Approaches to Technology

1. Welcome to a series of video lectures introducing the new field of the philosophy of technology. After exploring some general questions, the series will focus its attention specifically on recent emergent virtual technologies, the activities and relationships they enable, the nature of the self they create and the ontology they presuppose and entail. In this first video lecture I begin by surveying different philosophical approaches to the relationship between society and technology.
2. How best to understand this relationship? (1) Do social needs drive (2) technological progress or (3) does technological progress drive social needs? (4) Is the proper use of a given technology determined by (5) its inventor? (6)Or its manufacturer? (7) Or its marketer? (8) Or its users? (9) Or its government regulators? (10) Is a technology good or bad in itself or are moral judgments a function of how any given technology is used (11) in a given case?
3. In this video I survey the four principal approaches that have arisen in recent years in the new field of the Philosophy of Technology. I place them along a spectrum of how much agency or control to attribute to users of a given technology and so to humanity overall in the ongoing evolution of its technologies. Two extreme positions are the most intuitive at first glance: (1) technological neutrality, where the user is in charge and the technology is a mere means and (2) technological determinism, where the technology evolves according to its own internal logic and the user becomes a mere "cog in the machine." Two intermediate positions have emerged more recently: (3) the Social Construction of Technology (SCOT), in which the function of a given technology is the common product of the engineers who design it and the users who play with what they can do with it; and (4) Actant Network Theory (ANT) in which agency is distributed across a network of technologies and users. I will illustrate each of these approaches by applying them to recent internet enabled, virtual technologies.
4. Technological neutrality is the intuitive default position for most people. (5) For it attributes agency to them, the users. On this view, (6) the value of a technology is instrumental, (7) its merely a means to an end. (8) It's the user that supplies the end or intention to which a given technology is put in a given case. Thus, (9) tools in themselves are morally neutral, neither good nor evil. Rather (10) morality lies in the use to which

any given technology is put and the needs they serve. Indeed (11) technologies are invented precisely to perform such tasks and address such needs in the first place.

5. From this perspective there is no moral question surrounding the invention of the internet and the development of social media platforms, only how people choose to use them.
6. For example, Evangelical Christians have been enthusiastic adopters of digital media,
7. for the internet enables the mass dissemination of the Gospel
8. more efficiently and cost-effectively than ever before.
9. For many evangelicals, as earlier with radio and television, it is the content not the medium of communication that matters. The medium is a transparent conduit of the same Gospel message.
10. However it is the inspiring motivation for these lectures that the medium does matter. Compared to face-to-face storytelling or (1) writing a letter, (2) posting on Instagram or (3) livestreamed preaching enables one to communicate different content and creates a different impact on the viewer. Indeed over certain media, there are forms of relating to others that become impossible while other new forms, never even imagined before, now become not only possible but dominant.
11. Now a proponent of technological neutrality might argue that the choice of medium to use is still the responsibility of the user. But the ease or difficulty of use will inevitably factor into that choice. For example the US Postal service is having to deal with a precipitous decline in the volume of first class mail.(1) Is it that people are simply no longer choosing to communicate by letter or is it rather that so habituated to email and texting, writing a letter rarely even occurs to people as a live option.
12. The recent controversies over Facebook in both the United States and the European Union illustrate how the medium affects the message. Mark Zuckerburg initially claimed that Facebook was a neutral conduit for whatever people chose to communicate to one another and so should bear no responsibility for the content on its platforms. But in the wake of hackers, scammers and Russian misinformation, Facebook has had to accept responsibility for policing the content on its platform, if only to forestall governments and the courts from policing it for them.
13. It is such large scale changes of human behavior introduced by new technologies that has made the opposite stance of technological determinism appear plausible. In the nineties

people chose whether or not to participate over social media. But who today can conduct their lives and maintain their relationships (2) without texting or using email, let alone without having social media accounts on Facebook and/or other social media sites? As friends and relatives move online, as school and work require word processing proficiency and email access, as employers conduct Google searches on job applicants, and ask for Facebook passwords to verify information, (3) it becomes not just increasingly inconvenient but well nigh impossible in practice to opt out of social media altogether. As technologies mainstream new forms of communication, (4) those who do not keep up are increasingly on the margins of society, with all the social and financial costs associated with living outside the norm. (5) The question today is no longer whether to opt-in to social media, but why one would want to opt out.

