

**Technology-prompted Crisis in the 22nd Century –
Susan Greenfield's *2121 – A Tale from the Next Century***

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Abstract

The article focuses on an envisaged crisis of humanity in one hundred years' time, as it is presented in the novel *2121* (2013) by English neuroscientist and writer Susan Greenfield. Greenfield transfers her scientific expertise and pours into the mould of a dystopian view of the future her knowledge of the way in which technology has already, and will, potentially, change people's brains and the entire course of mankind. The novel, having received mixed reviews, is a "translation", a transfer or a carrying forward into (the world and language of) fiction of her studies and convictions from her scientific research. The article explores the depicted crisis caused mainly by the excessive and irrational use of technology, with its consequences at individual and collective levels and various types of associated loss and impairment connected to the imagined crisis: loss of measure, loss of control, loss of emotion, loss of the ability to interconnect, loss of environmental equilibrium and connection with nature, loss of purpose, loss of the ability to form mental processes and, subsequently, loss of a sense of identity.

Keywords: *crisis; technology; past-present-future; identity; loss.*

1. Introduction – a journey into the next century

Anticipating the dystopian view from Nicola Barker's *H(A)PPY* (2017), *2121 – A Tale from the Next Century* by Susan Greenfield presents humanity in the 22nd century as split between two communities – The N-Ps (Neo-Puritans or Neo-Platonics) and the Others. The former group are supposed to be an evolved type of humans, technologically advanced,

governed by reasoning and thought, while the latter are supposed to represent a grouping who, despite technological advancements, are rather primitive in that they let themselves be ruled by sensations. The perspectives belong to Fred, an N-P, who is supposed to be “the top neuroscientist of his generation” (Greenfield 2013: 361), Tarra, his wife, Hodge, Fred’s superior, Zelda, a more evolved Other and Sim, her current protegee, who is an immature adult. In turn, each of them presents his/her perspective upon the N-Ps’s world, “the purest of possible societies” (Greenfield 2013: 1) and the Others, which stood for everything that the N-Ps had tried “to vanquish” (id.: 9), also making a comparison with what had been “well over one hundred years” (id.: 2) before “the great, transformational crisis.” (id.) The crisis refers to the Exodus of the N-Ps, the moment which brought the separation of the two communities.

The novel reveals to the reader as a simplistic construction with chapters moving perspectives upon the story from one character to another, from masculine to feminine (Fred to Tarra/Zelda/Sim), from one community to another (from N-Ps to the Others), from one (allegedly) evolved society (the N-Ps) to another one which is (allegedly) primitive (the Others). Thus, the book seems to be moving like a metronome between poles that strive to find each other or in an attempt to find the proper pace/speed of human evolution. In the assimilation of technology in humans’ lives, they seem to have reached two opposing statuses or conditions, neither of them placing, paradoxically enough, the human being in an advantageous/harmonious position with himself/herself and with the world. Fred is part of a world of the future in which people have “succeeded in” estranging themselves from excesses of all sorts, including emotionally (they have eliminated even the pleasure of eating just for the sake of eating and have transformed the act in an enterprise having the exclusive purpose of ingesting the necessary nutrients one needs at a certain age and in a certain physical condition). They live in well-established Family Units, with a chosen breeding partner, they are allowed to have only one child; they use implants, a watch and a Helmet (the last element only after a certain age), to monitor themselves and are only allowed screens at their workplace. They have reached this stage of a new type of “civilization” (Greenfield 2013: 4) after the middle of the 21st century. Rebuking the extreme pleasure people experienced by means of devices and their increasing

preference for the screen to the detriment of reality, the N-Ps engaged in what is henceforth the great Exodus – a journey over the mountains, a long and hard journey made on foot, but which gave the forefathers who had engaged in it “time to reflect and to organize” (Greenfield 2013: 82). Thus, “the great backlash occurred” (Greenfield 2013: 166) and a breach between two large communities ensued and this is how the N-Ps separated themselves totally from the Others who, in their view, remained attached to the primitive drives. The hedonism the Others prefer is experienced by means of the enhancers which they take (to sleep, for example), or which they put in their food. They are not primitive from a technological point of view, however. On the contrary, they use nanotechnology to create objects on the spot, they use IVF exclusively to reproduce, they have women designated to be carriers and then the children are raised by designated mothers and fathers in a Grouping (carers). They have a device called Fact-Totum from which they take any kind of information, but they live in a type of harmony which is based on no real interaction. Conversely, they regard the N-Ps’ form of organization as a “sinister movement” (Greenfield 2013: 167). In these conditions, Fred is sent by his community to investigate the Others on grounds of getting to know the subconsciousness better so as to exercise more control over it with the sole purpose of ensuring the safety of their own community. But it is on this concept of “control” that the entire novel is built, and the work reveals itself as a paradoxical construction. But before we reach this conclusion, we will discuss the mechanisms that lie behind the creation of this dystopia.

