BUILDING AGENCY IN THE FACE OF UNCERTAINTY

A thinking tool for educators
and education leaders

FOREWORD

At a time when educators and students are commonly told that they need to adapt to an inevitable future, and when there is an all-pervasive discourse arguing that 'there are no alternatives', this paper makes a case for thinking differently. It presents a thinking tool and a set of resources to encourage educators and students of all ages and across all sectors to challenge assumptions about the future and to develop both the knowledge and the agency to allow them to begin to imagine and design better futures.

This paper arises from a series of seminars that ran from 2009-2011 that asked the question – how might we better equip education to engage with the future? The Seminar series brought together researchers, practitioners, policy makers and many others with an interest in the relationship between education and the future. The four workshops in the series explored issues ranging from: how do different disciplines build knowledge about the future? what counts as 'futures literacy'? what are the ethics of thinking about the future in education? From these discussions a paper emerged of early ideas and reflections that led, after some time and some translation, to the arguments outlined here.

The paper is being used as a basis for workshops running across the UK, but it is presented as an open access tool that we would encourage anyone to use on the usual creative commons basis. Any ideas, comments or suggestions about this tool are very welcome, and the seminar series blog will act as a hosting point for reflections on its use and development: **http://edfuturesresearch.org**

We look forward to hearing your views

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Ideas of the future matter in education. They matter for the assumptions upon which we build our institutions and they matter for the stories that we tell the students in our care.

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EDUCATIONAL FUTURES

Ideas of the future matter in education. They matter because the supposed imperatives of 'the future' are mobilised as powerful warrants for change in education. Take, for example, the ways in which both Barack Obama and Bill Gates harness a particular idea of the future as a basis for demanding change in schools:

> *Training the workforce of tomorrow with the high schools of today is like trying to teach kids about today's computers on a 50-year-old mainframe*
> **(Gates, 2005)**

> *So make no mistake. Our future is on the line. The nation that out-educates us today is going to out-compete us tomorrow.*
> **(Obama, 2010)**

Or David Cameron's argument that failure to change in education today will lead to catastrophe tomorrow:

> *We can't go on like this. If we carry on excusing this kind of failure, we face a future of where [sic] our most stubborn social problems get worse, not better, and where our economy gets left behind, as countries out-educate and out-compete us. So nothing else will do: we need big change in the way we do education in our country.*
> **(Cameron, 2010)**

Manuel Castells, one of the leading theorists of contemporary social change, argues that ideas of the future function as programmes for social networks, they set the trajectory for action and determine what activities should be promoted, encouraged or disallowed[1]. In education networks, such programmes shape expectations about the sorts of educational goals, institutions and systems that should be developed, whether the vision of a future 'Knowledge Economy' that underpinned the European investment in mass higher education over the last 20 years or the vision of post-colonial independence and autonomy that underpinned the democratic education movements of Ghandi and Friere.

The significance of ideas of the future in education is not restricted to the ways in which they shape policymakers', leaders' and educators' ideas about educational purpose and the design of institutions and curricula. Rather, ideas of the future are also important in shaping the day-to-day experiences and aspirations of students. As sociologists Barbara Adam and Chris Groves describe, the most intimate human interactions are imbued with a language of the future. In classroom discussions and in conversations between parents and children, young people are continually asked to "project themselves into the realm of the not yet", to imagine who they might want to be, to think about what they might become, and to defer gratification in the present in hope of a future benefit.[2] Indeed, the foundation of modern education is premised upon an idea of children as what the sociologist of childhood Nick Lee calls, 'fragments of the future', whose ongoing nurture is assumed to secure better futures for society and for individuals.[3]

So, ideas of the future matter in education. They matter for the assumptions upon which we build our institutions and they matter for the stories that we tell the students in our care.[4] We need, therefore, to pay attention to the ways in which we understand and accept ideas of the future in education.

What, then, might be the implications for education of a proliferation of discourses that claim that we are entering a period of radical and unpredictable disruption? That we are witnessing a significant erosion of our confidence and capacity to predict the future? That our previous institutional arrangements and traditions may no longer be adequate to act as guides to future change?

UNCERTAIN FUTURES FOR THE 21ST CENTURY?

A discourse of radical uncertainty and future disruption is characteristic of many public discourses about the future today. Since the Western banking crisis, economists increasingly voice disagreements over whether the foundations of our economic structures are sound or radically unstable; for the last two decades, sociologists have been describing the contemporary period as a 'risk society', where uncertainty is not only greater but increasingly managed by individuals alone as traditional institutional arrangements are unsettled; more recently, Martyn Rees, Astronomer Royal, has argued that our nascent technological capabilities have the potential to make this 'the last human century' while others such as Ray Kurzweil, proclaim that we are on the brink of a new evolutionary moment, as human-machine capabilities will blur; and environmentalists ranging from James Lovelock to the IPCC warn of tipping points leading to ecosystem disaster. Visions of the future of the 21st century range from civilisation breakdown to enhanced evolution to a new enlightened form of techno-humanity.[5]

Anxiety about the future and uncertainty about what it may bring have of course been characteristics of many societies, whether the millennial angst of the turn of the first millennium, the more well-founded concerns of Western Europe in the 1930s, or the global concerns over nuclear weapons of the 1950s onwards.

A proliferation of discourses of uncertainty, whether empirically sound or manufactured by dominant interests, however, can serve a number of functions with well documented implications for the capacity of individuals to build long term projects. These uncertainty discourses also, of course, have implications for education.

