

THE OTHER CLIMATE CRISIS: DIGITAL CULTURE, DEMOGRAPHY AND EDUCATION

Abstract

The world is facing two urgent crises. The first is the climate change crisis, a result of hundreds of years of problematic use of the planet's natural resources. The second, this article argues, is a crisis in public education, which is the result of an 'exactly parallel' misunderstanding and mismanagement of human resources. This article proposes that these crises need to be tackled together, and considers the emergence of digital cultures as presenting both significant challenges and opportunities.

Introduction

Most people now accept that there is a major crisis in the world's natural climate, and that it is directly related to how human beings have been behaving for the past 300 years. In the interests of industrialism and the ideologies on which it is based, we've taken from the earth a partial selection of its resources and imperilled the balance of all of them. I believe this crisis is genuine, profound and urgent. But it is not the only climate crisis we face. In my view, there is another — parallel — crisis, the origins of which are the same and the consequences of which are equally perilous. This is a crisis in our understanding and use of human resources. I believe that we won't fully solve either crisis without tackling them both.

In this article, I outline some of the origins and drivers of this other climate crisis, and argue that it is being exacerbated by the dominant systems of public education. The emergence of digital cultures poses stark challenges to these systems and unprecedented opportunities to transform them.

Making connections

I work now in three professional domains, mainly on issues of creativity and innovation. I work in education, from pre-school to universities and to programs of lifelong learning. For 12 years, I was Professor of Arts Education at the University of Warwick in the United Kingdom, and was variously responsible there for teacher education, research, and curriculum development. I work in the cultural sector, with a wide range of organisations from the Royal Ballet in Birmingham to the Getty Center in Los Angeles. I also work with the corporate sector, including many Fortune 500 companies.

My purpose is to promote conceptions of human talent and ability that are richer than those that now dominate education and many public and corporate organisations. I'm not interested only in advocacy, but in implementation. To do that, you need a theory of change. Mine is based in part on cultivating the common ground that lies within and between these three sectors. For example, many education systems are suffering from the political imposition of narrow curricula and standardised tests. Policy-makers argue that these measures are necessary to improve national economic competitiveness. The businesses I speak with see it differently, however. They want people who are flexible and creative — the very qualities in students that the regimen of standardised testing is stifling.

I also try to make connections between theory, practice and policy. All of these are important to the processes of educational transformation. The problem is that the lines between them are often blocked or broken. One of the reasons I enjoyed university life was the vigour of academic research and theoretical debate. Some of this casts a powerful light on the problems and strategies of educational change. Many theorists, though, have limited interests in the actual practice of education, and their work often doesn't travel far outside the academy. Many teachers are too busy with the day-to-day challenges of educational practice to keep up with theory. Too many policy-makers in education seem to know little about either theory or practice. Encouraging a better flow of traffic between these three fields seems to me to be essential.

The other climate crisis

It is especially urgent to make progress on all of this because of the extraordinary times in which we live. Wherever you work, whatever you do, whether you like it or not, you are caught up in a revolution. This revolution is both economic and cultural, and it is changing almost everything we take for granted. It has immense implications for education, from pre-school to lifelong learning. There are two driving forces of change: technology and demography.

Technology

We know that technology — especially information technologies — has transformed the cultural and economic landscape in the past generation. It has changed how we work, as well as who we associate with and how.

The fact is, though, that the digital revolution may hardly have begun. At the moment there isn't a computer on the planet that comes near the processing power of a human brain. Within 10 years you may be sitting in front of a laptop computer that does have the same processing power as your own brain. Ray Kurzweil (2005) and others confidently point to an historic threshold, which they say we're approaching at an exponential rate: the merging of digital technologies with human consciousness.

We cannot know if and when these technological innovations may come about. But even if we did, it would be almost impossible to predict their cultural consequences. Despite of all our scholarly labours, the implications of new

technologies have often turned out to be unpredictable. Even 10 years ago, few people fully anticipated how the internet would transform economic processes, social boundaries and often our own senses of personal identity and affiliation. And so far these devices are only at our fingertips, not in our cortex.