2. Context – technology in the present and the future

Susan Greenfield’s authority as a scientist, we think we can be sure to state, cannot be contested. Her works from the 1980s and especially from the 1990s onwards¹ are a solid proof of her prolific activity, her prestigious collaborations and her titles as leading figure of some scientific fora, which are yet again a guarantee of her widely-recognized expertise. Her

¹ <http://www.susangreenfield.com/img/Susan-Greenfield-CV-REVISED-23-Jan.pdf>, accessed the 27th of April 2021.

numerous lectures on the study of the brain (see part III of the bibliography – videos) are an additional proof of her wide-ranging work extended towards educational purposes and the reason for which many speak of her “cultural prominence” (Fahy 2015: 115). A large part of her studies is dedicated to the way in which the human brain, especially children’s brains, could be (or as she claims “are”) changed under the effect of excessive use of technology.²

However, the manner in which she introduced the concept of “mind change” as a main idea for the novel was viewed from polarized positions. Adam Roberts in a review for *The Guardian* (Roberts 2013) opines that the book is “badly conceived, badly realised, badly characterised, badly paced and above all badly written.” Similarly, in another review by Adam Rutherford (2013), the novelist is viewed as having failed in her “first foray in science fiction [...] largely because her agenda drives both plot and character”. Her agenda is supposedly driven by her “technophobia” and the novel is, allegedly, simply a “persistent vocalization of her technofears.” In fact, Greenfield says on numerous occasions that she is not against computers and any other devices, but pleads for their moderate and effective use, especially, in the case of children, whose minds are in the making and whose abusive use of technological devices of any sort might be an unhealthy choice in their development as it would make them form false representations of reality and of people’s emotions (see Greenfield, 2018, videos).

Another review by cell biologist Jennifer Rohn (2013) (who published a review of the novel in the much-appreciated

² For this purpose, see her works: *Tomorrow’s People. How 21st-century technology is changing the way we think and feel*, 2004; ID. *The Quest for Meaning in the 21st Century*, 2009; *Mind Change. How digital technologies are leaving their mark on our brains*, 2015.

journal *Nature*) is more lenient and admits that “her portrayal of a civilization on the slide to nowhere is evocative and sometimes alarming”. Even though the characters are seen as “one-note”, monotonous and as having no credible voice, Rohn agrees that the book does make one think upon “the perils of ubiquitous technology.”

Some scientists (see interview by Maureen Cavanaugh with Dr. Gary Small, 2009), however, have recognized the effects of spending at least 9 hours a day in front of a screen as having a direct negative effect on the way in which young people – the digital natives – regard face to face relationships and on the way in which they seem to become interrelationally incapacitated (they do not recognize the emotional expressions of a face or they do not interact with the members of their family). Other perspectives of the research on excessive technology use upon the brain regards the aspect of attention deficit, capacity to focus, long term memory (Dalton 2013). Some of the most obvious consequences seem to be upon the levels of empathy that these technologically driven people may fail to develop in the future, shallow thinking and emotional frigidity.

Other more recent studies – see the study on *Creativity* by neuropsychologist and cognitive neuroscientist Elkhonon Goldberg (2018: 7) – regard the phenomenon differently than the literary critics and support views that speak about the transformation of the brain under the effect of excessive use of technology and its subsequent negative effects. It is perhaps for the very reason that we advanced further into the phenomenon than the year in which the novel was published and we can observe it on another level now. Goldberg speaks about “the fusion of physical and virtual realities” – people bump into each other on the street because they focus on the “reality” in their phones, or he mentions a case from South Korea in which some parents let their child die because they were too busy

feeding a child from a video game. The latest news in Romania revealed in the last two months two cases in which teenagers were killed by car or by tram because they were wearing their headphones and were not paying attention to the danger befalling them, or the case of two toddlers who fell from the balcony of their parents' flat while the mother, together with another one of her children, was engaged in streaming a live video on a social network. Perhaps it is this form of reality that Susan Greenfield anticipated and criticized – Goldberg actually says that the novelist “prophesied” such changes brought about by the emergence of “a thoroughly fused synthetic world” (Goldberg 2018: 9). Vogels et al (2020) also synthetically canvas “the likely future of social and civic innovation”, while Small et al (2020) speak about the negative aspects of technology use such as reduced attention, impaired emotional and social intelligence, addiction, social isolation, adverse impact on cognitive and brain development, as well as disrupted sleep.