First, narratives of radical uncertainty can lead to a growth in the what we might call the 'guru market', the search for people or institutions (whether religious, commercial, scientific or political) who are able to offer solutions to the seeming 'problem' of unpredictable change. A number of recent advertisements, for example, show how

easily an ontological anxiety about the future can be exchanged for the certainty offered by others who will 'do the thinking for you' (in return for hard cash). This logic is evident, for example, in an ad for Barclay's Bank, knowingly called 'Uncertainty' by the agency who produced it. This advertisement shows men and women falling down stairs that have turned suddenly and unpredictably into slides of getting stuck in quicksand that has appeared from nowhere. 'In times like these', says the voiceover 'you need an experienced partner to look after you'.[6] In response to unpredictable change, this logic suggests, you need to turn to someone else for certainty. In the education arena, this process is visible in the growth of commercial companies offering 'solutions' and 'future-proofing' for schools, some of whom arguably foster and encourage a discourse of uncertainty in order to build a market for their products and others of whom actively challenge the idea that schools or educators or students themselves may be able to build their own 'solutions'.

Second, a proliferation of discourses of apocalyptic uncertainty can serve to produce a misleading picture of the relationship between change and continuity. Discourses of radical uncertainty, for example, can present change as a problematic and uncomfortable feature of human life, rather than an ongoing feature of human civilisation. When, for example, has there ever been a period of human history that did not involve both ongoing change and radical disruptions?

At the same time, discourses of radical change also obscure underpinning continuities that often persist despite seemingly significant social and technological disruptions. Another contemporary advertisement exemplifies this feature of such uncertainty discourses. In February 2011 the car manufacturer Honda launched a new advertising campaign called 'This Unpredictable Life'. The advert comprised 60 seconds of brightly coloured animation set to a lighthearted musical theme in which an individual is buffetted through life, opening doors that lead to Escher-like staircases, being drawn apart from a loved one, thrown about through different events and experiences until, finally, they find a partner and the couple 'lands' in the seat of a car, their children neatly falling into place behind them with dogs and pot plants stacked

in the boot.[7] Even as this advertisement voiceover intones 'we can't predict everything life will throw at us', it treats some aspects of the future as inevitable constants; uncertainty, in this case, leads us inevitably towards a heterosexual car-using nuclear family. Radical uncertainty discourses, therefore, are often strangely 'blind' to some of the continuities that they assume.

In the education arena, this process is visible in the policy discourses that construct 'the future' that education is to prepare for. As Ivana Milojevic[8] and Noel Gough[9] have argued, the images of radical new futures for which education is expected to prepare are often, for all their claims to predict disruptive change, highly conventional. 'Schools of the future' for example, are usually modeled around adaptation of schooling to high technology contemporary working practices premised upon continued economic growth rather than, for example, aimed at equipping children for low carbon or post-breakdown futures or for transcendental post-human environments. Images of educational futures, such as those described by Obama and Cameron at the outset of this piece, continue to subscribe to visions of international competition in global markets, rather than the potential for global collaboration and wellbeing. This selective blindness about which aspects of human existence may or may not change serves to shape where we invest our educational energies and may explain why, despite a century of highly disruptive educational change, it is still possible today to predict educational and employment outcomes based on social class, income and parental occupation.

The extent to which uncertainty discourses can be mobilised simply for ideological purposes, both within education and beyond, can be used as a rationale for working only within the present, with what we are confident we know and what we believe we can influence in our immediate environment. At the extreme, this can lead to desires to self-anaesthetise, to tell safe and familiar stories, to disengage. At best, it can represent a committed desire to building local and embodied futures. Such a return to the local and the familiar as a domain of both knowledge and control, however, risks ceding the powerful discourses of global futures to the chronological imperialism of

vested interests and risks overlooking the opportunities that educators, education institutions and students may have to influence or at least perturb the multiple trajectories of contemporary change.

THE CHALLENGE FOR EDUCATORS

The challenge facing educators, as they are confronted by discourses of disruptive change, persistent inequalities and radical uncertainty in the 21st century, therefore, is first, to seek to better understand how ideas of the future work to shape the capacity of education, educators and students to build long term projects for personal and social benefit; and second, to understand how educators can position themselves in a society that proposes increasing levels of uncertainty even while it sustains social norms that support the individual's drive to self-anaesthetise, inducing high levels of stress derived from commuting between panic and lethargy.

At a time when public education in the UK is being confronted by discourses of inevitable future change, as long-held assumptions about the nature, reach and even role of public education are thrown up for grabs, and as funding and resources dissolve away to be invested in other areas deemed more appropriate investments for the future, education itself might be seen to be confronting its own unique crisis of uncertainty. All the more reason then to understand how ideas of the future work to enable or undermine the capacity to shape alternative futures, and to understand how educators might build a new position that navigates an empowered route between extreme anxiety or disengaged apathy.

A TOOL FOR THINKING

Our suggestion is that an intervention is needed to support educators to reconnect the present and the future, to reconnect action and imagination, and to view the future as a set of multiple trajectories that are being built and which can therefore be influenced or at least perturbed in the present.[10] Such an intervention would seek to reclaim discussions of the future from the realm of rhetoric and marketing and re-connect the grand themes of social change with the lived experiences of personal and social narratives.

The intervention that we propose is intentionally simple. It is a thinking tool that aims to support reflection upon our orientations towards the future as individuals, as organisations, as students or as educators. This tool foregrounds two critical components of our orientation towards ideas of the future:

> First, it asks us to reflect upon our perception of the future: how 'open' or 'closed', how 'uncertain' or 'inevitable' do we perceive the future to be?

> And second, it asks us to reflect upon our locus of control: how far do we see our responses to the future being in our own hands or in the hands of others?

The purpose of the thinking tool is not to provide answers but to allow those who use it to ask the questions:

> What are our assumptions about the future and about our own ability to influence it?

> What are we basing our answers on?

Is it possible to challenge these answers? For example, what evidence is there that we might have either more or less control over trajectories than we imagined? What evidence is there that the trajectories we imagine may be more closed or open, may be more or less certain than we think?

