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Introduction

Education, Technology and Democracy: Can Internet-Mediated Education Prepare the Ground for a Future Global Democracy?

Rupert Wegerif*

Abstract

This introduction paper provides the context for the Symposium. It begins with a brief account of the ways in which the Internet is being held responsible for poisoning democracy, then unpacks the nexus of the three main terms of the title of this Symposium: democracy, education and technology. The conceptual aspects of this nexus are inextricable from the technical aspects. That is why it is appropriate that this Symposium integrates together papers that might seem primarily conceptual and papers that are more focused on technical issues of how to design to support deeper reflection and collective intelligence. This paper ends with a justification of the need to take an expanded 'design based research' approach to the issue of how education and technology relate to democracy. What we need now is not so much contemplative knowledge of relationships between abstract concepts but engaged knowledge that supports collective technology design, where we, ourselves, or the nature of human subjectivity and human subjectivities, are understood to be part of that technological design based research project.

Keywords: *theory of technology; collective cognition; CSCL; dialogic; design-based research.*

1. Introduction

New digital media associated with and including the Internet, are referred to collectively by Bernard Steigler using the term *pharmakon* (Steigler, 2012). He is borrowing this usage from Derrida, who was in turn following Plato, who used *pharmakon* to refer to literacy in his dialogue *Phaedrus* where he applied it specifically to the issue of whether or not writing is a good thing—a remedy for failings of memory—or a bad thing—a poison for the mind. Derrida's point in using the term *pharmakon*, a term meaning both remedy and poison in Ancient Greek, is that the nature of writing is essentially undecidable. In a similar way to the advent of literacy, the advent of the Internet changes who we are. It is entirely possible that

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future historians will divide human history into before and after the Internet. It is precisely because the Internet changes everything that it seems appropriate to apply to it the label of *pharmakon*. We cannot say if it brings good things or bad things because it brings a whole new departure and the potential of many different things. The question asked by all the papers in this Symposium is if one of the potentials of the Internet is global democracy and if so what implications this has for education. This Symposium explores both the practical question of how we should design education if we wish to prepare for global democracy and the more theoretical question of what the term 'global democracy' means.

Pharmakon has a third possible meaning. The very similar word *pharmakos*, was the name given in Ancient Greece to a human 'scapegoat' who was burdened with all the sins of the community and then driven out. In newspaper articles, popular books and even some academic studies we increasingly read about how the Internet and associated digital media is the cause of many bad things such as an increase in stupidity (eg Carr, 2010; Greenfield, 2014), ignorance (Colleoni, Rozza, & Arvidsson, 2014), immaturity (Dreyfus, 2008; Steigler, 2010), bullying (Suler, 2004) and just general distraction. Most of these complaints come from members of an older generation like Agamben who do not seem to like what they see happening to the young people around them:

> I live in Italy, a country where the gestures and behaviors of individuals have been reshaped from top to toe by the cellular telephone (which the Italians dub the telefonino). I have developed an implacable hatred for this apparatus, which has made the relationship between people all the more abstract. Although I found myself more than once wondering how to destroy or deactivate those telefonini, as well as how to eliminate or at least to punish and imprison those who do not stop using them, I do not believe that this is the right solution to the problem. (Agamben, 2009: 16)

This is odd since so many young people seem to love their phones and appear come alive as they use them to chat and flirt with other young people. Agamben's sentiments are very similar to the way in which the oral thinker, Socrates, is described as reacting to the practice of writing that was then spreading in Ancient Greece. Socrates claimed, for example, that memory would suffer since people no longer had to learn epic poetry by heart. Most of these complaints against new digital technology fall into what could be called the *pharmakon* as 'poison' category but some also veer toward turning digital technology into a scapegoat for all human sins. Almost all of the sins that the Internet is accused of are concerns that long pre-date the Internet and that every generation has complained about. "The best argument against democracy," Churchill famously quipped, "is a five minute conversation with the average voter." The difference is perhaps that the Internet makes these human failings more visible, revealing tendencies that were previously easy to ignore. The Internet has become

a useful scapegoat in the sense of something that can be held responsible for bad things. Originally heralded by many commentators as offering the prospect of more direct democracy, the Internet is now increasingly blamed for the extent of the credulousness, ignorance and malevolence that is said to have infected recent politics. It is possible that many voters were always credulous, ignorant and malevolent. The difference is that now the opinions and personalities of voters are highly visible online through tweets, blogs, facebook posts and shared 'memes'.