Demography

The second major driver of change is demography. In 1800, the population of the earth was one billion; in 1930, it was two billion; and in 1970, it was three billion. In the 30 years to 2000, the world population doubled to six billion. It may be heading to nine billion by 2060. The real growth in the population is happening in the ‘emergent economies’, including India, China, the Middle East, parts of Southeast Asia and South America. There is a huge shift in the axis of the world’s human populations. But there is a second shift, from the countryside to the city.

As the earth’s human population has multiplied, we have congregated in ever-greater numbers in cities. In 1800, about 3 per cent of the one billion people on earth lived in cities; by 1900, it was 14 per cent of almost two billion people. In 2000, about 50 per cent of the world’s population of six billion were city dwellers. It’s anticipated that by 2050, over 60 per cent of the nine billion people who may then live on earth will be gathered together in vast urban centres. Twenty or more of these may be mega-cities of over 20 million people. Already, Greater Tokyo has a population of over 35 million people — more than the entire population of Canada. Again, these enormous urban developments will not be in the established economies of the West, but in the emergent economies where populations are growing fastest.

In terms of natural and human resources, these twin forces of technological and demographic change present challenges to humanity that are simply without precedent. National education systems should be in the front line in meeting these challenges. Too often, however, they are facing in the wrong direction.

Industrial education

Current systems of compulsory mass education are rooted in the practices and ideologies of a previous time. They are a curious historical hybrid of eighteenth century cultural aspirations and nineteenth century economic imperatives. They emerged mainly in the nineteenth century to meet the demands of the new industrial economies. Those demands had a profound effect on the organisation and structure of mass education. But the internal culture of education was moulded by the intellectual preoccupations of the Enlightenment. In practice, these two forces — the one economic, the other a view of the mind — have often been at odds with each other. Over time, the tensions between them have buckled and distorted the systems they created.

Organisationally, education systems were not only developed in the interests of industrialism but in its image. You can see this in their basic operating principles. For example:

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- Most of these systems are front-loading — that is, they focus on children and young people on the basis that the role of education is to prepare them for something that comes later. People get educated when they're young and then are supposed get on with the rest of their lives.
 - They are linear. Students are grouped by age and progress through the system in batches. For educational purposes, the most important thing that children are thought to have in common is their age – their date of manufacture, so to speak.
 - They are normative. They are based in standardised curricula and forms of assessment that look for conformity, not difference.
 - They are driven by assumptions of economic utility. This is one of the reasons for the hierarchy of subjects in schools: maths, languages and sciences at the top, the humanities and the arts near the bottom.
 - Teaching, beyond elementary schools, is normally based on the division of labour among separate specialists. To this extent, they function something like assembly plants, with some teachers adding the maths, others the modern languages and so on as the graduating student gradually takes shape. In general, teachers are employed to teach subjects, not students.

I could go on. The organisation of mass education may be modelled on the ideologies of industrialism: the internal culture owes more to a view of the educated person that emerged through the Enlightenment.

One reason for the hierarchy of subjects is a set of assumptions about economic utility. Students are often steered away from arts courses on the basis that they won't get a job as a musician, artist, writer, dancer, and so on. This is true in almost every country. There isn't an education system on the planet that gives dance the same status as mathematics. But there is another force at work here. On the whole, students are not discouraged from doing mathematics on the basis that they're unlikely to find work as mathematicians. This is because education is suffused with deep assumptions about intelligence and rationality, and what it is to be an educated person. On this basis, some areas and modes of study are thought to be more important and more improving than others, and to have higher intellectual currency. The dominant emphasis is on certain sorts of critical analysis, especially in verbal and mathematical reasoning. Our education systems have canonised particular forms of intellectual activity and sorted students into academic and non-academic types on that basis. This is one of the central tensions in the system.