What new choices and opportunities might such challenges offer us?

To help our thinking in this area, we have developed the following matrix (Fig 1) that maps locus of control against perception of future certainty to produce four caricatured orientations towards the future.

Our argument is that, in exploring where we see ourselves in relation to these different orientations towards the future; in examining what resources might enable us to move from one quadrant to the next; and in understanding the conditions that would be required to make each orientation a source of positive action, we can develop a more empowered, potentially more realistic and resilient orientation toward the future and toward both change and uncertainty.

Unlike a number of other such thinking tools that are designed to support analysis of possible and alternative futures, this matrix seeks to locate the social actor (whether an institution or an individual) at the heart of the process and, in so doing, to reconnect discussions of possible futures with exploration of personal, institutional and social resources for change.
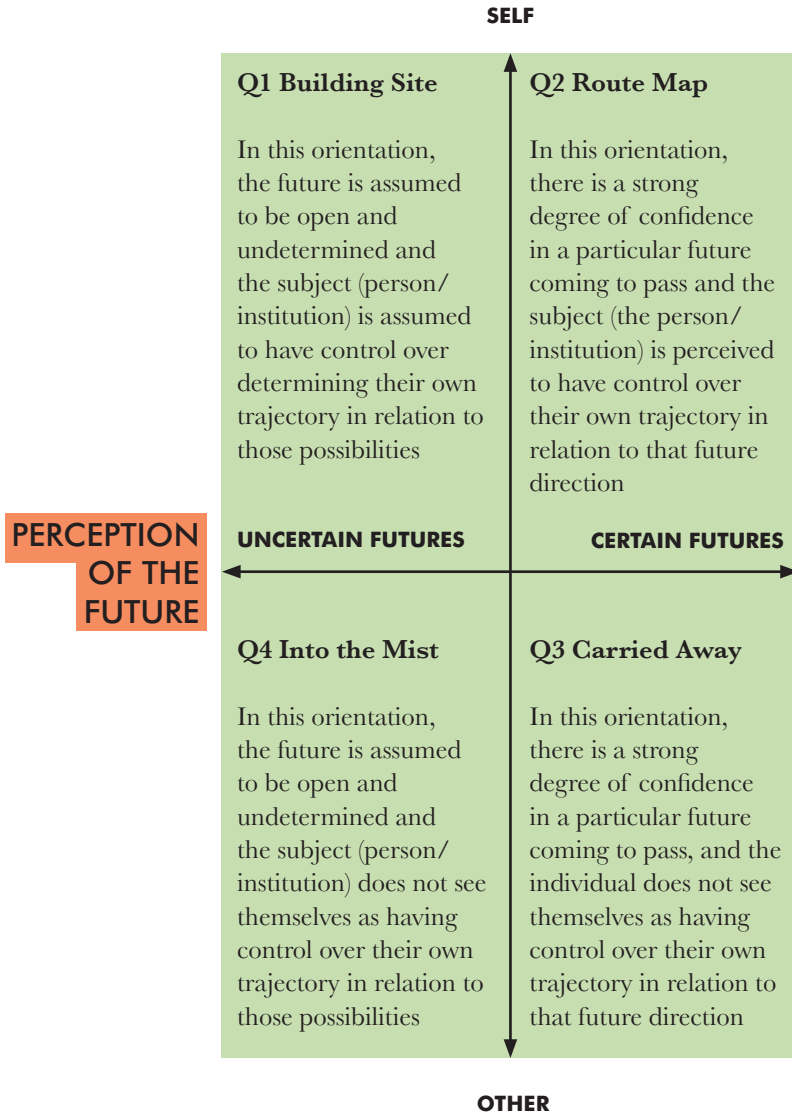
LOCUS OF CONTROL

SELF

PERCEPTION OF THE FUTURE

Q1 Building Site

In this orientation, the future is assumed to be open and undetermined and the subject (person/institution) is assumed to have control over determining their own trajectory in relation to those possibilities

Q2 Route Map

In this orientation, there is a strong degree of confidence in a particular future coming to pass and the subject (the person/institution) is perceived to have control over their own trajectory in relation to that future direction

UNCERTAIN FUTURES

CERTAIN FUTURES

Q4 Into the Mist

In this orientation, the future is assumed to be open and undetermined and the subject (person/institution) does not see themselves as having control over their own trajectory in relation to those possibilities

Q3 Carried Away

In this orientation, there is a strong degree of confidence in a particular future coming to pass, and the individual does not see themselves as having control over their own trajectory in relation to that future direction

OTHER

Fig.1

CHARACTERISING THE ORIENTATIONS

Each of the orientations might capture a number of different types of situations for individuals or institutions. For example:

In 'Building Site (Quadrant 1) we might imagine students who see themselves leaving school or university in a climate of significant uncertainty about what it might bring, but who see themselves as having the resources (whether these be material, cognitive, social) to shape their personal success and survival in those unknown futures. At an institutional level, the same quadrant might characterise educational institutions who find themselves having new autonomy and control over their curriculum, recruitment and governance and offered a highly open future for educational policy and educational purpose.

In 'Route Map' (Quadrant 2), we might imagine students who see themselves leaving school and imagining a future that seems to be heading in a particular direction. They are responsible for determining their response to that future, for pushing it along, for opting out, for seeking to resist it. Those students participating in the new Really Free Schools and student movements might characterise such an orientation, with a high degree of self-efficacy oriented against a particular future vision. Equally, such an orientation would characterise those students with the resources and tools to work within a mainstream vision of what future success will look like. At an institutional level, the same quadrant might characterise educational institutions who find themselves, as many are today in the UK, confronted with a particular vision of the future of UK Higher Education and yet who have significant control over the way in which they respond to that vision (the Russell Group of Universities might characterise such an orientation).