In the next section I will look briefly at the ways in which the Internet is being held responsible for poisoning democracy, then I will look at the issue of what we mean by democracy, and then at what we mean by educational technology. This introduction paper is here to provide a context for this Symposium. The topics addressed are conceptual but also technical. The question of the impact of social networking sites on democratic discourse, for example, depends on the design of the platform. All the papers that follow offer particular answers to the question of how the Internet and education can relate to democracy. This Symposium as a whole contributes to understanding the possible role or roles of education in preparing the ground for a future global democracy, even though what this future might look like is unclear and the project itself might prove to have no end.

2. 'Fake news','post truth', and the 'echo-chamber'

Since the link between the Internet and democracy was agreed as the focus of this Symposium over a year ago, international events have pushed this theme into the spotlight of media attention. In 2016 both the UK referendum on membership of the EU and the USA presidential election led to claims that the Internet had played a major role in deciding the outcome. This role was, by and large, reported as a bad thing for democracy. The Internet, more particularly, social media, and most particularly, Twitter and Facebook, were repeatedly blamed for promoting 'fake news'. The extent of the coverage of this issue is indicated by the fact that the word 'post truth' entered the Oxford English Dictionary as the new word of the year in 2016 (Peters, 2017).

> Relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief.
> *'in this era of post-truth politics, it's easy to cherry-pick data and come to whatever conclusion you desire'*
> *'some commentators have observed that we are living in a post-truth age'.*
> (English Oxford Living Dictionaries, 2016)

Examples of what became called 'post-truth' include a story in the UK referendum campaign that Turkey was about to join the EU giving mil-

lions of Turks the right to live in the UK and a story in the USA election campaign that the pope endorsed Donald Trump. These were also called 'fake news' and 'false news' stories. There have always been false news stories fabricated for political advantage. Applying the term 'post-truth' to the ancient phenomenon of false news links it to recent movements of thought in a way that implies that the 'postmodern' idea that there are no solid facts, only an endless series of interpretations, has finally gravitated from academia to have an impact in real life. Using the term 'post-truth' for the problems with modern democracy, perhaps, is a subtle way of blaming postmodern professors.

The false news story about Pope Francis endorsing Trump for president very quickly reached a million readers via the Internet whilst that the retraction of that story reached far fewer people (Lee, 2016). One concern implied by the term 'post-truth' is that features of Internet mediated communication made false news produced by amateurs and fraudsters more compelling than more objective 'true' news of the traditional kind produced by responsible journalists.

The echo-chamber effect of the Internet referred to by Judele and Weinberger (this Symposium) suggests that structural features of Internet mediated communication tend to support bias. Participants in online communities may find their own opinions constantly echoed back to them, which reinforces their individual belief systems. Companies like Facebook, Google, and Twitter, have established personalization algorithms that cater specific information to individuals' online newsfeeds (Lee, 2016). This is intended to make advertising more focused and so increase revenue for these companies so it follows a capitalist implicit logic rather than any explicit political agenda. The unintended political consequence, it has been claimed, is supporting division and cultural tribalism.

3. 'True news' versus 'fake news'

The concept of 'fake news' depends upon an implicit contrast with 'true news'. So how do we recognise 'true news'? Is it perhaps intended to be the sort of news we used to get before the advent of the Internet? The contrast between true and false often seems as if it ought to be straight forward. After all the pope did not endorse Donald Trump for president and the claim that he did is simply not true. But of course all such truth, and untruth, has to be constructed in order to reach us. The contrast here is not only between 'true' and 'false' but also between traditional media and new media. 'True' news, implicitly, is likely to result from proper editing procedures, from using trusted experts, from the practices of regulated broadcast and print media outputs. 'Fake' news is associated with the untrammelled access to broadcasting offered by the Internet such that anyone, however ignorant, stupid or malign, can post claims on the Internet in a way that can quickly reach millions of potential readers. Traditional one-to-many

media, such as print and television, require physically located technologies, a printing press or a TV studio, which has to be owned and can be regulated and in extremis, shut down. The Internet cannot be so easily regulated, controlled and shut down.

The contrast made between fake news, originating mainly on the Internet and true news, originating mainly in traditional print journalism, is similar to the contrast that used to be made in universities between reliable sources and Wikipedia. My university colleagues tend to warn their students against using Wikipedia as a source because it is 'not reliable' since, 'anyone can change anything'. Traditional print encylopedias such as the *Encyclopaedia Britannica*, (now online of course) only hire experts to write article and have editorial controls to check for bias and for accuracy. But a comparison between a print encyclopedia and Wikipedia might miss the point that they are very different kinds of enterprise. Print, like TV, is a one-to-many medium with the authority, which is also to say, the authorship, controlled by the centre. Wikis are, by their nature, intended to be participatory. This means that the information should be read differently. For Wikipedia the reader should be prepared to be critically aware and to cross-check with other sources. They should also be prepared to take responsibility and to correct anything they find that is not true or suspect. Using Wikipedia, or any participatory online sources, requires a shift in attitude from being a passive consumer of the 'truth' to becoming an active participant in the process through which we collectively construct useful but always fallible shared knowledge (Wegerif, 2013: 9).