14. Interestingly, as with technological neutrality, technological determinism entails that technology itself is amoral, with technological neutrality (1) because the user always has a choice, whether and how to use a given technology; with technological determinism (2) because the user has no choice. You can't stop progress. Resistance is ultimately futile. (3) To opt out of virtual communication media, is increasingly to opt out of society altogether. (4) Humans are not only a social species, we are a technological species as well.
    a. (5) But if technological evolution has its own necessary logic, why can't we also extrapolate how today's technology will continue to evolve in the future? (6) Retrospectively, technological evolution can appear as technological development, logical, necessary, inevitable, like the development of an oak from an acorn. (7) But prospectively, invention is not so predictable after all. Invention is not simply a logical extrapolation from the past, but calls for creativity and imagination. New technologies sometimes improve on existing technologies or meet pre-existent needs. (8) But truly disruptive technologies do not do a better job, they do a different job altogether (9) that makes the old job unnecessary. Laptops are not better typewriters, any more than cars are better shoes. Laptops rendered typewriters obsolete.
15. Necessity it is said is the mother of invention. But Socrates (1) did not have an unmet need for a microwave any more than we (2) have an unmet need for telepathy or to

bilocate. New technologies can make possible not only what had been impossible before, but can make possible what was not even inconceivable heretofore.

16. Problems with the plausibility of both extremes, neutrality and determinism has led to the emergence of a third approach, the Social Construction of Technology. (1) Here agency lies neither with designers nor users alone but each can shape the behavior of the other, leading (2) to the creation of something unforeseeable in advance by either party. Inventors (3) design a technology for a particular use. But once the technology becomes available, creative users will inevitably start to play with it, exploring what else they might do with it. (4) While such innovative uses of a technology may be criticized, even forbidden, as abuses or hacks, by its original designer, these unforeseen uses may ultimately end up overshadowing the intended use for which the technology was originally designed. Designers may then improve the technology to optimize these novel uses, further developing the technology in a novel direction.
17. The internet itself offers a striking example of such unforeseen evolution. (1) It was originally called Arapnet, developed by DARPA to meet the need of a hardened communications network that could survive a nuclear attack. (2) Soon however it also began to be used to communicate ongoing research data amongst universities. Scientists also began to use it for personal communication between their colleagues. This latter use was initially resisted as an “abuse” of the technology. So too any commercial use was also prohibited as an abuse of a tool designed for sharing research and scholarship. (3) The birth of the internet is usually dated to when these restrictions were lifted, (4) when the European Center for Nuclear Research (CERN) launched the World Wide Web free to the public for use by anyone and everyone for any purpose. Just what kind of a tool the internet was had changed.
18. Computers provide another example. (1) Computers used to be people, employed to make calculations. Machines were invented during the second world war to automate such computations to meet a need for exponentially quicker computations to break the Nazi codes.
19. After the war computers were still used (1) mostly to make computations. IBM famously predicted that there would be a very small market for such powerful machines. (2) How many companies really needed that kind of computational speed and power? Today

computers are ubiquitous. But they are rarely used any more for mathematical computations. The term “computer” is a legacy of its origins.