There are, however, equally positive views upon the novel by literary critics, too, as it is the case of Ansgar Nünning, in “Changing Contexts, New Concerns, and the Cultural Dynamics of the Generic Change: Emerging Genres and New Trends in the 21st-Century British and American Novels”. Thus, *2121* is seen as offering us

a rather grim and sinister view of a possible future in which technology has radically changed dominant lifestyles and values in hedonistic, hyper-real and cyber-driven world, while also raising poignant questions about current developments that are not so much dystopian but are already very real. (Nünning in Thaler 2019: 41)

Apparently, scientists are closer to viewing the novel as “portending a seismic societal shift” (id.) than literary critics

are. But maybe they are too harsh judges of a work that the author reveals in the *Afterword* to be not “an abstracted thought experiment”, but rather “a cautionary tale” and the characters are to be seen as caricatures rather than social or psychological portraits of the 21st century (Greenfield 2013: 391). As for the style of writing, the novel was critiqued for the “myriad indigestible mini-lectures on neuroscience” (Roberts 2013) that it contains. The first chapters were seen as “an epitome of failing to abide by the rule “show, don’t tell” (Rutherford 2013). Vera Nünning, too, in her study “The Affective Value of Fiction. Presenting and Evoking Emotions” (in Jandl et al 2017: 35) states that Greenfield may not have chosen “the most common or interesting mode of presenting emotions” in some parts of the novel as she may have been too direct in actually calling the emotion:

Given the [...] usual routine of my life, there was usually never anything to trouble my thought processes. But today was different. Today my palms were wet, my breathing difficult and shallow, my heartbeat banging through my ribcage. I had to admit that this unpleasant though obvious sensation could only be called anxiety. (Greenfield 2013: 68–69)

Eckart Voigts also sees the novel as “very traditional in structure and narrative transmission” (in Nünning 2018: 273) and as a “thinly fictionalized adaptation of her 2008 book *ID: The Quest for Meaning in the 21st Century*” (id.), but considers that her demarcation between the affective, the cognitive and the psychometric dimensions is valid scientific vanguard (id.: 274). And even if the “multi-perspectival narrative” (id.: 275) that she builds is not the strongest basis for narrative elaboration, the novel is seen as being rich in ideas and strong in that it is an “indictment of contemporary social and

entertainment media” and of “technologically-induced posthuman hedonism” (id. 275, 277).

But we think that the reader’s perspective upon the work is just a matter of taste – we loved all of these. And such an emotionally deprived manner of seeing the world and the humans inhabiting it may be a caution against “the steady erosion of the human” that had been seen by literary critics and/or critical theorists as emerging in the aftermath of postcolonialism culminating with the figure of the cyborg.³

3. Effects of the technology-prompted crisis in the 22nd century within a typical dystopian genre

Dystopia has been a (sub)genre of fiction through which authors typically draw attention to the excesses, from one perspective or another, of humanity and the subsequent peril for the loss of humanity that this may lead to. From H. G. Wells’s *Time Machine* (1895) to Jack London’s *The Iron Heel* (1907), and Yevgeny Zamyatin’s *We* (1924), from Aldous Huxley’s *Brave New World* (1932) to Ayn Rand’s *Anthem* (1938), from George Orwell’s *Nineteen Eighty-Four* (1948) to Ray Bradbury’s *Fahrenheit 451* (1953) and Ayn Rand’s *Atlas Shrugged* (1957), from Anthony Burgess’s *A Clockwork Orange* (1962) to Brian Aldiss’s *Cryptozoic!* (1967) and again Burgess’s *1985* (1978), from Margaret Atwood’s *A Handmaid’s Tale* (1985) to P. D. James’s *The Children of Men* (1992), from Lois Lowry’s *The Giver* (1993) to Jonathan Coe’s *What a Carve Up* (1994), the genre has produced valuable works and has attracted the large public. The wide appeal for the genre has been so great, all the more in the post-humanist context, that dystopias have been written extensively even after the 2000s: David Mitchell’s *Cloud Atlas* (2004), Kazuo Ishiguro’s *Never Let Me Go* (2005), Cormac McCarthy’s *The Road* (2006), Margaret Atwood’s *MaddAdam* (2013),

³ See Boxall (2013: 84–122) for a presentation of theories on “The Limits of the Human”, from Edward Said, Homi Bhabha, Gayatri Spivak to Donna Harraway.