In 1938 a radio broadcast of a dramatised version of H.G.Wells, *War of the worlds* in which the Martian invasion of the Earth was presented in a series of news broadcasts led, it has been claimed, to some panic and a widespread concern that the planet Earth really was being invaded from Mars. Since then radio audiences have become more adept at telling real news from fictional news. Perhaps the prevalence of 'post-truth' and 'fake news' is a product of readers who have been educated to accept the truth of what they read and hear through one dominant set of media practices, one-to-many media such as print text books, now having to learn new practices in order to take a more critical and co-constructive attitude towards the truth. But the 'true' news and the 'truth' that is implicitly presumed to have existed before the 'post-truth' age was always already biased and always already should have required a critical and participatory reading. Delivering news via the Internet requires a shift in readers from passive acceptance to active criticism and participatory co-construction which is potentially a good thing for democracy even if, initially, the failure to make this shift, leads to the apparently harmful effect of believing and sharing false news. Education here might have an important role to play in teaching people how to read and participate on the Internet.

Another, quite different, possible reason why fake news stories had so much impact on the two voting campaigns that led to Brexit in the UK and the election of Donald Trump as president in the USA, was per-

haps that the truth of the traditional 'true' news was being challenged. In both cases the 'underdog' campaigns which were initially expected to lose, claimed that the 'mainstream media' were biased against them and in collusion with the 'establishment'. In both cases the underdog campaigns claimed that the people should not listen to 'experts' because they were all just part of the establishment. The Internet, especially social media micro-blogging sites such as Twitter and Facebook, enabled these campaigns to bypass the mainstream media and communicate messages which had not been moderated or sanctioned by 'experts'. Even when not obviously 'fake news' many of these messages could be described as 'post-truth' in that they were appeals to emotion or claims based on personal opinion unconcerned with expert knowledge. In both cases then the Internet played the role of expanding democracy in the sense of bringing more voices into play than would have been possible without this new technology. However, in both cases, many commentators claimed that the manner in which these new voices came into play had a bad impact on the quality of democracy. If an increase in the number of voices participating in opinion forming debate could be seen as a bad thing for democracy this raises the question of what exactly do we mean by the key word 'democracy'?

4. Democracy

The term democracy has a very virtuous ring to it without always having a very clear reference. For the ancient Greeks however, despite the fact that they are usually credited with inventing democracy, the term was often used pejoratively. For both Plato and Aristotle the term democracy conjured up the chaos of everyone competing over selfish desires instead of uniting to realise the common good.

Aggregative democracy or the democracy of simply voting and counting has an obvious danger referred to by de Toqueville in a resonant phrase: "the Tyranny of the majority." When it is argued that the Internet brings with it a heightened capacity for 'direct democracy' it is often this kind of voting and counting that is meant. The Swiss have more direct democracy than anyone else. In 2009, for example, a country-wide referendum led to the banning of the building of minarets in Switzerland. It is easy to see how this sort of 'democracy' could be experienced as oppressive by minority groups.

When the concept of democracy is referred to by Judele and Weinberger (this Symposium) in the context of designing an App to support more reasoned debate on Facebook, it is made clear that it is deliberative democracy that they mean and not aggregative democracy. The same seems to be true in other papers which focus on the idea of preparing the ground for democracy by enhancing the quality of online dialogue (Wegerif, Doney, & Jamison, this Symposium), through online teaching in a more dialogic

manner (Ritella, this Symposium) and through designs that support intelligent collective thinking and decision making (Hogan, Hall, & Harney, this Symposium). Deliberative democracy is associated with Habermas' model of communicative rationality. The idea is that making good decisions requires dialogue in which the voices of all relevant stakeholders in the decision are heard and listened to with respect. The ideal at the heart of deliberative democracy is referred to by Habermas as an "ideal speech situation," a situation in which power differences between people do not determine the outcome but the only coercion or force involved is what Habermas calls "the unforced force" of the better argument (Habermas, 2001). From the beginning of the Internet it has been proposed as offering a possible site for realising the ideal speech situation more effectively than face to face communication because the physical differences between people, including gender, clothing, badges of status etc. are minimised and the difficult hurdle of silencing others in order to 'take the floor' that occurs in face to face dialogue is removed (e.g. Wegerif, 1998).