20. As is the smart phone as well. Why call a smartphone a phone rather than a computer? Or a camera? Or a calendar? Or a health monitor? And could the early designers of cell phones even conceive envisage of it becoming such a universal tool?
21. To summarize these first three approaches to the relationship between human beings and their technologies: with technological neutrality, agency lies with the user. Inventions are designed to meet needs determined by the user. With technological determinism on the other hand, agency lies with the technology. People either adopt the new technology or risk being left behind. With SCOT agency is dialectical. While technologies may sometimes be invented to meet user needs, users inevitably play with the technology to develop new uses that can then create new needs often unforseable, even inconceivable to both ahead of time.
    a. Bruno Latour has developed a fourth approach which (1) distributes agency across both a given technology and its users, (2) as well as a broader network of surrounding technical and social infrastructure. (3) No one given node in the network, be it user or device is an autonomous agent by itself but rather is agency is catalyzed and shaped by other nodes to which it is linked. So too no one given node (4) is a neutral, mere means or an inert, passive object but rather is what he coins an (5) “actant” with its own part to play in the work of the network as a whole. Latour refers to all such nodes as “actants” rather than “actors” to emphasize the real but partial and dependent character of their agency in the network. (6) Agency in the full sense is to be attributed only to the network itself as a whole
22. The archeologist Ian Holder has recently emphasized a second converse aspect to networks that deserves equal consideration—entanglement. That is networks, do not only empower but also entangle agency. (1) Building a network has its own costs. And, once established, (2) changes or disruptions to a network also have costs. Thus its far easier to (3) use the infrastructure already available to address new concerns even if such use is suboptimal, less efficient or even effective than if one designed a network specifically for the new use. Also networks (4) once established also need to be maintained and repaired,

further entangling future activity. (5) If network distribution of agency across multiple nodes introduces a spatial or topological dimension to agency, (6) network entanglement can be seen to introduce a complementary temporal dimension. That is, entanglement (7) entails that technologies have momentum. Using available technology will be more efficient and cheaper than "re-inventing the wheel" every time a new issue needs to be addressed.

23. Take current proposals for national health insurance in the United States.. Even the most radical proposals frame the question as "extending Medicare" to all. In effect, technological momentum can be treated as playing the role of natural selection in technological evolution.
24. As an example of networked agency, consider social media. A social media app's features both empower and entangle its users. Apps are replete with nudges to draw and keep user attention and engagement. They are designed to be "sticky" even addictive. Nudges do not force behavior, but neither are their users fully autonomous or fully responsible for their behavior by themselves either. So too design features of a platform also entangle users in that one must communicate within the parameters a given platform affords. In short how, when and where an app is used is not simply the responsibility of the user. Credit and/or blame must also to be given to the format, its nudges and their designers, as well as to the entire network of resources and allies instrumental in the production, marketing, operation and regulation of such devices.
25. Tristan Harris, has promoted a growing movement for "design ethics" to be included in the teaching and practice of software designers. Computer science is effectively evolving from a skill to a profession, which like lawyers and doctors, involve social responsibilities as well as the private pursuit of profit. The measure of a good programmer is not merely the profit his apps generate but include their effects on the life and character of its users and the societies in which they operate
26. Finally, the size of any given network is itself ultimately relative to the questions asked of it. For example to address the problem of users spending too much time on social media one could enlist a wide array of resources and allies, (1) from hiring teachers and life coaches to (2) instruction on best practices, (3) to raising the cost per minute or per click to users, to(4) even providing *more* apps that monitor time spent on other apps. The

power of Actant Network Theory lies precisely in its ability to illumine how agency networks that can be extended and strengthened, or undermined and pruned, or simply tweaked and steered to better enable and shape the desired activity.

27. ANT also illustrates how virtual technologies fundamentally differ from modern industrial and literate technologies. Rather than a world of self-determining subjects and causally determined objects, virtual technologies operate over a web of interdependent, indeed, ultimately inter-definable nodes, links and networks. Controversies surrounding virtual technologies often involve liquifying other modern dichotomies as well, be it mental vs material, public vs private, self vs other, reader vs author and perhaps most disturbing of all, humans vs machines and, ultimately, the actual vs the virtual itself.
28. In the videos that follow, I will develop some of the implications of a virtual, networked ontology, the new kind of networked self it enables, its blurring of modernity's most fundamental conceptual boundaries and the significance of all these changes for religious belief and practice. Together these videos present an extended argument for considering the emergence of virtual technologies a second axial revolution in our human way of being in the world.