Dave Eggers's *The Circle* (2013), Susan Greenfield's *2121* (2013), Howard Jacobson's *J* (2014), Naomi Alderman's *The Power* (2016), to list only some of the critically acclaimed novels, which are a proof of some serious views upon a grim future (the list would be so much longer if we also included the works belonging to young adult fiction or works belonging to writers having written in other languages than English). What is the purpose of a quantitative look at products of this genre? Probably to give proof of writers' interest and readers' appeal to works that deal with the perils that humanity may face from one reason or another and to venture the idea that this could be symptomatic for the society that produced them. We have reached the age of the greatest comfort, the most increased medical safety, the most advanced technological discoveries that could secure our safety, and yet, according to scientists (see Greenfield's studies as well) we face the greatest rate of cases of depression. The fact that writers transferred mankind's fears to works of fiction is, we consider, a symptom of the critical times we pass through, similar to the decades after World War II when mankind had also registered a great mind shift. To compare the digital era with the aftermath of WW II is, of course, an exaggeration, or maybe time will prove otherwise, but we had better consider twice the warnings of scientists, social analysts and writers who speak about another type of control than the one done at gun point. The issues of excessive technologization and the exercising of control, with effects such as emotional destabilization and the subsequent forms of dehumanization are thus central worries this literature addresses.

We consider that the common denominators of dystopias of all times is the fact that they present a community/society in crisis, having reached this stage of its existence most poignantly because of a certain type of *loss*: loss of measure, loss of control, loss of emotion, loss of the ability to form relations, loss of environmental equilibrium and connection with nature, loss of purpose, loss of the ability to form mental processes and, subsequently, loss of a sense of identity. Greenfield also presents these types of loss and the outcomes generated, as shown in the next part of this article.

a. **Loss of control** can be viewed in more ways than one. The first form of loss of control is introduced through the generic reference to loss of order, loss of control over the state of things as they knew it in their world – the well-established routine of the life of the N-Ps, “the reassurance” given by the extant “clear order” (Greenfield 2013: 75) are shattered when Hodge proposes to Fred to carry out the experiment upon the Others: “The world tilted. What Hodge was saying just didn’t make sense.” (id.: 78)

Loss of control is also viewed in the case of the Others in terms of lack of control over their emotions, attachment to the physical body to the detriment of the cognitive: “No one over there is in control. No one wants to change” (id.), Hodge motivates to Fred as a basis of the proposed experiment.

Loss of control in front of technology could be one other reason for reaching a state of crisis. Some of Greenfield’s main research is based on measuring adults and children’s screen time (TV, computer, iPad, smart phone, etc.). In a lecture delivered in Australia, Greenfield (2012b) quotes a study done on children in the UK that reveals the fact that they spend in one year (between their 10th and their 11th birthday) 900 hours in class, 1.277.5 hours with their families and 1.934.5 hours in front of a screen (by playing games, surfing the internet or watching TV). In her opinion, this is highly damaging for the total development of the child, who is not able to develop cognitive or physical abilities that real life would help him/her develop by exposure to real life situations. Sim from the novel is such an example and the scientific discourse Fred builds in the analysis of his subject is rather convincing:

Sim was obviously fully grown, as the prominent curves poorly concealed below the thin garment testified: but she seemed to have the verbal ability only of a small child. I made a brief mental note. Much would flow from this one basic issue: if the Others had underdeveloped linguistic skills, then poor cognitive abilities would be almost inevitable. (Greenfield 2013: 141)

b. Loss of emotion is recorded first and foremost among the scientists that formed the committee of the Elders. If, up to a point, this might seem a normal attitude, the narration gradually progresses towards registering the lack of practice in smiling of one female scientist (Greenfield 2013: 73), and adopting an emotion-free demeanour when speaking of the three possible scenarios in the N-Ps treatment of the the Others: converting them, keeping them as pets, or annihilating them. (id.: 73).