Deliberative democracy, is perhaps the dominant theory informing education for citizenship across Europe, but it has been questioned by Biesta appealing in particular to an account of democracy from Ranciere (Biesta, 2010; 2011). Ranciere claims that any system of norms, including the procedural rules of deliberative democracy, becomes a kind of regime or what he calls a "police state," which inevitably includes some and excludes others. Real democracy is not to be found in any normative system, according to Ranciere, but only when the system is challenged in the name of equality. Democracy is therefore only to be found sporadically. According to Biesta then we should educate in a way that allows for such encounters and supports their educative potential. The argument from Ranciere and Biesta seems to be that democracy is not something we have and can give to others by including them with us, in our democratic system, but, almost the reverse of this, democracy can only be learnt through experiencing exclusion and acting to escape from the minority status that this exclusion gives us:

> democratisation for Rancière is not something that is done *to* others; it is something that people can only do themselves. Rancière connects this to the question of emancipation. Emancipation, he writes, means 'escaping from a minority' (Rancière, 1995: 48). (Biesta, 2010: 125)

While this challenge to more normative models of democracy education is stimulating there is also something slightly bizarre, and even, perhaps, rather innocent about the way that Ranciere, is willing to see every state of order as a "police state" and is obviously wanting to see every challenge to order, at least potentially, as a bid for equality. I began this paper with the recent context of elections in the USA and a referendum in the UK in which there were clearly voices that felt excluded challenging what they saw as the establishment. But this challenge to the normative system was not always in support of Ranciere's vision of equality. As the philosopher

John Gray points out, the challenges that relatively stable liberal 'democracies' now face are often from those who, in his words, are: "Happy to relinquish their freedom as long as those they hate—gay people, Jews, immigrants and other minorities, for example—are deprived of freedom as well." As Gray points out, the apparent assumption often made by left intellectuals that everyone secretly wants freedom and equality is not well supported by the facts of human history (Gray, 2015). In this context how is it that norms and virtues implying the promise of democracy have arisen in some cultures and are constantly renewed through challenges and reformation? Perhaps education has something to do with this.

Ranciere and Biesta make the assumption that we can separate democracy from technology whereas the papers in this Symposium all assume that technology is essential to democracy. To describe education into shared norms as a bad thing ('colonial') as Biesta does (2010), implies that he is either ignoring or not valuing the context of communications technology including writing and indeed mathematics and specialist scientific terminologies all of which could not exist without systematic education as induction into shared norms. The relation of technology to democracy is something I will look at more in the next section but my summary conclusion is that, we (the 'demos' or people) are the technology that gives us a global body and a global mind and that for this technology to function in a way that could be called, at least in part, 'democratic', requires universal education into shared 'democratic' norms.

Habermas, possibly the leading proponent of the idea that education for democracy requires induction into a system of procedures and norms, was influenced by what happened in Germany when democratic norms and procedures were broken in the name of a romantic adventure (Müller-Doohm, 2016). However, Habermas's understanding of communicative rationality is not as narrow as his opponents sometime claim. It is grounded on those norms, such as reciprocity, that arise in the course of social life as essential supports for social life. The game of asking for and giving reasons is, by its nature, open to challenge and so has an inbuilt mechanism for self-reflective change including the possibility of unexpected transformations (Wegerif, 2004). The 'norms' that children need to be inducted into for communicative rationality to work, include virtues such as 'openness to the other' which implies being able to listen, to learn and to change as a result of each encounter. This is not a given. It is quite possible to present clear evidence and arguments for something like man-made climate change, for example, and to have this evidence rejected by those who lack basic communicative virtues such as openness to learning from other points of view and intellectual honesty. Education into norms and virtues is essential if people are to be able to follow arguments and give consent on the basis of understanding reasons. Without this there would be no science and democracy so if we want science and democracy, however we define either of these two connected ideas, we need to vote for education into the relevant shared norms and communicative virtues (Rorty, 1991: 39).

Biesta, following Ranciere, seems to want to divide the spontaneous events that bring awareness of democracy, democracy as the event of calling for justice, from democractic norms and virtues as if these two are unconnected. He acknowledges, however, that some "police states" are better than others, especially those that have been shaped by the after-effects of previous events of challenge and democratic awakening. Perhaps the quality of spontaneous events of awakening to democracy and the normative structure that children are inducted into are not so completely unconnected after all. Perhaps these two are like the play of participation, experiencing flows of meaning from within, and reification, looking from the outside at the social structures, words and institutions for example, that are formed in the wake of flows of meaning. I mean something like the way in which creative and poetic new ways of using language turn into everyday stale clichés over time. Although someone in the grip of what Biesta calls "the incalculable" in a moment of discovering freedom and equality, will not experience themselves as socially conditioned in anyway, perhaps, in fact, they are deluded. Tarkovski, in his late film, *The Sacrifice*, includes a story of a monk who planted a barren tree on a hillside and then carried a bucket of water to it every day for years. This seemed pointless. Then one day, miraculously, the tree blossomed. The blossoming tree might not have realised it but there was a connection between the water that had been brought every day to its roots systematically and the apparently miraculous event of its blossoming. This story could be used as an analogy to what teachers do in modelling and encouraging norms and virtues everyday which are often not apparently picked up by students at the time but might have an indirect impact in awakenings later on even if this impact is unrecognised and remains unthanked especially by those who prefer to see ethics as descending from a mysterious beyond—the "incalculable" (Biesta), the "ungovernable" (Agamben), the "impossible" (Derrida)—while all teachers and all teaching remain seen to be part of imposing a "police state."

