The More-Than-Human Framework and the Rise of Smartphones

The specific topic chosen is to look at how the More-Than-Human Framework could be applied to the issue of the impact of the rise of smartphones on teenage welfare. The rise of smartphones further strengthens the case for the 'more-than-human' framework, as humans take on cyborg tendencies, but are also a potential subject of the framework, perhaps using some of the methodology from the drug analysis world.

The 'More-Than-Human' Framework

The 'more-than-human' framework is an attempt to move away from the humanist anthropocentric view of the world which has the human, traditionally a white male human, at its centre. In this traditional, or classical, framework the human is the central sovereign actor, with agency, the ability to act. The human reacts to the environment, be it matter or nature, but the analysis is naturally focussed on the human actor. The brain is implicitly seen as separate from body, and the human effectively seen as a brain, a calculating machine, a utility maximising rational individual. Naturally, this tends to imply that individuals are fully responsible for their successes and failures.

By contrast in the more-than-human framework, the human is not seen as an independent unit with complete agency. Rather the agency is broadly pooled with 'distributive agency' (Bennett, 2010), which comes from the interaction (or intra-action) of all the objects, human and non-human, effectively moving agency away from humans into wider groups. Non-humans are very broadly defined, ranging from nature and the environment to technology and inanimate materials. The approach is stretched further by those who include concepts amongst the non-human element, the 'semiotic' added to the 'material', culture and ideas added to the soup of the non-human elements. The core idea is that without the participation of the non-humans in all their variety, the humans are not agential, lacking agency. Non-human elements are far better represented in this paradigm versus the classic version, given the more level representation of the human and non-human actors that the human interact with, or intra-act with.

I mention 'intra-action' as Barad (Barad, 2007) emphasises that the human and non-human elements are constantly influencing each other in both directions in multiple ways and the complexity of the relationship, or entanglement, is such that any classical measurement of the impacts of non-human on human (or vice versa) is impossible. The agency comes from the relationship and cannot exist outside of it, hence the use of 'intra' rather than 'inter'. The measurement challenge is before considering how the measurement process, be it human, a technology, or a combination of the two, affects the processes.

The growth of the more-than-human and the associated frameworks can be seen as based on two twin tracks. The first track is the harder sciences. Progress in biology helped break down the classical Cartesian dualism that split the body from the mind, as embodiment, or embodied cognition, recognised the importance of the body in cognitive processes, for instance as bacteria and the stomach biome affect cognition. In addition the concept of assemblage, the idea that human agency

is not possible without the complex independencies with non-humans is biological in origin, species assemblage being all the species in a biology habitat. The entanglement concept, and the difficulties of measurement, are heavily influenced by Quantum Theory, most notably in Barad's work, while Actor Network Theory (ANT), according to which ever-changing networks of relationships, both material and semiotic drive the social and natural worlds, came out of Science and Technology Studies (STS) and thus the concept of computer networks.

The other track is paradoxically very different from the measurable and quantitative hard sciences which have inspired a great deal of the language of the more-than-human framework. The intellectual tradition of much of the more-than-human area relies on anti-foundationalist ontology and is often post-structuralist, taking the view that the social world is fluid and that truth, rather than being absolute, is constructed through discourse and power relations. This fits well with the idea of contingency within the more-than-human world, which argues that outcomes are the result of complex interactions (or intra-reactions) within the complex system of human and non-human actors and as such are not easily forecasted or explained. This is particularly the case as the human element within the assemblage or network is not assumed to be a calculating rational actor, but rather someone not necessarily in conscious control, given their 'embodiment', the influence of the rest of their body, and the effect of the intra-actions with other actors, which drive the human's 'affect'. This challenges neo-liberal constructs around rationality and personal responsibility, what Duff calls the "quaint dogma of rational choice" (Duff, 2012, p. 155)

Given the post-structuralist tilt of the more-than-human framework, it is natural that the goal is to understand and describe rather than to aspire to determine causes. The complexity of the intra-reactions between multiple actors makes causal analysis impossible. Given this the forms of analysis are naturally qualitative, and within that 'small-n' qualitative, be it ethnography or detailed interviews, rather than any form of quantitative analysis.