The N-Ps take pride in the way in which they have medically eradicated some disease or another, but this came at the expense of having suppressed their emotions as well:

We had eradicated schizophrenia by the time of the Exodus, with our highly controlled environment, thereby suppressing excessive emotion from infancy. The highly impressionable brains of our N-P young were trained from the outset by minimizing distractions, to ignore the sensory and to focus, focus, focus on thinking, on sequence and consequence. (Greenfield 2013: 143)

This leads to the typical idea of dystopian writing in which people were almost transformed in mechanical devices deprived of emotional attributes, robotized entities whose buttons/keys could be touched, but one could never touch their heart. However, as in any system, there is a glitch and Fred seems to be the one. Similarly to Mira A. from Nicola Barker's *H(A)PPY*, Fred experiences an emotion even before knowing exactly that he could feel such a thing and knowing that he is in full control of such emerging experiences. For example, when he heads to the Institute he feels some kind of emotional stirring, but it is put in connection to his scientific curiosity:

With professional curiosity, I noted that I was still feeling what might be described as a heightened emotion. Perhaps it was getting worse: indeed it was. Normally, I can safely say, I feel

truly nothing. [...] I am well beyond the pure sensory processing of the small child, and hence of the hectic emotions that we have for so long contrived to minimize. (Greenfield 2013: 68)

Perhaps it is because of these very restrictions that Fred embraces the new love he observes Zelda gives him and lets himself be “the male partner in Zelda’s dance” (id.: 254) or feels totally comfortable in the newly created routine with her. He experiences a new state which had been repressed, he gains a new perspective upon a woman, and he goes through new emotions that he never felt. But even this is taken further and, because Zelda is rather close to his wife, Tarra, in terms of being a capable partner for dialogue (she was the only one from among the Others who can read), Fred also experiences a whole new range of feelings when being with Sim. In the end, when explaining to Zelda (his first lover from among the Others) how he feels when he is with Sim (his second lover), he claims that “she’s an experience: being with her is pure feeling, but in a new and powerful domain. It’s all feeling. At least for me.” (Greenfield 2013: 321) The repression of emotion and feeling is, on the one hand, one of the mechanisms that dehumanize people while, on the other hand, it may backfire forcefully in primitive and sensual ways.

Loss of emotion culminates with establishing the relations between spouses who form a Family Unit according to degree of matching of the partners in breeding. Forming a family is a rational process, dictated or at least guided by a team of researchers who establish compatibility between participants, an undertaking that doesn’t involve emotional ties. And if one of the spouses dies, there is, of course, a Partner Substitute Program, Hodge explains to Tarra (Greenfield 2012: 372), through which an N-P can “re-partner” (id.). The emotionless, almost business-like transaction of having a partner with whom to form a family, the rational type of life they had led within the family that the N-Ps were taking pride in is precisely the flaw that makes Fred lose his empathy so easily and not think of Tarra when he engages in extra-martial relationships which had become, of course,

inconceivable. This well-programmed family construct may boast rationality, but it lacks affection and makes room for immorality and selfishness.

Empathy, though used in the novel (but only two times) by Fred is used as a concept which he wants to teach Sim to experience, but he fails to observe that even the N-Ps had lost it. In their attempt to eliminate negative emotions (fact which led to their world becoming safer) they also eliminated positive emotions ("In the place I've come from nobody laughs", explains Fred to Sim, Greefield 2013: 147) and empathy became a moot concept.

c. Loss of the ability to form relations

In Fred's society/community, relations are clearly delineated: husband-wife, parent-child, employer-employee. These were all types of interactions that developed under strict monitoring, were treated objectively and were established in affectionless ways. The years throughout which these relationships developed were mere phases in which the participants had to reach a new stage in their evolution. That is why even a mother would speak with complete detachment to the child she had given birth to. Here is how Tarra, Fred's wife, refers to the way in which she relates to their son, Bill:

The use of the phrase acknowledging my relation to my son is the formal form of address, employed on the relatively rare occasions when one meets someone for the first time and states the stage in the life narrative that they have reached. (Greenfield 2013: 267)

Parents would take care of their children until a certain age and then they would become "the Ex-mother of" or "Ex-father of" one or another. The loss of connection with one's child and the loss of the parental status signal the utmost loss of humanism and the migration towards a robot-like type of society, in which people live a "living death". (Greenfield 2013: 271) What is criticized here is the possible

breaking of the most intimate bonds of blood relation and heart connection that have made humans unique.