In 'Carried Away' (Quadrant 3) we might imagine students who see themselves leaving school or college with a strong vision of what the future will bring but with no sense of the ability to influence their role in that future. Such an orientation might characterise both the despair of those students who feel they have few resources

to shape their lives and who can see their future being determined in a particular negative trajectory, or the comfort of those students for whom a future is already mapped out and well resourced. At an institutional level, this quadrant might characterise the educational institutions that are so constrained by external regulation and so tightly articulated with changing policy contexts, that their actions are shaped by the strategy and policy directions imposed from above.

In 'Into the mist' (Quadrant 4) we might imagine students who not only see themselves as having no sense of how they might influence their own futures but also a sense that the contexts in which they are operating might change at any time. At an institutional level, this orientation might characterise educational institutions who are tightly controlled by centralised policy demands, but who are cognisant of the tendency of such policy demands to change rapidly and unpredictably in the face of opinion polls or new leadership. Such open futures offer the potential of opportunities for change, but also a capricious dependence upon others for adaptation to them.

Mapping these quadrants makes visible the limitations and strengths of each of these different orientations. The strengths of each quadrant are visible: the trusting relationship to the other that might characterise Q3/4, the engaged and active participation that might characterise Q1/2, the openness to possibilities of Q1/4, the comfort of a sense of direction of Q2/3. It also makes visible the risks of these different orientations: dependency and lack of control in Q3/4, high levels of responsibility in Q1/2, lack of direction and indecision in Q1/4, overconfidence and overinvestment in a particular future in Q2/3.

As well as being used reflexively, the tool can help us to examine the discourses of the future that are being mobilised in education and by educators. Like the old-fashioned graphic equaliser, the tool can help us to pay attention to when the discourses of uncertainty or agency are turned up and down. When is the inevitable presented as unavoidable? When are things seen as unknowable and open? When is the individual seen as responsible and when are 'unnamed forces' or other agencies seen as taking control?

USING THE THINKING TOOL TO IDENTIFY OPPORTUNITIES FOR RE-ORIENTATION

The purpose of this tool, however, is not intended to simply be descriptive (although this is an important first step). Instead, it is intended to support analysis of whether these orientations are inevitable. It is intended to support reflection about whether the certainties really are so certain, whether the unnamed forces really are so powerful, whether the individual really is so responsible, whether the unknown really does mean no more continuities. And in so doing, it is intended to support the analysis of where the opportunities lie for moving ourselves into other orientations and the resources that would be needed to achieve this.

Each of these quadrants, for example, might elicit a set of critical questions intended to unsettle our assumptions (Fig 2.):
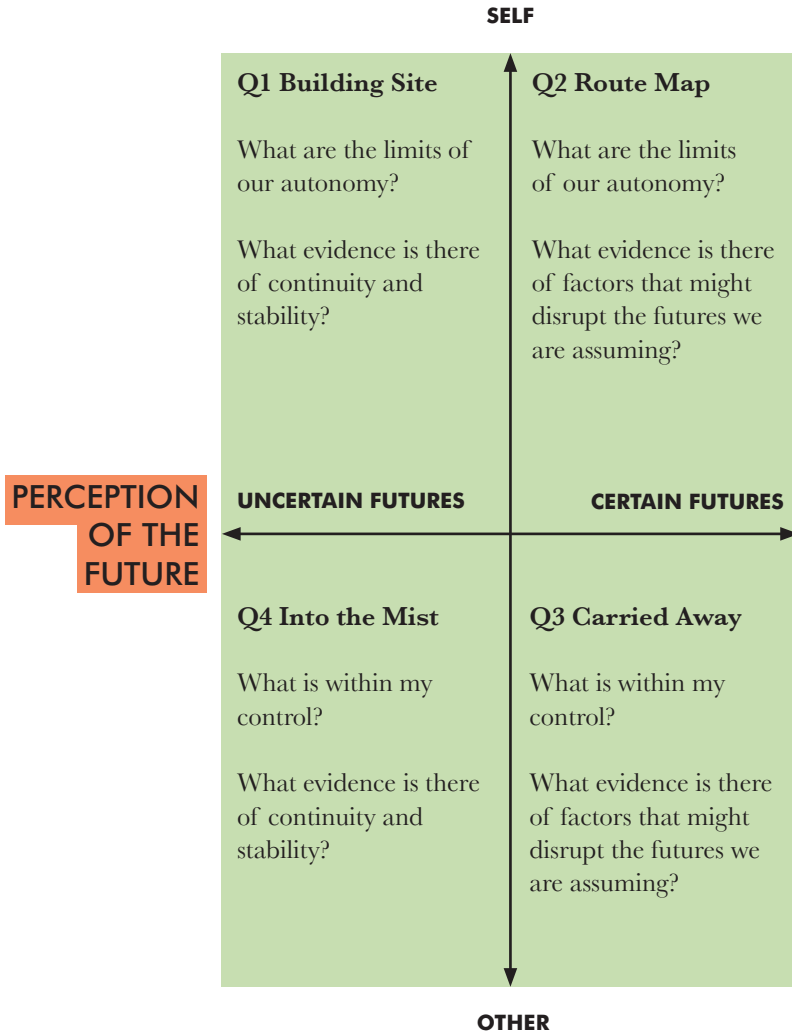
LOCUS OF CONTROL

SELF

PERCEPTION OF THE FUTURE

Q1 Building Site

What are the limits of our autonomy?

What evidence is there of continuity and stability?

Q2 Route Map

What are the limits of our autonomy?

What evidence is there of factors that might disrupt the futures we are assuming?

UNCERTAIN FUTURES ←→ **CERTAIN FUTURES**

Q4 Into the Mist

What is within my control?