Public education evolved to meet very practical social and economic purposes. But it was rooted from the outset in a view of the mind which venerated theoretical knowledge over its practical applications. At the heart of public education there is a kind of intellectual caste system, which is now economically misconceived and culturally corrosive.

Most national and regional governments are busily reforming their education systems. They are doing this for two principal reasons. The first is economic. What kind of education do people now need to ensure personal and national

economic success in a business climate that is being convulsed by the combined forces of technology and demography? The second reason is cultural. How can education enable people to participate in the new global cultures without losing a sense of their own personal, local and national identities in the process? Digital technologies are at the heart of these challenges. They have made many forms of traditional education obsolete. They also hold the key to some of the new forms of education that are needed. Educators of all sorts — theorists, practitioners and policy-makers — need to engage fully with these challenges.

It is no longer enough to reform our systems of education. To meet the real needs of the twenty-first century, they have to be transformed. To do that, we need to change metaphors: from an industrial to an organic model of culture and education.

Changing metaphors

A key concept in tackling the crisis in natural resources is ecology — the interdependence of living systems. I believe it should be applied with equal force in the development of human resources. I was in a natural history museum a while ago looking at a collection of butterflies. They were all neatly arranged by species, pinned lifeless to the backboards of glass display cases: the large ones at the top, the small ones at the bottom. The beetles were in another gallery and the spiders in another.

Such systems of taxonomy provide one example of the extraordinary achievements of the Enlightenment world-view and of the systematic processes of analysis and discovery that emerged from it. It's a fascinating way to look at the phenomena and creatures of the natural world. But this is not how you find them in the natural world. Butterflies don't fly in formation with the large ones at front and the small ones at the back, while the beetles scamper in formation at a discreet distance. Living insects exist in mutual dependence with each other and their environment. An inert taxonomic display is a way of thinking about them, but it does not correspond to the natural state of affairs. The same is true of human cultures.

I define culture here as 'the values and forms of behaviour that characterise different social communities'. In our universities and schools, our dominant habits of mind lead us to treat aspects of human culture as we do insects in natural history museums. We isolate aspects that interest us and arrange them into categories so that they can be studied and taught. This can be useful and instructive, but in the process we can overlook the real dynamics of living systems.

Raymond Williams (1961), one of the founding voices of cultural studies, argued that the study of culture should not be of cultural phenomena in isolation from each other but of the relationships between them. To understand a given culture, it isn't enough to look at the legal, economic, moral or political systems separately. The challenge is to understand how they interact with and affect each other. This process has to engage many different disciplines and modes of

study. This is especially important in trying to fathom the cultural dynamics and implications of digital technologies.

Defining the agenda

The development of digital technologies over the past 20 years has given unprecedented access to new tools of communication and creativity, to information, and to the ideas and opinions of other people. They have revolutionised patterns of social affiliation and business systems. Education systems have to respond to a new cultural agenda. We are too early in the process to understand fully how best to do this, but there are some core cultural issues that need to be addressed now, including ideas of literacy, identity and authority.

Literacy

Mark Prensky (2001) has drawn a much-discussed distinction between ‘digital natives’ and ‘digital immigrants’. This isn’t an exact dividing line, of course, but it is a suggestive observation. What he has in mind is that if, like me, you are over the age of 25, you were born before the digital revolution began. We have learnt digital culture in our adulthood, like a second language. We do emails and PowerPoint, download music, search the internet and have PDAs. Some of us are good: compared with our students, most of us are competent at best.

People under 25 were born into a digital world, and many of them speak it like a mother tongue. To them, this isn’t even technology. It’s part of the taken-for-granted cultural environment. I came across a story recently of an old fish swimming along a river. He passes two smaller fish going in the opposite direction. The older fish says, ‘Good morning, boys. How’s the water?’ They nod and, as they swim on, one of the young fish says to the other, ‘What’s water?’ Our students are like this with digital technology. It’s the element they live in and they take it for granted.