Smartphones & Digital Natives

The arrival of the smartphone has been a sudden transformation. By 2022, only 15 years after the launch of the iPhone 1, Statista estimated that there were 6.8bn smartphones in circulation, a figure that is 85% of the world's population, though admittedly there were many holders of multiple phones.

The impact of this revolution has been felt across society in multiple ways, but the young have arguably been the most affected, as they have grown up as 'digital natives' as opposed to older 'digital immigrants' (Prensky, 2001). Prensky argued, even before the arrival of the smartphone, that digital natives' brains were physically distinct from older generations, given the exposure to digital inputs in childhood and adolescence.

The impact of the smartphone revolution on the digital natives has been explored by Jean Twenge, in her book iGen, or to use the very full title, "iGen: Why today's super-connected kids are growing

up less rebellious, more tolerant, less happy – and completely unprepared for adulthood" (Twenge, 2017).

> "… around 2012, I started seeing large abrupt changes in teens' behaviour and emotional states… 2011-12 was exactly when the majority of Americans started to own cell phones that could access the internet, popularly known as smartphones. The product of this sudden shift is iGen" (Twenge, 2017, p. 4)

The main evidence that Twenge uses is the Monitoring Future Survey, a national US survey undertaken annually by the National Institute of Drug Abuse. A great number of shifts occur as smartphone prevalence grew. The Monitoring Future Survey found that the average high school senior was spending over 6 hours per day on-line, between texting, surfing the internet, gaming and video chat, comfortably dwarfing the hour and a half spent watching television.

Given all this time spent in the virtual world, it is hardly surprising that teenagers became less likely to meet up in real life (IRL), less likely to date or have sex, less likely to have a job and less likely to pass their driving test. On the flip side they were more likely to get lonely, have a shortage of sleep and show depressive symptoms. The Centre for Disease Control figures suggested that the suicide rate amongst 15-19 year olds rose from 8.4 per 100,000 in 2012-14 to 10.8 per 100,000 in 2020-22. It is not all bad news, with less alcohol use, lower crime rates and less running away from home, but there has clearly been a significant shift in behaviours that is worthy of serious investigation.

Smartphones and the More-Than-Human framework

The first point to make is that the arrival of the smartphone greatly strengthens the case for more-than-human analysis. The arrival of a multi-purpose communication and computing device in human hands has turned humans into a form of cyborg, part-biology, part-technology, moving from Homo Sapiens to 'Homo Prostheticus' (Marchant & O'Donohue, 2017). The outsourcing of cognitive functions outside the body is not new. Using writing as a form of memory storage dates back at least as far as the Babylonians, who also used abacuses to ease calculation. Richard Feynman, the Nobel Laureate physicist claimed to have 'thought' with his notebook. Clark and Chalmers (Clark & Chalmers, 1998) were writing about the 'extended mind', or active externalism, as external devices boosted cognitive power and freed up resources within the brain, well before Steve Jobs delivered the iPhone.

That said, the smartphone has been a step change in this phenomenon. A device with 120 million times the computing power of the Apollo 11 mission to the moon sits in the human hand, and multiple cognitive functions are outsourced to it, such as memorising phone numbers and navigating. It has also revolutionised communication and the acquisition of information. While not usually physically attached to the body (the Apple Watch being an exception), it often might as well be, with RescueTime (Mackay, 2019) reporting that the average American spent 3 hours 15 minutes a day on their phone, checking it 58 times per day, with even higher numbers quoted for the young. The idea of attachment has even reached the Supreme Court of the USA, with Chief Justice Roberts

of suggesting that smartphones should be treated as part of the body in the 2014 Riley vs California judgement which ruled that police needed a warrant to access smartphones

> "[Smartphones]… are such a pervasive and insistent part of daily life that the proverbial visitor from Mars might conclude that they are an important feature of human anatomy" (Riley vs California, 2014).

The Tenge analysis we discussed above is traditional and anthropocentric. The smartphone changes happen to the teenagers, and it is the teenagers, the human actors, that are measured. They are impacted by the technological change, and interact with the smartphones, but the smartphones are assumed to be external to them. The Monitoring Future Survey is quantitative, and the author reaches the conclusion that the introduction of the smartphones had an impact given the movement in so many variables from 2011-23, though she is careful to point out that correlation is not causation. She also points out that cross-sectional analysis, for instance linking amount of phone use and depression, supports her case.