What evidence is there of continuity and stability?

Q3 Carried Away

What is within my control?

What evidence is there of factors that might disrupt the futures we are assuming?

OTHER

Fig.2

We might also look at the matrix as a resource for helping us to begin to identify and build the resources needed to move between different orientations. Questions we might ask at the boundaries between the quadrants include:

To build agency:

Who else wants to build the same futures I do and how can I connect with them?

What alliances might I be able to develop to achieve futures that I might want?

What skills or competencies might help me to create more opportunities for action?

To build certainty:

What sorts of futures are people actively trying to bring about?

What evidence do we have of continuity and stability?

What actions can we take to limit uncertainty?

To create more open futures:

What alternative futures are already available to us, what alternatives have been imagined, by artists, scientists, politicians?

What competing visions of the future are available in different cultures, organisations and institutions?

What factors might disrupt those futures I am assuming?

To create trust and recognise dependence:

What/who am I reliant upon for my goals?

What are the constraints that I am operating within?

Asking these questions and exploring and challenging the answers offered are a way of beginning to enable individuals and institutions to shift between these different orientations. They are also a way of exploring how at different times, and in different contexts, we may find ourselves with different orientations to the future.

For example, we have already explored how educators in the UK at the present time may feel themselves to be located in Quadrant 3/Carried Away. There seems to be an inevitable push toward (and certitude in relation to) the marketisation and privatisation of educational establishments and the control over that direction, and of our own responses to it, seems to lie in the hands of others. A critical challenge to this position might be to explore, for example, the counter-narratives relating to the inevitability of such a trajectory: what social, technological or economic factors might disrupt our certainty about such a future? (could constraints on international travel due to environmental concerns lead to a relocalisation of education? Could the growth of online learning communities support individuals to set up reciprocal 'exchanges' of learning?) Such questions would seek to move educators into Quadrant 4/Into the Mist, to more openly explore the nature of education that might evolve if such a future is seen as less certain.

Alternatively, another challenge to this position would be to ask: if this trajectory is assumed (perhaps over a shorter timescale), where is my/our agency in response to such a direction, where are the gaps that would allow us to act, to work against or to create viable and positive experiences within that future? (for example, we might ask, how might we come together with others who want to resist this trajectory to begin to influence its direction?) Such questions would seek to move educators into Quadrant 2/ Route Map, to explore the possibilities for shaping action there.

If we develop both areas of questioning – challenging the inevitability of a certain future and seeking to explore our capacity to effect change, then we may be able to move ourselves into Quadrant 1/ Building Site, a position in which we map out the possibilities for our own action and for opening up new futures. Such an orientation might be described as a shift towards a design perspective. This flip seems unlikely, and yet when we observe developments in the Middle East in recent months, we might argue that we have been witnessing precisely such a shift in perception.

Such a shift in orientation to Quadrant 1/Building Site (or indeed any of the other quadrants), however, should not be seen as the attainment of a final and irrevocable destination. No future is either infinitely open or predetermined, no person is either infinitely autonomous or constrained. A design perspective, for example, could be infinitely enhanced in its efficacy by recognising the possibility of wider constraints and dependencies.
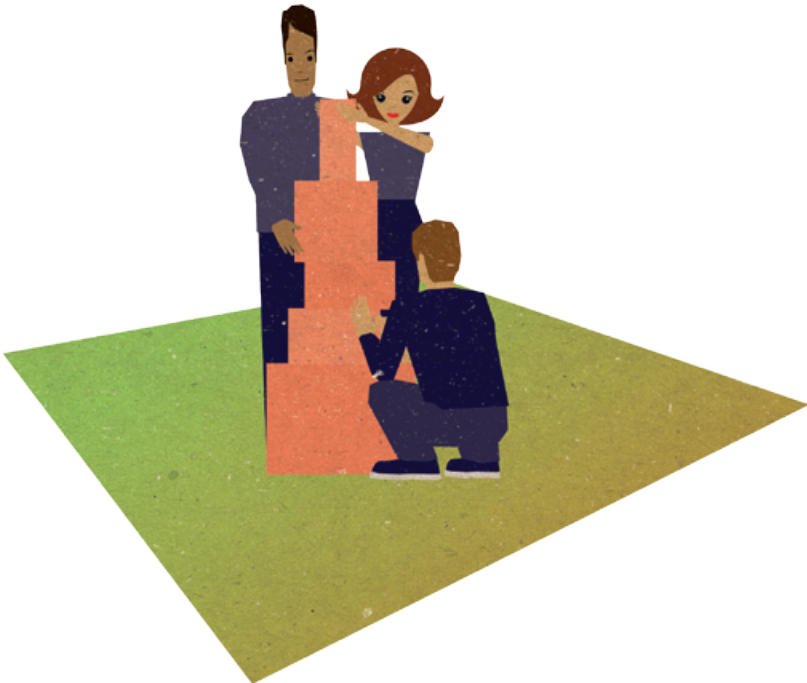
USING THIS THINKING TOOL

The aim of this thinking tool is to support educators and students to reflect upon their assumptions about and orientations to the future at different times and for different purposes. Its usefulness lies in the process of exploring how these different orientations enable or impede our ability to act in the world in order to try to bring about the personal and collective futures that we might desire.

Its purpose, above all, is to challenge the tyranny of the idea that there are no alternatives.