How are we to think of digital literacy and the roles of education in promoting it? Is there really such a thing? In general, ‘literacy’ comprises suites of abilities to encode ideas into systems of representation and to decode them. Using digital technologies involves a host of traditional skills, in reading, writing, visual imagery, music, and so on. Is digital literacy analogous with verbal or musical or mathematical literacy? Is it a composite of all of these or is it altogether different in nature? Is it even a stable concept, given the rate of innovation in digital culture? Our children live in a different cultural space from us: theirs may live in a very different one from them.

And, given that our students are better at some of this than we are, who should be teaching whom? The typical history of immigrant communities is that the children teach the parents the new culture. The older generations tend to import their own culture into the new country. It is the children who go to school and play in the street and learn the new language and culture and then teach it to their elders. Maybe we should be inviting students to teach the new digital cultures to *their* teachers.

Identity

Culture can be thought of a system of permissions: a series of sometimes tacit, sometimes explicit conventions about what you can and can't do in a given community. Digital culture is shifting conventional social boundaries in all kinds of ways, not least in respect of personal privacy and information. Emily Nussbaum (2007) describes digital culture as the first genuine generation gap since rock'n'roll. I think she's right. Nussbaum argues that many young people are living in a completely different cultural space from older generations, in their sense of identity, in what counts as intimate or public information, and in how they evolve social networks. They seem fearless in the personal information and images they are prepared to share online, and they're archiving their lives in ways that their parents often struggle to understand. Their exposure raises questions of what counts as private and intimate information, who has a right to see it, and how these levels of exposure might affect their own sense of identity now and in the future.

Authority

Not everyone thinks of digital culture and the democratisation of the tools of communication and creativity as an unmitigated good. In *The Cult of the Amateur* (2008), Andrew Keen worries that the burgeoning of blogs, of user-generated content on YouTube and Flickr and multiple social networking sites, is leading to the collapse of intellectual and aesthetic standards. If there are no gatekeepers anymore, no curators and no experts, if anyone can publish anything and everyone's opinion is as good as everybody else's, how are we to have any sense of truth, judgment and value? Are there new skills of critical judgment and verification that we should be teaching our children and students now, or will they emerge naturally as digital culture continues to evolve?

Rethinking human resources

At the heart of my own case for educational transformation is the idea of creativity. Given the rate and nature of change, I believe it's essential that we develop all students' powers of creativity in a systematic way. In doing so, we need to think in new ways ourselves about the whole process of education. Being creative in any area usually means questioning what you take for granted. It's hard to know what you take for granted, of course, because you do take it for granted. A good example of this is the dominant conception of our own human senses.

I've asked audiences all over the world how many senses they think they have. Typically, they will say five: sight, hearing, taste, smell and touch. Usually, someone will suggest a sixth sense: intuition. The first five, though, are different from the sixth, because they have organs that do it: eyes, ears, tongues, noses, fingers. Physiologists call these 'real' senses. It's not clear what 'does' intuition. But are we right to think we have only five real senses? In *Culture and the Senses* (2002), the anthropologist Kathryn Lynn Geurts describes her experiences with the Anlo-Ewe peoples of southeastern Ghana. They had not thought of having five

senses. Counting and categorising the senses, like pinning butterflies, is another example of the Western habit of mind.

But when pressed they asked why the list didn't include what they consider to be another major sense. This too is a 'real' sense, but we normally don't think of it. It's fundamental to our sense of humanity, well-being and proper functioning. This is the sense of balance. Balance is mediated by the inner ear, and without it we can't function properly. We generally don't include it in the list in part because we've heard ourselves say so often that we have five senses that we've stopped thinking about it. We take it for granted. We just happen to be wrong.

We take a lot of other things for granted about human capacity that are also wrong. Probably the most important is imagination. Imagination is the most distinctive feature of human intelligence — the only one, in my view, that sets us apart from other creatures on earth. Imagination is the capacity to bring to mind things that are not present to our senses, however many we have. Because we can do that so easily, we are able to do something remarkable: we can conceive of things that were never present. We can hypothesise, speculate and formulate propositions and suppositions.