The N-Ps took pride in the sameness of their life, they rejoiced the routine of each day and reveled the exclusion of any form of subjectivity from their lives. That is why, when Fred meets Zelda and after he starts having feelings for her, he is amazed by the fact that they did not follow “the preordained ideas and guidelines” (Greenfield 2013: 255) that made his and Tarra’s life perfect, but simply “eat and talk and look into each other’s eyes with no other purpose” (id.) than being together and making the person they held into their arms “fuller, more open, more of a complete entity” (id.). Fred gradually starts understanding that the purposeful life he led was directed and regulated by his government in only being seemingly “N-P perfect” (id.), not perfect in the true meaning of the word, as long as it allowed no choice.

In the world of the Others, things are even bleaker as they know no relations, they do not form marital relationships and do not have intimate intercourse even for the simple purpose of reproduction – in vitro fertilization is used and people are just donors or carers for their children.

d. Loss of environmental equilibrium/connection with nature

The perspective through which this topic is introduced is not necessarily an environmental one. Though climate change is mentioned in the novel as one of the biggest threats to humanity (Greenfield 2013: 2), though the world of the Others is presented as being invaded by plastic objects and plastic bags (Greenfield 2013: 112, 262, 346), the novel does not necessarily constitute itself as a work advocating an environmental cause. But the time of the past is associated with the crisis of the climate change and there is a strong image towards the end of the novel in which Sim finds Zelda dead in a decrepit, decadent scenery in which plastic stifles life (of flowers and of Zelda):

My purposeful stride became more hesitant, allowing me to

observe the jagged edges of the usual broken glass gleaming in the growing dimness, an unusually large pile of white and blue plastic bags flattened and earthy, a lone clump of tired yellow flowers, a human figure hunched up near them, head bent under folded arms, arms folded round bent knees, foetal, rocking. Even in the dark I could see the matted hair on the buried head would have been red-gold. Zelda. (Greenfield 2013: 346)

Additionally, in a typical manner to so many other dystopias written in previous decades, Greenfield also uses nature as a space for the characters' escaping from the lifeless atmosphere of the inside of the Dwelling, from under the permanent surveillance of one or another entity.

The two lovers, Fred and Sim, remind readers of a classical pair of lovers in one of the most famous dystopias in fiction – just like Winston and Julia from Orwell's *Nineteen Eighty-Four* or like Equality 7-2521 and Liberty 5-3000 from Ayn Rand's *Anthem*, they escape outside before making love for the first time and each and every time they want to repeat the experience after this first time. Sim lives the experience of escaping outside as an epiphany of rediscovering the world around:

I could feel the heat of the sun on my skin all over, and then my hair became damper and I felt it sticking to my bare back. It reminded me a bit of the feeling I used to have when I ran all the time, only this time it was so much stronger, nicer – much nicer. (Greenfield 2013: 289–290)

At one point Sim desperately wants to put her thoughts in order and she is perfectly aware that she had always thought better outside where she could enjoy the environment and the “real sky, which still really couldn't be simulated in the Dwelling” and where she could breathe “real air though it was sometimes windy and wet” (Greenfield 2013: 346); later, towards the end of the novel, she desperately needs to

get free and she knows that she can find freedom only outside: "I needed to escape into the fresh air. Stumbling now, even clumsier in my haste, I broke out into the outside" (Greenfield 2013: 386). Therefore, she escapes outside – see the last page of the novel – when pregnant with Fred's child, so she leaves the Dwelling:

I opened my mind and breathed deeply the fresh air outside as though for the first time. As I turned my back on the Dwelling and the bright blinking cluster of domes, I stepped heavily round all the usual glass and plastic. (Greenfield 2013: 388)

e. Loss of purpose is rendered first and foremost through Fred because of the mission he is given – to go and survey/monitor the Others. But Fred does not clearly understand the finality of his mission and, for the first time in his life, he "felt truly at a loss, completely unable to understand what the Elders wanted." (Greenfield 2013: 71). This comes from the fact that, though not fully aware of it, Fred sees the flaw in the government's plan at least for the fact that it had not been thought through – Fred wonders what they would do after they monitor the Others. Would they take them as pets? Would they keep them in cages? Would they control the Others by means of drugs or neurosurgery? (id.) The first reason for Fred seems to be simply a closer monitoring of the Others because the N-P need not just to observe them from the outside, but also to understand them from the inside of their world, to see them in context, to try to find the reasons that made them prefer a "suspension [...] of their individual identity." (Greenfield 2013: 79) But the double-edged sword of this undertaking is now entering centre stage for it is Fred, too, who starts wondering about the purpose of his own existence and starts wondering who he is: "What was my own, my very own individual identity independent of the N-Ps dialogues?" (id.)

Additionally, typically to a dystopia, a secondary purpose of the community/regime that considers itself superior, the N-Ps, is revealed through Hodge's voice: as Hodge explains to Fred in his attempt to create purpose, the N-Ps do not have an optimal gene pool anymore and the Others could enrich their genetic diversity, once they comply with the N-Ps' way of

life (Greenfield 2013: 82). But this is, in fact, highly disruptive of the N-Ps' life, as Fred's experience would prove in the end, and the initial purpose proves faulty, if not utterly wrong for it lacks empathy and humanism towards fellow humans.

On the other hand, the Others, according to the N-Ps' recording, but also according to Zelda through some of her observations, lacked "purpose, planning and consequence" in their actions (Greenfield 2013: 109) – they seemed to be moving in a permanent present, just living their life in the state that sensations created in a perpetual now, without really knowing their past and without thinking of their future. Fred, "born into a world of purpose and direction" could not comprehend these figures, humans just like him

but drifting and twirling apparently aimlessly around in multicoloured, shimmering garments? They wove their way through the spaces at different paces, some seeming to dance, yet all oblivious to each other. (Greenfield 2013: 177)

He wonders how the human species could have diverged so much and regards this loss of purpose as cognitive and emotional decadence. He is the character through which the author performs the most obvious move of reinstating the lost balance of man between the cognitive and the emotional, between the nature inside and the nature outside. Fred's owning a lilac bicycle is a symbolic act of finding again the beauty of walking outside and finding one's thoughts in the middle of the harmonious nature. His oscillation between two relationships in the world of the Others (with Zelda and then with Sim) is an indication of his attempt to bring balance to the cognitive and the emotional sides that he possesses (as all of us, humans, do). In the end of the novel Fred tries to escape from the unbalanced situation he is in:

Riding the bicycle was the perfect balancing act between emotion and thought, between the past that made him who he was so far and the future that lay ahead that could and

would continue to offer possibilities for further change – but always evolving as Fred the man. (Greenfield 2013: 357)

f. Loss of the ability to form mental processes

One of the most controversial ideas in the novel (and in Greenfield's research for that matter) is that together with the excessive use of technology, people, especially children, have lost and at least diminished, the capacity to form and develop correct mental processes. Yes, they have become faster thinkers, they make quick decisions, they may have developed an ability to memorize some aspects quicker, but they only accumulate information and fail to process it correctly. Because they spend so much time in a virtual world (of TV, of their computers/iPads/smart phones) they have suffered a diminution of the ability to process the information because they are not exposed to real life situations in which they have to make decisions for themselves and for the others; they have failed to develop (just like Sim in the novel) an understanding of the fact that sometimes actions have irreversible consequences. It is not like in interactive games where decisions can be changed, or like in computer games where, if some characters are killed, it is not painful for the player. The main point is that, if neuroplasticity has been largely accepted and defined by neurophysiologists and other scientists studying the brain and/or human behaviour, as being the brain's capacity to adapt to the environment, this fascinating organ of ours needs exposure to as many environments as possible and to as many situations as possible so as to develop to its full potential. But the contemporary society in which the tendency is to reduce human contact to the minimum because of the technological devices we would rather use as interface to communication, or in which people's (including children's) daily programmes have become so busy that they merely perform their job (/school) duties, they all fail to develop more varied pursuits and fall victims to the routine of their lives. This is one of the main messages of the novel – the routine of the characters' lives does not allow development in the case of the N-Ps and the inability to understand complex processes in real life and to develop abstract

thinking as much as concrete thinking keeps the Others in a state of primitive or, at least, childish existence. The fact that the human being would cease, at one point, to develop a rich repertoire of behaviours (says Greenfield in a lecture of hers) (see Greenfield 2012b) would make us draw closer to the animal species. The scientist sees a direct connection between the ability to learn and adapt to our environment (and this would involve, of course, the development of numerous processes of thinking) and our status as the species that occupies the most ecological niches on this planet. She was contested for seeing technology as the main factor that would lead to such an impaired capacity of forming varied mental processes, but she maintains this assertion:

Most people, from school teachers and parents, agree with what I'm saying. The evidence is there. What I've done is pull together the science, and suggested there is a new phenomenon that has analogies with climate change, in terms of being unprecedented, controversial, and global. Mind change is value-free. It doesn't say it's good or bad. If you want to read something into that, that's your problem. (Greenfield in Bell 2013)

g. Loss of a sense of identity is another great peril signalled by Greenfield's novel. The obsessive questions asked by Fred or Sim in relation to who they are or who they have become is, in fact, supposed to function like a distress signal discharged from a flare gun so as to look at ourselves and see how much we are a product of society and its trends in fashion, consumerism, in the demands of an employer, etc. These uncertainties stem, some theorists say (Boxall 2013: 90), from the intellectual and technological conditions that have led to the emergence of "a new form of subjectivity under posthuman conditions"/"the lapsing of the human."

In *2121 – A Tale from the Next Century* the N-Ps have reduced their clothes to mere items that were supposed to be functional (but this also transforms them into beings wearing a permanent grey); for the

Others the high point of their day is one activity meant to bring gratification through stimulating their senses (for Zelda “food is the high point” of her day) (Greenfield 2013: 92) and Sim’s eating brings her to a state that would be close to an orgasm (Greenfield 2013: 120); for Sim “emptying bladder and bowels was fun” and “the wash-waste sessions were special” (Greenfield 2013: 119) as they were enhanced at an olfactory, auditive, caloric and kinetic level. Similarly, Sim adores running for the pleasure of feeling the air running through her hair and listening to the music in her ears (Greenfield 2013: 213). Therefore, the author opposes two worlds: the first in which the preservation of “individual identity” is apparently the basic tenet of the N-Ps’ life, but only as long as it leads to individual thought (id.: 79). The other dimension, of the Others, does not encourage thought, and here individuals simply live their lives at the extreme between “Yuck” (marking their dislike of something; their simple negative response to a negative stimulus – a taste, a smell, the sight of something or someone) and “Wow” (marking their liking of something; their simple positive response to a positive stimulus) (Greenfield 2013: 82). Thus, the newly formed life lived according to the “Yakawow”⁴ principle reminds us of the primitive and brutish society of the yahoos in Jonathan Swift’s *Gulliver’s Travels*. The author uses this principle as “the cipher [...] for the emotional gratifications of popular entertainment.” (Voigts in Nünning & Nünning 2018: 273).

The author herself explains the two divergent drives, that felt by the insensible, rational and (yet) uniformized mob member and the lustful, sensuous and almost brutish individual, in the *Afterword*:

⁴ Greenfield presents in numerous lectures (see 2012b and 2018) the origin of the term: she explained the “Yuck” and “Wow” concepts to two journalists in an interview, but as she spoke very fast, they misunderstood and spelled the concepts as one word, “Yaka-wow”. See article by McClelland and Sylvester (2010) for admission of error. After that, the (slang) word was registered in online dictionaries (see, for instance, <https://www.yourdictionary.com/yaka-wow>, <https://encyclopedia2.thefreedictionary.com/Yaka-wow>).

My aim has been to lay out two very different portraits of individual identity, relationships and hence of society as a whole that, caricature through they may be, could well be the all-too inevitable outcomes of the twenty-first-century lifestyle. (Greenfield 2013: 390)

Conclusions

We consider that the crisis envisaged in the novel is prompted by the simultaneous triggering of all of these types of loss, whose combination creates great disequilibrium, errors in judgement, blurring of boundaries between thought and emotions, inability to recognize consequences of one's actions, and diffusion of values. Greenfield's skepticism targeted at technology is disguised in this dystopian vision of the future and she offers a nostalgic humanistic view upon the world. Her science permeates her fiction, some say, with the effect of contaminating her fiction, some others say, with the effect of becoming a possible prophesy of the not-so-distant future, one in which an unfeeling programmable mob is 'living' a dead life instead of vibrantly feeling and enjoying individualized lives as free individuals.

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