We are using this tool with a number of educators, educational institutions and students across all sectors from lifelong learning to schools. To date we have been using the tool in a workshop situation (for between 20-25 people) as follows:

First, we draw out the matrix on the floor of the room, with the axes and quadrants clearly labelled

We then ask participants to position themselves on the matrix in the quadrant that they feel best reflects their own present orientation toward the future. It can help to address one axis at a time – asking people to position themselves first in relation to the question of the uncertainty/certainty they perceive about the future. Those who see the future as more predictable or visible will place themselves to the right of the horizontal axis, those who see it as more uncertain will place themselves to the left. Having taken a position on the horizontal axis, we then ask people to move forwards towards the 'top' of the matrix if they feel that they have a some control over how that future plays out and how they respond to it, and to move backwards towards the bottom of the matrix if they see others as having more control over the future.

Four groups then emerge as people position themselves differently in the quadrants. At this point, people are simply reflecting upon their existing orientations. We then ask the groups to talk amongst themselves about why they are in those quadrants and to ask themselves:

– Why have you decided that this is where you are?

– On what are you basing your assumptions about the future?

– On what are you basing your ideas about your capacity to respond to the future ?

– What's good or comfortable about this orientation?

– What's bad or uncomfortable about this orientation?

– Give us 5 reasons why you are right to have that orientation to the future

We then ask each group to present their arguments to the wider group, with the aim to make the most plausible argument for why that quadrant is the 'right' one to be in.

The challenge to group participants is then to unsettle or disrupt their assumptions about the future and their locus of control. Key questions we now ask them to address in their four groups are:

– For those in Quadrants 1 & 2 (with a sense of control) – what are the limits of your autonomy?

– For those in Quadrants 2 & 3 (a certainty about the future) – what might disrupt these futures?

– For those in Quadrants 3 & 4 (without control) – where could you begin to act with confidence?

– For those in Quadrants 4 & 1 (without certainty about the future) – what evidence is there of continuity?

We then ask participants again to position themselves on the matrix on the floor and either to move to the quadrant they would most like to be in, or to the one they find hardest to associate with. Once in their new groups, we ask them to address a range of questions that might include:

–   What has to have changed for you to get there?

–   What information and knowledge would you have to have generated?

–   What allegiances and support would you have to have built?

–   What ideas would you have had to give up?

–   Why and when would this be the right orientation to have toward the future?

–   What are the 5 ways you would be able to move to this quadrant from your previous quadrant?

Again, we then ask each group to present their arguments to the wider group, with the aim being to explain both why that quadrant is a plausible orientation toward the future and why they could plausibly mobilise resources to shift toward that orientation from their previous position.

This process, seemingly simple, has been successful in encouraging individuals and groups to reframe their assumptions about the future, their position in shaping it, and their sense of efficacy. It can be used as a basis for opening up ideas and possibilities or for mobilising action for change.

We have used this process with disparate groups with little in common except an interest in educational futures and it has been a stimulus for rich discussions not only about fundamental assumptions and personal experiences but also practical actions and aspirations.

Our hunch, however, is that it would be particularly powerful as a resource for organisations or specific groups in education who find themselves confronting stagnation or periods of significant uncertainty. It would enable these groups to think about their diverse orientations toward the future and to mobilise the resources of aspiration, agency, realism and concern that they have within them in order to begin to imagine alternative futures.

The slides we use and this document are freely available on our blog (http://edfuturesresearch.org/) as are links to a range of other resources and reading that might be helpful. The tool and these resources are presented as a tentative contribution to the much wider field of educational futures. They are intended to support the playful, challenging and provocative process of asking hard questions about our assumptions about the future and exploring whether other ideas might offer better or at least plausible underpinnings for personal and institutional projects.

If you find this tool useful, or have suggestions for how to amend and develop it, we would be very interested in hearing your responses and ideas.

ABOUT THE AUTHORS

The authors of the paper were responsible for designing and steering the seminar series. They are:

Keri Facer is a Professor at the Education and Social Research Institute, Manchester Metropolitan University where she specialises in digital cultures, social justice and educational change. She acts as adviser and collaborator with a diverse range of organisations from the Baltic Centre for Contemporary Arts, FutureEverything, the TDA and the RSA. Her latest book Learning Futures describes critical uncertainties surrounding socio-technical change over the coming century and the questions these raise about education's role in equipping societies and individuals for the future. Keri was Research Director of Futurelab from 2002-2008 and led the strategic educational foresight programme 'Beyond Current Horizons' for the DCSF from 2007-2009.

Anna Craft is Professor of Education at Exeter University and The Open University. With a background in teaching and national curriculum development work across early years, primary and secondary education, Anna works with learners, teachers, researchers and policymakers to nurture creativity and educational futures. Her books include Creativity Across the Primary Curriculum (2000), Creativity and Early Years Education (2002), Creativity in Schools: Tensions and Dilemmas (2005), and Creativity, Trusteeship and Wisdom (2008, edited with Howard Gardner and Guy Claxton). Her new book is Creativity and Education Futures (Trentham, 2011). At Exeter she leads the CREATE research group, Aspire (creative school transformation) and the Educational Futures group. At the Open University she leads work on creative teaching and learning. She is co-Founding Editor of Thinking Skills and Creativity and co-founded the British Educational Research Association Special Interest Group, Creativity in Education.

Carey Jewitt is a Professor at the London Knowledge Lab, Institute of Education, University of London. She is currently involved in several research projects on the role of digital technologies in

teaching and learning, and multimodality including GeoSciTeach (JISC) a study on the use of GIS in school science, and the NCRM Node 'Multimodal Methods for Researching Digital Data and Environments' funded by the ESRC which is focused on developing and providing specialist research methods. Carey's recent publications include The Routledge Handbook of Multimodal Analysis (2010) and Technology, Literacy and Learning: A multimodal approach (Routledge, 2008). She is currently editing The Sage Handbook of Researching Digital Technologies, with Sara Price.