Creativity is a step on from imagination. I define creativity as the process of having original ideas that have value. To be creative, you have to do something. It is a process of putting your imagination to work to solve existing problems or think of new ones, or to bring into being something that didn't exist before. There are various misconceptions about creativity. One is that it is about special activities, like the arts. The arts can be intensely creative, but you can be creative at anything that involves your intelligence: music, maths, technology, anything. A second misconception is that that creativity is about special people. The fact is that everybody has the capacity for new thinking. But they need to have the skills and techniques for doing it. Being creative always involve working in a medium. The nature of the media we use, and the tools and techniques we have available, profoundly affect our creative achievements. Digital technologies are now making available extraordinary opportunities for creative work and collaboration to more people than ever before.

A third misconception is that you're either creative or you're not. The truth is that it is possible to enable people to be much more creative. For economic and cultural purposes, it is desperately important that we do so, and that we create conditions in our schools and universities where original thinking is an accepted practised and not an occasional aberration.

Transforming education

Transforming education involves thinking differently about human resources and then acting differently to cultivate them more fully. There are three levels of action: personal, group and cultural.

Personal

Our education systems are dominated by a particular conception of academic intelligence. The result is that the talents and abilities of many students are stifled or squandered. I've argued elsewhere (Robinson, 2001 and 2009) that there is much more to the human mind and to human culture than the conventional academic curriculum allows. We know at least these things about intelligence. First, it is intensely diverse: we think about the world in all the ways that we experience it. Second, it is intensely dynamic. This is true in everyday activities. But original thinking often comes about specifically by connecting ideas from different domains and modes of thought, especially through analogies and metaphors. And third, intelligence is individualised and distinct. We each have a unique profile of intellectual capacities, not a single rank. Creativity and innovation are driven by these three features of human intelligence.

Groups

Great creative teams share the characteristics of the human mind. They're diverse: they bring together people who think differently from different disciplines and backgrounds. They're dynamic: they have a process through which their differences don't obstruct their thinking but facilitate and enrich it. And they're distinct: they come together for a specific task and when the job is done they disperse.

Culture

I described earlier some of the typical organisational and cultural features of education. For the future, we need to shift to new models of practice. For example:

- *From front-loading to lifelong learning:* Education must be seen as a lifelong opportunity to refresh ideas, renew perspectives and develop new skills.
- *From linear processing to intergenerational learning:* I know some five-year-olds who are smarter at some activities than people twice their age. Students of all ages have a lot to learn from each other, across ages and generations.
- *From standardisation to customisation:* Education has to focus on developing the real diversity of human talents. To do that, institutions should be customised to local needs and opportunities.
- *From utility to creativity/from hierarchy to balance:* Strong economies and vibrant communities depend on a wide range of abilities and on the synergies between them. For these and other reasons, I can see no cultural, economic, social or personal reason why the arts should be given lower priority in education than maths and science. Science is tremendously important to human progress and well-being. So too are the arts and humanities, and all that they make available to human consciousness and development.
- *From competition to collaboration:* Schools and universities not always the best places for collaborative inquiries. Faculty are normally deeply invested in separate subject departments, and professional reputations depend upon staking out individual ground. The ARC Centre for Excellence for Creative Industries and Innovation is conceived of as an interdisciplinary faculty of

scholars working in collaboration. The intention is that there should be a dynamic process of inquiry rather than discrete fields of study. This seems to me to be an appropriate strategy for the issues that are at stake here.

Conclusion

Many forecasters offer a bleak view of what will happen to the earth if we don't change our behaviour with its natural resources. I believe we need to change in similar ways in our use and understanding of human resources, and that we have to move equally quickly. We've brought the planet to a point of crisis partly because our imaginations have taken us this far in our journey but we have not foreseen the real consequences of our own actions. Our systems of education are doing too little to help because they are focused on short-term issues and a narrow view of human needs and capabilities. Transforming education is a complex task. But there are few that are more urgent.

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