Perhaps the sporadic blossoming of democracy in action and the induction of children into norms and procedures associated with democracy as a system are two aspects of a single larger understanding of democracy as a complex historical process, always in tension and so always open-ended and erratic in its progress. This could also be one way of interpreting the route that Derrida takes with his repeated phrase "*la démocratie à venir*" or "the democracy to come" (Derrida, 1997). The focus in this phrase on the future—'*l'avenir*', that is "to come" or "*a venir*," is not meant to imply that true democracy will emerge eventually but to refer to the inevitable tensions at the heart of democracy which mean that true democracy is never simply to be realised here and now in a system that works but is always, in a sense, 'deferred'. Derrida, like Habermas in some ways, ties democracy to a drive to justice and equality that arises at the heart of dialogue from out of the very structure of dialogue. Specifically he calls democracy a "promise":

> […] this democracy we dream of is linked in its concept to a promise. The idea of a promise is inscribed in the idea of a democracy: equality, freedom, freedom of speech, freedom of the press—all these things are inscribed as promises within democracy. Democracy is a promise. That is why it is a more historical concept of the political—it's the only concept of a regime or a political organization in which history, that is the endless process of improvement and perfectibility, is inscribed in the concept. So it's a historical concept through and through, and that is why I call it 'to-come'. (Derrida, 1997, quoted by Fritsch, 2002: 8)

This is Derrida's way of acknowledging something of the argument made by Ranciere and Biesta, that Democracy is not a state of affairs that we ever achieve in any particular constitutional arrangement but is always a struggle. The tensions that Derrida refers to at the heart of democracy are the same sort of tensions that were noted by Plato and Aristotle, the tension, for example, between the ideal of individual freedom and the need for democracy to rule effectively in the name of the common good. A democracy needs to rule effectively or other, worse systems, will replace it, however it can only rule effectively by constraining individual freedoms—for example by compulsory education into democratic norms—but to the extent that it constrains freedoms it become a regime that excludes some and so undermines itself as a promise of inclusion. Perhaps it is precisely in the challenges to it, and the way it responds to them, that democracy works even when it is being seen by some as a system that does not work. Perhaps it is that dynamic struggling combination of ideals and the repeated inevitable failure to realise them that we should call 'democracy' rather than either the explicit system of procedures and norms emphasised by Habermas or the sporadic outbreaks of challenge to the system emphasised by Biesta and Ranciere.

While it is not possible to characterise democracy in any simple way there is a clear and simple contrast at the heart of the ideal of democracy. This is the contrast between taking decisions that impact on everyone in a community on the default basis of who has the most power and, the democratic alternative ideal or promise: taking decisions on the basis of unforced agreement emerging out of free and open dialogue between all who have a stake in the outcome where all participants feel respected and listened to by the others. At the heart of democracy then is not simply rationality, if rationality is understood as an abstract logical system of argumentation, but also the dialogic expansion of the sense of self to include others and so to create together, if only for a moment, a collective sense of self and a collective agency. It is education's role in this expansion of the sense of self, perhaps crucial to the possibility of democracy, that the paper by Loperfido and Ritella (this Symposium) deals with. While at any given time democracy is characterised by norms and values that children need to be inducted into, the central driving ideal is the dialogic virtue of 'openness to the other'. Derrida wants to claim that this value or promise is not

something we get from education but is a universal a priori of language, but even if the potential is always already there, and I agree with that, this potential for openness that arises in every dialogue still needs to be reinforced and supported by institutions and education into norms. Being inducted into such a system of norms is perhaps a contradiction because this virtue is not a rule to follow but more a kind of opening to the unknown and the unexpected,—the radical alterity of the future—as Derrida might put it, however, if 'induction into openness' is a contradiction it is a generative contradiction that perhaps sums up the role of education in relation to democracy. Being open to engaging with and learning from each and every challenge makes democracy a dynamic and unpredictable system to the extent that it is perhaps not really best understood as a system at all but could be seen more as an open-ended process of collective self-reflection and self-education. A dialogue perhaps, and potentially a global dialogue about who we think we are and what we think we should do, including the question of what sort of future we want to create together and how we should educate our children.

