding which updates are more "important" and showing them first. One picture seen on Facebook can trigger an unthinkable chain reaction in a user's life, but it was the system (hybridized with the user) that picked what picture would be more relevant for the user to see first.

Such reflections can be easily extended to most contemporary technologies mediating pro-sociality by the Internet. Whereas the diffusion of remote communication systems (mail, telephone, text messages, emails...) <sup>7</sup> turned human beings into diffused cyborgs (it's not impossible, in agreement with Clark's idea, to imagine a Renaissance man as cyborg made up of body, paper, and ink as he would engage in correspondence with his fellows over Europe), contemporary technologies add the artificial cognitive element, determining users as *Diffused and Artificially-Cognizing Cyborgs*. This is not only true as far as social cognition is concerned, but also the reliance on geo-localization and guiding devices (assessing road conditions and making forecasts about traffic and

<sup>7</sup>It can be argued that also the reception of emails and text messages depend on services establishing the priority of their recovery, but they do not rank the relevance. The SPAM filters, conversely, can be considered as a kind of pro-social mediator inasmuch as they perform kinds of guessing and establish a course of action affecting the users real-life.

weather), or eCommerce: basically, just as SNS make human beings into social DACCs, advanced eCommerce platforms such as Amazon turn consumers into DACC consumers, because of the integration between the buyer's desires, her possibilities and their processing operated by the website. The same can be said of most contemporary and foreseen "augmented" experiences, as they will rely on a diffusion of the self through the internet in order to achieve a maximized experience in her real life, but this can happen only if massively supported by transparent artificial decision makers assisting the user, ranging from contemporary artificial cognition to a full blown artificial intelligence.

### Cyber-bullies as Cyborg-bullies

The aim of this last section is to show the utility of the reintroduction of the (DACC) cyborg notion in the current debate, by applying it to the widespread issue in Internet-related safety known as cyber-bullying. Cyber-bullying – that is bullying carried out through means related to the Internet, that is via Instant-Messages, Social Networks and so on – has received ever-growing attention by the media, and by political and intellectual actors.<sup>8</sup>

The standard, and not fruitless, approach usually involves a techno-ethical reflection, dealing with processes of empowerment, digital literacy and pedagogical issues, together with a psychological and social enquiry connecting the dimension of real-life bullying with its online counterpart (Rigby & Smith, 2011; Sontag, Clemans, Graber, & Lyndon, 2011; Kowalski, Limber, & Agatston, 2012). The latter research shows interesting but relatively unpractical correlations between online and offline bullying, leaving vast percentages in which the two phenomena do not overlap that are still to be efficaciously explained in order to find a long-term solution to the threat. A viable idea would be, indeed, to reframe cyber-bullying as cyborg-bullying, of course understanding the cyborg in its DACC conceptions described so far. A number of reasons seem to favor this perspective shift:

1. The rupture of moral proximity brought about by computer screens and anonymous avatars is often advocated as one of the causes of the lack of empathy which results in particular verbal violence, threats and so on that would not be carried out so openly in real life. Our claim is that this presumed moral gap is a biased artifact of the analysis, informed by the honest (but untrue) answers of the subjects: what is perceived as a distance between the virtual world and real life is actually caused by the loss of references of the biological organisms (with the evolutionary inherited endowments concerning sub moralities and the enforcement of coalitions (Bingham, 1999; Magnani, 2011)), and the acquisition of the new references (social, too) pertaining to the DACC cyborg. Empirical research carried out to study "the transferability of basic interpersonal affect,

<sup>8</sup>Also a EU report, deriving from a number of studies and a workshop reuniting experts from different disciplines, was released on the matter (Rizza & Pereira, 2013).

or affinity/disaffinity, from nonverbal to verbal communication accompanying the alternative communication channels of [Face to Face] versus [Computer Mediated Communication]” (Walther, Loh, & Granka, 2005, p. 56) seem to confirm that moral proximity is indeed not impaired by the lack of physical presence:

Although concerns about the lack of cues in CMC may persist with regard to determining participants identity, or the reduction of message equivocality, as functions of bandwidth and interface design, affinity issues may be different and readily translatable from one cue system to another. (p. 58).