Mike Sharples is Professor of Learning Sciences and Director of the Learning Sciences Research Institute at the University of Nottingham. He has an international reputation for research in mobile learning and the design of learning technologies. He inaugurated the mLearn conference series and was founding President of the International Association for Mobile Learning. He is author of over 200 publications in the areas of educational technology, interactive systems design and artificial intelligence.

Richard Sandford is an educational research consultant working in Singapore, helping teachers and students to develop new learning practices, and before that was a senior researcher at Futurelab (**http://www.futurelab.org.uk**), an independent organisation in the UK working with educators, policy makers, academics and technologists to explore the educational potential of new digital technologies. While at Futurelab, he led the research and scenario development phases of the Beyond Current Horizons programme (**http://www.beyondcurrenthorizons.org.uk**)

Simon Mauger is Director of Shoshin Limited, a company formed in 2001 from the Language House Partnership that specialises in the field of open learning resources development, psychometrics and counseling, learning technologies, and horizon scanning. Formerly NIACE SW Regional Development Director, Simon worked with strategic bodies and a range of organisations including learning and skills providers on key issues such as age and employability, health and well-being, technology and learning, scenario planning and continuing professional development.

USEFUL RESOURCES

5x5x5=creativity is an independent, arts-based action research organisation with charitable status supporting children and young people in developing creative skills for life. Artists, settings and cultural centres collaborate to develop creative values, dispositions, relationships and environments. An approach which puts the arts at the heart of educational futures:
http://www.5x5x5creativity.org.uk

Aspire is an approach to creative school transformation which offers a key role to students as researchers. Offers ways of enacting educational futures at local level:
http://education.exeter.ac.uk/aspire

Beyond Current Horizons. The UK's strategic foresight project for education. Includes over 80 reviews of research and evidence in the area of socio-technical change and education:
http://www.beyondcurrenthorizons.org

Causal Layered Analysis. A collection of papers from Sohail Inayatullah outlining a useful approach to critiquing and exploring dominant and alternative futures: **http://www.metafuture.org/ causal-layered-analysis-papers.html**

Centre for Intergenerational Practice. Aims to support projects and catalyse activities that bring together generations to work for social change: **http://www.centreforip.org.uk**

Coalition for Education in the 21st Century formed in early 2011, in response to rapid changes occurring in education in England. It involves a diverse range of people and organisations and prompts debate based on evidence to develop education appropriate to the challenges and opportunities of the 21st century:
http://www.C4E21.org

Dance Partners for Creativity is a dance-based research study which has generated a series of publications that explore how wise, humanising creativity developed through the arts can inform educational futures. See Chappell et al in book list and: **http://education.exeter.ac.uk/dpc**

Dark Mountain project, a group of writers, artists and others seeking creative and practical solutions to living in times of environmental and financial disruption: **http://www.dark-mountain.net**

David Hicks, one of the leading educators working on educating for sustainable futures, has a collection of papers and resources available for download: **http://teaching4abetterworld.co.uk/downloads.html**

Deloitte Centre for the Edge. The Shift Index: measuring the forces of long-term change **http://www.deloitte.com/view/en_US/us/About/Catalyst-for-Innovation/Center-for-the-Edge/index.htm**

Elon University: Imagining the Internet Centre aims to explore and provide insights into emerging network innovations, global development, dynamics, diffusion and governance: **http://www.elon.edu/e-web/predictions/about.xhtml**

Foresight (UK Government Office of Science). This group are tasked with assisting government to think systematically about the future, reports available on projects ranging from long term futures for mental health and wellbeing, to food and flooding: **http://www.bis.gov.uk/foresight**

Foresight International seeks to help create and sustain social foresight, through a range of resources, and through collaborative work: **http://www.foresightinternational.com.au**

Foresight Horizon Scanning Centre: Exploring the Future Toolkit offers ideas and suggestions for ways to start thinking about the future and approach future sprojects: **http://hsctoolkit.tribalhosting.net**

Foundation for the rights of future generations is a think tank bringing together science, business and research to try to ensure that today's youth and future generations have the same capacity to meet their needs as the generations governing today: **http://www.intergenerationaljustice.org**

Futurismic - near future science fiction and fact: **http://futurismic.com/category/fiction**

Government Office for Science Sigma Scan - brings together 'evidence from the future' in over 2000 reports and interviews with 300 leading thinkers about emerging trends: **http://www.sigmascan.org/Live**

Hexayurt Project – habitations for survival **http://hexayurt.com/**

How Change Happens a report from Oxfam written by Ronan Krznaric, provides a useful set of resources for reflecting upon change processes: **http://www.oxfam.org.uk/resources/issues/ education/downloads/research_change.pdf**

In Pursuit of the Future. A website from the ESRC funded Professorial Fellowship research project looking at how to link action, research and knowledge, highly academic but very useful: **http://www.cardiff.ac.uk/socsi/futures/index.html**

Institute for Ethics and Emerging Technologies. Includes interesting short articles and provocative pieces about the ethical questions raised by emerging technologies: **http://ieet.org**

Institute for the Future, 10 year Forecast can provide a good starting point for thinking about what people might have to respond to: **http://iftf.org/tyf**

Institute for the Future. A strategic action toolkit which offers a 'do it yourself' forecasters toolbox: **http://www.iftf.org/HC2020Toolkit**

International Futures Foundation Three Horizons approach outlines a mechanism for challenging assumptions about the future and deepening analysis of possibilities and trajectories: **http://www. internationalfuturesforum.com/projects.php?id=26**

International Institute for Applied Systems Analysis – research reports on energy, food, climate change and inequalities: **http://www.iiasa.ac.at**

KnowledgeWorks Foundation Futures Map. A map of 'the future forces affecting education': **http://www.futureofed.org**

NIACE Inquiry into the Future of Lifelong Learning. A thorough look at the implications for learning and education institutions of life in an aging society, accessible versions available. Also a great resource for all issues related to lifelong learning and demographic change: **http://www.niace.org.uk/lifelonglearninginquiry/default.htm**