5. Educational technology

It is worth recalling that the term technology comes from the Greek term *techne* that is best translated as the systematic treatment of any art or craft. Physical tools are involved of course in arts and crafts but so, perhaps more centrally, is education for without education no-one knows how to use the tools.

We began this paper with the word *pharmakon* used to refer to communications technology. Plato used the word *pharmakon* to refer to writing in a story told by Socrates about the time when writing was offered by the god Thoth to king Thamus of the Egyptions as a 'remedy' (*pharmakon*) to enhance memory (Derrida, 1981). King Thamus rejected this gift on the grounds that it would really destroy memory and also true learning. King Thamus claimed that those who read texts will have: "not truth, but only the semblance of truth; they will be hearers of many things and will have learned nothing; they will appear to be omniscient and will generally know nothing…" (Plato, 2008). In other words, Thamus claimed, writing was more like a poison (also the word *pharmakon* in ancient Greek) than a remedy. Socrates goes on to explain to Phaedrus that writing is destructive because access to true knowledge comes through face to face dialogue. Although Socrates' story makes it clear that writing is only to be seen negatively, Derrida chooses to interpret the concept of *pharmakon* applied to writing as implying that writing is in fact essentially undecidable. His point is perhaps that writing cannot be given a determinant meaning except within the field of writing. After the advent of writing we change and the value system changes. Because writing is a precondition of all our judgements we cannot step outside of writing in order to judge it as a good

thing or a bad thing. In a similar way the advent of new digital technology, especially the Internet and mobile technology accessing the Internet, is rapidly changing what it means to be human, making this technology part of the preconditions of our thinking rather than an object that we can stand outside of and judge. What would it now mean to be human without our technology?

It is difficult to distinguish the history of education from the history of technology. According to the research of Lewis-Williams the first cave paintings, going back 40,000 years, were used as a kind of educational technology to record the spiritual voices of the community so as to be able to induct newcomers into those spirit voices each with their distinctive energies. The beautiful animals painted on the walls represented spirit voices that could be experienced in shamanic possession and the many hand-prints showed, according to Lewis-Williams how participants connected with those energies through touching the walls of the cave in ceremonies that including dancing and trance-like states (Lewis-Willaims, 2002;Wegerif 2013: 90).

The first formal schools, edubas or 'tablet houses', were created around 4,000 years ago in Sumeria to transmit literacy and mathematics. Because the students were writing they wrote about their schools and curricula can be reconstructed from these stories which do not seem too different from many curricula today with lots of learning of word lists and copying of key texts including punishments for making mistakes (Sjöberg, 1975). It sounds a lot less fun than trance-dancing in caves and allowing oneself to be possessed by cultural voices but the trouble with writing and mathematics is that most students find them hard to learn. They do not come naturally to humans but require years of induction into shared ways of using cultural sign tools. Literacy education remained an elite activity for princes and for scribes until the advent of the printing press and the expansion of the need for workers to be literate in order to master instructions on machines.

New communications technologies required education as induction into norms. Making meaning from moving images which is now so much a part of everyday life as millions swap videos on You Tube, was initially not so obvious. André Gaudreault (1990) points out that early silent cinema screenings required a narrator in order to help audiences make sense of the images that they saw. Now the narrator has disappeared and people educate themselves and each other into reading meaning out of moving images. Research that begins with the question of why does education need educational technology might be missing the real question which is: why does technology need education and what kind of education does it need? The history of technological innovations suggest that it is technology that calls education into being in order to realise its potential ('our' potential). Literacy, including mathematics, is the most obvious example that has given birth to the mass compulsory formal schooling that we now tend to take for granted as part of modern life. But the same is true of each new

technology. I am not so much suggesting that we give technology agency here, as that we include technology, and, therefore education, in a larger understanding of 'us' and 'our' agency.

Socrates' complaints about writing in the Phaedrus suggest that, as literacy spread throughout ancient Greece, it was just as disruptive of established political norms as the new communications technology of the Internet is proving today. In describing how people can now borrow scrolls and make speeches that have the appearance of truth but no real substance he is describing the disruption of existing power relations. The modern world has been shaped by the almost magic power invested in key texts, from core religious texts to law codes and more recent universal declarations of human rights. This focus on texts largely swept aside Socrates' ideal of truth emerging from intelligent dialogues replacing this with an image of truth as something more like 'the laws of physics' as written down in science text books (Toulmin, 1990). The recent concerns over 'post-truth' described earlier in this paper are perhaps a symptom of moving from one regime, print-based truth, to another conception of truth more appropriate to the Internet Age. The advent of the Internet only has the potential to change what we mean by truth again if it is combined, just like the regime of literacy before it, with a universal project of education that inducts children into shared norms for the effective use of this new technology. There is a very wide agreement that we need universal induction into shared norms in the form of literacy education in order to realise the benefits of literacy for the human race so why not try to form a similar consensus as to the need for induction into shared norms for the use of the Internet to support a future global democracy?