2. Considering what we exposed so far, we could indeed see how this configuration equals setting a ring, a fight arena between human beings that became DACCs, as they obtained an ubiquitous access to their social cognition (and its enhancement by bits of artificial cognition) and, in return, paid the price of forsaking (at least as long as they act-as-DACCs) the real lives subdivision that separate them but also protect them, and the groups they belong to, from each other (Bertolotti & Magnani, 2013; Debatin, Lovejoy, Horn, & Hughes, 2009).
3. Many instances of cyber-bullying and cyber-violence seem affected by an element of randomness and self-righteousness, where on the one hand it becomes hard to tell the aggressor from the victim, and on the other hand the perpetrated violence embeds instances of extreme moral reactions following a perception of relevance that is different from that of the “real life.” The perceived randomness depends on the artificial cognitive processes embedded in the DACC, presenting certain information instead of others to users. Furthermore, as the boundaries between DACC and groups of DACCs do not reflect those between real-life humans (because of their diffused nature, as seen in the previous section), a user might find that a remote event justifies her moral and violent intervention against another DACC, who is not “remote” in the cyberspace they connect within. Such a view does not justify, but explains why teenagers engage in violent mobbing aggressions against “peers” they never met on websites such as *Ask.fm*, or why so many Twitter users thought they had to pursue the public shaming and threatening of Alicia Ann Lynch, a 22-year-old from Michigan, who tweeted and Instagrammed a photo of herself at work dressed as a Boston Marathon bombing victim for Halloween 2013.
4. The different perception of relevance is also due to the fact that whereas real-life human beings cope with a diversity of truth regimes, where truth is generally perceived as less reliable as it gets further from its source, DACCs can rely on a copy-and-paste truth regime, which does not let distance (both chronological and physical) defuse the truth-value, and hence the pragmatic relevance, of the information they stumble upon (Bertolotti, 2011).

Considering all this, it might be indeed interesting to consider instances of Internet-related violence such as cyber-bullying (but the paradigm can easily accommodate other examples) as clashes between cyborgs. This is particularly interesting as far as the incidents – albeit they induce serious real-life consequences – sometimes involve no real-life relationship between the victim and the aggressor who, in their real-life existences, have no connection whatsoever.

## Conclusion

Conferences, workshops and studies focusing on (real or perceived) emergencies relating to Internet safety, such as cyber-bullying, have been ever increasing in the recent past, also as the media coverage becomes more and more intensive. Most analyses (and the solutions they inform) tend to concentrate on the aging distinction between an online and an offline world. This dualism more or less explicitly serves the purpose of reiterating pedagogical and moral axiologies tacitly connecting *online* and *offline* with *safe* and *unsafe*, fundamentally reverberating the dualism between good and evil.

The effort to make the Internet a *safer* place (Beauchere, 2013) can only be integrated with the awareness that we are not users separate from it, but rather our cognitive endowments were prone to seamlessly connected with the possibilities offered by the new technologies, especially (so far) in as much as social cognition is concerned.

Such a seamless connection between humans and technology has been studied since long as defining the dualism-collapsing notion of cyborg, but the issues at stake might benefit from the explanatory power of a particular concept: the *Diffused and Artificially-Cognizing Cyborg* (DACC). This concept describes, and fosters the reflection on how contemporary human beings, thanks to a number of devices mediating their Internet use, experience the cyborgization not as a virtualization but as an augmentation of their real-lives, actualized by the *diffusion* of their selves beneath the geographical and chronological constraints, but still connecting with similarly diffused humans, and whose interactions are sensibly determined by a transparent layer of artificial cognitive processing.

If Internet-related unpleasant issues can be interestingly re-framed as clashes between cyborgs, the protean essence of the cognitive links bonding humans and the Internet are so unapparent that the lack of awareness concerning one’s cyborg nature can be seen as the cause of many of the direst consequences of Internet use. Therefore, future efforts to establish digital literacy should first of all aim at teaching users to be aware of, and to explore, their very *being cyborg*.

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