OECD Educational Futures Scenarios. 6 scenarios offering long term possible trajectories for education institutions: **http://www.oecd.org/document/10/0,3343, en_2649_39263231_2078922_1_1_1_37455,00.html**

Open Book of Social Innovation – a set of ideas, projects and resources that show how individuals and organisations can kick start local and global change: **http://www.nesta.org.uk/library/ documents/Social_Innovator_020310.pdf**

Self-Sufficient Schools Programme – a programme to encourage schools to generate sufficient income to cover the costs of providing education to its students: **http://www.teachamantofish.org.uk/ selfsufficientschools.php**

Sitra: the Finnish Innovation Fund, outlines projects, research and ideas used for 'building a sustainable Finland for tomorrow', many of which are applicable and useful outside Finland: **http://www.sitra.fi/en**

The Economic and Social Research Council, site collating all social science research funded by the ESRC offering up to date research into the present. An important basis for grounding future projections and narratives: **http://societytoday.net**

The Great Transition Pamphlet from the New Economics Foundation – an argument and resource for thinking through the practical action needed to effect transition to different economic, environmental and social models: **http://www.neweconomics.org/publications/the-great-transition**

The Long Now Foundation – set up in 01996 to promote seriously long term slower/better thinking to challenge today's fast/disposable thinking: **http://longnow.org**

The National Audit Office. An important site for accessing up to date figures on the state of the UK, useful for grounding future projections and narratives: **http://www.nao.org.uk**

Tomorrow's World programme archives (provides useful context and prompts for reflecting on technological and scientific change, predictions and presenter hairstyles): **http://www.bbc.co.uk/archive/tomorrowsworld/index.shtml**

Transition Network – helps communities deal with the challenges of climate change and peak oil: **http://www.transitionnetwork.org**

Visionmapper. A set of prompts to work through 6 divergent futures for education in the context of socio-technical change: **http://www.visionmapper.org.uk**

Worldchanging - A useful collection of ideas, possibilities for action and emerging developments designed to produce a 'Bright Green' future: **http://www.worldchanging.com**

FURTHER READING

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http://mitpress.mit.edu/9780262513593

Dorling, D (2010) Injustice: Why Social Inequality Persists, Bristol: Policy Press

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Fielding, M and Moss, P (2010) Radical Education and the Common School: A democratic alternative, London: Routledge

Futures: **http://www.elsevier.com/wps/find/ journaldescription.cws_home/30422/description**

Gaffney, V., Fitch, S and Smith, D (2009) Europe's Lost World: the Rediscovery of Doggerland, CBS Reports

Janes, R (2009) Museums in a Troubled World: Renewal, Irrelevance or Collapse? Abingdon and New York: Routledge

Journal of Futures Studies: **http://www.jfs.tku.edu.tw/**

Martin, J (2006) The meaning of the 21st century: A vital blueprint for ensuring our future, London: Transworld

Miller, R et al (2008) School's over: Learning spaces in Europe in 2020, Luxembourg: Office for Official Publications of the European Communities

OECD (2008) The Future of the Family to 2030: A Scoping Report, Paris: OECD

Ostler, N (2005) Empires of the Word: A Language History of the World, London: Harper Collins

Raskin, P et al (2002) The Great Transition: The promise and lure of the times ahead, Boston MA: Stockholm Environment Institute/ Tellus Institute

Rees, M (2004) Our Final Hour: A Scientist's Warning, New York: Basic Books

Rosenberg, D and Harding, S (2005) Histories of the Future, Durham and London: Duke University Press

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Slaughter, R (2010) The Biggest Wake-Up Call in History, Brisbane: Foresight International **http://www.foresightinternational.com.au**

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ENDNOTES

1   See Castells, M. (2009) Communication Power. Oxford and New York: OUP.

2   See Adams, B. and Groves, C. (2007) Future Matters: Action, Knowledge, Ethics. Leiden/Boston: Brill.

3   Lee, N. M. (2011) Childhood and Bio-Politics: Climate Change, Bio-science and Human Futures. London: Palgrave Macmillan.

4   Facer, K (2009) Learning Futures: Education, Technology and Social Change, London & New York: Routledge.

5   See, for example Raskin, P., Banuri, T., Gallopin, G., Gutman, P., Hammond, A., Kates, R. and Swart, R. (2002) The Great Transition: The Promise and Lure of the Times Ahead. Boston MA: Stockholm Environment Institute/Tellus Institute. and Martin, J (2006) The meaning of the 21st century: A vital blueprint for ensuring our future, London: Transworld.

6   The Barclays 'uncertainty' advert **http://link.brightcove.com/services/player/bcpid1315793544?bctid=605147193001**

7   See Honda 'this unpredictable life' **http://www.youtube.com/watch?v=VnwsAr8eBQA**

8   Milojevic, I. (2005) Educational Futures: Dominant and Contesting Visions. Abingdon and New York: Routledge.

9   Gough, N (1990) Futures in Australian Education: Tacit, Token and Taken-for-granted, Futures, 22 (3) Pages 298-310

10 See Adam & Groves (2007) for their discussion on the relationship between knowledge, action and responsibility in relation to 'the future'. See Craft, A. (2011). Creativity and Education Futures. Stoke on Trent: Trentham Books; Inayatullah, S. (2008). Mapping Educational Futures. For a

discussion of the reconnection between the personal and the systemic in educational change. See Bussey, M., Inayatullah, S., Milojevic, I. (Eds) (2008). Alternative Educational Futures: Pedagogies for Emergent Worlds. Rotterdam/Taipei: Sense Publishers for a discussion of the possibility and basis for beginning to imagine alternative educational futures.