The claim that false news spreading on Facebook influenced the outcomes of elections in the USA led to a response from Facebook that was, in some ways, similar to installing a narrator in early silent cinema, this was a tool giving users tips on how to read Facebook posts and how to spot fake news stories and the strong advice not to pass them on through sharing. In addition software was developed to spot potential fake news stories and label these with a red warning to users to be cautious and not to share.

The Internet does not have an effect on its own but only in conjunction with cultural practices or shared norms for how to use the Internet. So far we have developed technologies, such as social networking sites built on 'likes' and not on challenges, which enhance cultural tribalism. These are designed by the processes of capitalism to promote sales. The example of Facebook's reforms show that it is quite possible, with some programming tweaks and some educational intervention, to change the impact that the Internet has on our collective thinking and our collective way of being together. This would require some sort of collective steering mechanism to intervene and regulate the Internet in the interests of democracy but the modest example of Facebook's response to criticism suggest that that steering mechanism does not need to be a global super-state but could be

the power of public opinion mobilised through and, at the same time, not entirely constrained by, existing communications technology in order to reform that technology from within.

We are still in the early days of the Internet Age, still learning how best to design ourselves through education so as to make best use of the potentials now open to us. This, at least, is the message of the papers in this Symposium. The paper by Loperfido and Ritella suggests how the design of online learning courses can develop the kind of selves required of an on Internet mediated democracy of the future, selves that are distributed and dialogic, able to participate in many perspectives without losing a capacity for critical judgement and reflective thought. The paper by Judele and Weinberger, suggest how we can add features to existing social networking sites that change their functionality, supporting deeper reflection and dialogue of the kind required for deliberative democracy. Hogan, Hall and Harney, put forward a more complex design of pedagogy for collective intelligence based on systems theory claiming that, like the experiment with an app of Judele and Weinberger, this technology could be integrated into the working of the World Wide Web. The paper on how to use Open Educational Resources (OER) by Ritella again addresses the issue of how to design forms of pedagogy that can prepare us for a genuinely global thinking and global democracy of the future. The combination of OER and Internet mediated dialogue in small learning groups offers a model of a new kind of global education system that could serve as an infrastructure for induction into effective global decision making dialogues of the kind needed for future global democracy. The final paper by Wegerif, Doney and Jamison, offers an example of an alternative social networking site designed specifically to support global education into global dialogue with an explicit aim at preventing violent extremism. Evaluation of the impact of this site and associated pedagogy suggest that it has an impact in changing the self image of students and socialising them into the kind of sense of self and the kind of dispositions, norms and virtues that would be a necessary precondition for any future global democracy.

6. Educational research as designing the future

The papers in this Symposium are concerned with the question of how to use technology to support preconditions for global democracy. This kind of enterprise is dismissed by Agamben as based on false vanity.

> Here lies the vanity of the well-meaning discourse on technology, which asserts that the problem with apparatuses can be reduced to the question of their correct use. Those who make such claims seem to ignore a simple fact: If a certain process of subjectification (or, in this case, desubjectification) corresponds to every apparatus, then it is impossible for the subject of an apparatus to use it 'in the right way'. Those who continue to promote

> similar arguments are, for their part, the product of the media apparatus in which they are captured. (Agamben, 2009: 21)

Agamben here sets up an opposition between technology and subjectivity. He is taking the term 'apparatus' from Foucault who argued that our subjectivity was produced by larger social and historical processes. However there is an obvious problem with Agamben's argument. If, as he argues above, subjectivity is produced by the apparatus such that it is impossible for a subject to stand outside the apparatus and say how it should be 'correctly' used, it equally follows that it should be impossible for a subject to 'correctly' oppose the apparatus as he claims to do in the name of a true vision which enables him to see, for example, as referred to earlier, that mobile phones are a bad thing corrupting young people. It is hard to understand where Agamben's oppositional subjectivity comes from if not from an apparatus (unless perhaps, as I assume, from the previous regime of literacy education and induction into the thought of authors like Camus who wrote the relevant if slightly ridiculous phrase: "*Je me revolte, donc je sui*") since, ultimately, according to his theory, the subject is an aspect of the apparatus. Another more recent account of apparatus offered by the quantum physicist and feminist philosopher, Barad (2007), suggests a possible way forward from this impasse. Barad takes her model of apparatus from quantum physics, where different configurations of experimental equipment generate different apparent realities, including not only objective reality, which is brought into being, but also subjectivity and agency. The apparatus, Barad argues, is part of the phenomenal world as well as producing that world. By setting up the apparatus differently in order to observe differently we bring different realities into being including different subjectivities. Paradoxically the realisation that who we think we are is a product of an apparatus gives us the power to design ourselves differently through re-designing the apparatus.