In contrast to the Tenge approach, a more-than-human framework would move away from the centrality of the human promoting the importance of the other actors in the network, or assemblage, including the smartphone and integrating them into the analysis. There are indeed academics who have used a more-than-human framework to study the impact of thes martphone and associated technologies. Amongst others, Christensen & Prax (Christensen & Prax, 2012) and Merchant & O'Donohue (Marchant & O'Donohue, 2017) have adopted the assemblage lens, while Cupples & Thompson (Cupples & Thompson, 2010) look at teenage texting in relationships through the Actor Network Theory framework, "paying attention to the multiple materialities implicated in the performance of gender" (Cupples & Thompson, 2010, p. 17). There seems plenty of opportunity for further more-than-human work around smartphones, looking at the complex 'intra-action' of humans, the technology, be it the phone itself, the infrastructure behind the phone, the apps and platforms and on-line worlds, not to mention the operators behind the technology, both hardware and software, even before including the semiotic side as well as the material. As mentioned above in the first section, such work would be 'small n' qualitative rather than quantitative.

The more-than-human work in the drugs area is an interesting template for the smartphone analysis. This is not least because of the level of addiction to smartphones, estimated to be as high as a quarter of young people and adolescents (Gutierrez, de Fonseca, & Rubio, 2016), though a significantly lower percentage seemed to exhibit harmful behaviours. The expression 'addiction to smartphones' shows the need for a broad analysis of all the actors because it is not the physical phone itself that is the core of the addiction, even when the human has 'nomophobia', the fear of being without the smartphone, but rather the whole network, or assemblage, of intra-actions that the phone provides with the platforms, apps and other humans. The dopamine hit from receiving the text or getting 'likes' on a social media account are analogous to the 'gouching' after injecting in the word of drugs. As Stanford psychiatrist Anna Lembke put it:

> "… just about all of us have a digital drug of choice, and it probably involves using a smartphone – the equivalent of the hypodermic needle for a wired generation" (Lembke, 2021)

Given the strong parallels between the world of drugs and the world of smartphones, approaches along the lines of those taken by Fay Dennis (Dennis, 2019) look interesting. Her focus on understanding the context for the drug use and seeing the drug as more than a passive chemical, making the drug and the other materials including the location agential, looks very applicable to the analysis of the smartphone complex, as is allowing the interview subjects to express themselves fully, both verbally and through drawings.

One fascinating contrast between the world of drugs and smartphones is the status of those involved in the activity. Many heavy drug users will tend to be on the margins of society, outsiders undertaking activities that are generally frowned upon by the wider community, meaning that much of the activity happens behind a veil of secrecy as contributing an affect of shame. The industry providing the drugs is even more 'beyond the pale', indulging as it is in clearly criminal activity. The smartphone world is far more mainstream, even if some habits such as phubbing (checking the smartphone while being talked to by another human) can cause tensions. The strongest contrast is in the providers. While those in the drug industry face the risk of prison sentences if caught in action, the addictive material in the smartphone world, be it the social networks that deliver the dopamine-filled likes or the on-line games, is delivered very openly, often by trillion-dollar corporations. The role these powerful corporate actors play in the eco-system is crucial, as they work very hard to maximise attention, and minimise the customers agency, by optimising the dopamine release reaching the human subject through their smartphone, through making sure that the rewards reaching the person holding the smartphone are unpredictably intermittent. It may well be too ambitious, but a study comparing the dynamics of the two industries, given the difference in power and status of the providers, is a fascinating prospect.

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This is a very engaging essay that I have very much enjoyed reading. You give quite a sophisticated overview of the more-than-human framework, discussing the diverse bodies of thought that feed into it. You could have used a bit more direct engagement with the texts cited to make it bit more concrete. Your consideration of who the framework might usefully apply to the use of smartphones is also lucid and interesting. It's clear you have read and understand a range of academic texts and other materials, but the essay does not always have references where you need them. Your final suggestion for an analysis comparing the smartphone and drug industries is interesting and not at all the obvious choice. You do start to make a compelling case but with such a short word count, I think you could have got here a bit sooner and then had a bit more time to think this through more concretely. Overall great job!