This might sound very abstract. Concrete examples of designing for subjectivity are offered in all the papers in this Symposium. A basic example could be something as simple as re-arranging the seating in a room. If one arrangement, separate desks in rows perhaps, seems to be contributing to feelings of isolation, competition and anxiety in students and we agree that this is not what we want then we might try re-arranging the furniture to create shared tables in order to see if this improves the sense of community and the quality of the collaboration. In addition to this we might explicitly teach ground rules for friendly and supportive collaborative learning. I am not necessarily recommending this intervention just pointing out that designing for subjectivity is what teachers do. It is intrinsic to education.

Agamben is right, however, that the 'us' who think we understand what is correct and choose to design the future on behalf of everyone else is problematic. He is right to claim that this sense of 'us' could easily be suffering from false 'vanity'. Justifying the decisions we take in education is not easy but nonetheless actions do need to be taken. If, as Agamben im-

plies, getting outside of the system is not possible, this does not mean that there are no values and directions of travel that arise within the system. This is essentially what Habermas is arguing with his concepts of "ideal speech situation" and "discourse ethics" that arise within history as organising ideals that are then always very imperfectly realised in scientific forums and democratic debating chambers. This is also what Derrida is acknowledging in a different way with his concept of "the democracy to come" guided by the relational ethic of openness to the other.

Dewey's understanding of democracy as an ongoing shared enquiry and shared process of problem solving might be useful here (2004). Our capacity through science, where science is understood in the broadest sense as a transdisciplinary shared enquiry, to stand back and understand, always imperfectly, some of the ways in which we are shaped in our subjectivity by underlying hidden structures and processes, gives us a certain, always limited, freedom to act and, with that freedom, an ethical responsibility to act. It is only through design-based science of acting to change our social conditions and observing the consequences of those actions that democracy can progress while remaining always imperfect, always "to come" in Derridas' phrase. The difference between this vision and standard accounts of educational design-based research is the acknowledgement that we ourselves and our desires are shaped, over time, by the research designs we make. As Agamben notes there is a certain circularity in a subjectivity already shaped by a technology deciding on the correct way to use that technology. But if we accept something of the claims from Habermas and Derrida about the foundation of democracy as an ideal (or promise) rooted in the nature of dialogue—a certain ethical openness to the other—then this circularity is not closed but more of an infinite expanding spiral of inquiry driven forward by a drive that is never completely obscured by each new design of our historical discursive and technical apparatus. It is in this context that this Symposium is applying educational research to an educational issue. Education here is understood as that discipline which concerns itself centrally with the design of the future, including and most especially the design of our future subjectivity.

The research in this Symposium combines theory papers with more technical papers and evaluations of interventions with descriptions of design principles. The overall research approach could be said to be transdisciplinary in that it begins with a real-world challenge and develops ways to address that challenge that draw upon different disciplinary backgrounds. The paper by Hogan, Hall and Harney on design for collective intelligence outlines the importance in this context of an educational design-based research methodology. Although the other papers are less explicit about this approach, it is clear that they are all concerned with the question of how we should design the future through designing educational technology. At this juncture in human history, with the advent of the Internet and our general confusion about what to do with it, what we need is not the kind of research that is content to describe reality but the kind of research that

creates a new reality. A possible model to follow here as a metaphor is the way in which aviation began in sustained design-based research where the only certainty was the aim, building machines that could enable humans to fly (O'Neill, 2012). We know roughly what we want now, which is global democracy, but we do not yet know how to get there. The aim for educational research should be to design educational technology systems to achieve this aim, evaluate their impacts, refine the designs, try again and eventually, like the aviation pioneers over one hundred years ago, we might have a system that flies. Of course, unlike aviation research, this kind of educational research is not only technical but has to engage with profound ethical and ontological issues about what kind of future we want and what kind of beings we want to be. However, as with the aviation research, the best way to research such issues is not through theory alone but through practice by making designs and evaluating the impact of designs where we allow our most fundamental assumptions and, indeed, our very selves, to be included in the dynamic self-reflective and self-reforming iterative design-based research process.

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