JSSE

Journal of Social Science Education

2022, Vol. 21(2)

Edited by:
Jan Löfström &
Birgit Weber

Article

The curriculum question and school economics: three educational scenarios for the future

Jacek Brant[a]

[a] IOE, UCL's Faculty of Education and Society, UCL, London

Keywords:

- What shall we teach and to what end?
- Framing the curriculum question
- A 'Future 3' curriculum for school economics underpinned by Powerful Knowledge
- School economics addressing the problems faced by the world

Purpose: To challenge Future 1 and Future 2 curriculum approaches and offer a more holistic vision of school economics that empowers teachers and students.

Practical implications

- Argument for curriculum space for school economics
- Articulation of purpose of school economics for teachers and teacher educators
- Suggestion of change of didactical approach of teaching economics

Corresponding author:
Professor Jacek Brant E-Mail: j.brant@ucl.ac.uk, 20 Bedford Way, London, WC1H 0AL

Declaration of conflicts of interests: No potential conflict of interest was reported by the authors.

Suggested citation:
Brant, J. (2022). The curriculum question and school economics: three educational scenarios for the future. Principles of teaching economics and the discourse of social education. In: *Journal of Social Science Education 21(2).* https://doi.org/10.11576/jsse-4858

1 INTRODUCTION

In 1960, Jerome Bruner posed the question: "What shall we teach and to what end?" (Bruner, 1960, p 1). This is a profound question that applies to school curriculum per se and to school economics as a case in point; I argue that 62 years on, the question needs to be asked again. The question is fundamentally a knowledge question, but it is also a pedagogical one. Although I do not report empirical research in this paper, I address the question by focussing conceptually on what has become a significant issue of concern about the place of specialist subject knowledge in secondary school teaching (Mitchell and Lambert, 2015). This paper offers a theoretical argument about the philosophy of education with the teaching and learning of economics as a specific and atypical example of a school subject. I pose fundamentally educational questions of economics education by exploring the meaning of 'curriculum' and 'curriculum making' in school economics. I frame the curriculum question through Young and Muller's (2010) 'three educational scenarios for the future'; my argument is for a Future-3 curriculum underpinned by a strong sense of social and moral purpose.

Before exploring matters curriculum, I pose a connected question: how might one view a well-educated person? Looking back a few hundred years, say to pre-industrial society in England, the vast majority of the population could not read or write. Typically, men, women and children worked together in the fields or at home in cottage industries. Workers were predominantly unskilled, though there was an important place for skilled artisans, who normally learnt their craft through apprenticeships. What needed to be learned was achieved through experience; to receive an academic education one was either upper-class or employed by the Church. Fluency in French, or in the case of Roman Catholic priests Latin, was a sign of an educated person as was a knowledge of philosophy and of the classics. During the industrial era, education provision expanded rapidly in response to the changing social, economic and political situation of the time, including population growth from seven million in 1751 to 26 million in 1871 (Baker, 2014). The Second Reform Act of 1867 (www.parliament.uk, accessed 12/10/21) enfranchised a million people, involving both academic provision, in the form of infant and elementary schools, and technical or vocational training, which was usually provided by voluntary organisations.

And to Europe in 2022; what might constitute a well-educated person? Waters (2013) identified five 'vital signs' for students to succeed at school and thereby receive a good education: articulacy, competence in literacy and numeracy allows students to express themselves and engage with deep learning; a wide general knowledge facilitates an interest in reading and engaging in interesting conversations; wide friendships, enables networking; emotional intelligence, enables appropriate relationships; and, making a contribution to school (e.g. being in the school play) contributes to citizenship. There is an allure to Waters' list, in a liberal democracy we expect citizens to make informed choices about activities that most suit them and, as Reiss and White (2013, p 14) note, "one role of the school is to prepare children to make these choices – not on a one-for-all-time basis, of

course, but throughout their lives". There is, however, a striking omission from Waters's list – the first half of Bruner's question, it is as if he has forgotten that knowledge is at the core of a decent education. While discourses such as Waters' articulate the needs of an educated person in the twenty-first century, Deng (2020) stresses the need for knowledge questions to be asked and for a vision of education that cultivates human powers.

Education debate often appears polarised between those who advocate a specific curriculum that should be 'delivered' by teachers and those that advocate student-centred approaches that develop skills and understanding (Pring, 2013). The tensions are not new, from ancient Greek and Roman times there were disagreements between traditionalists and progressives. The famous trial of Socrates, arguably one of the founders of modern thinking, illustrates this point. Socrates was found guilty of corrupting the minds of the youth of Athens and subsequently sentenced to death by being forced to drink the poison hemlock. This paper goes to the heart of the tension via an exploration of the 'curriculum question'.

2 FRAMING THE CURRICULUM QUESTION

'Curriculum' as a term is used widely but its meaning is nevertheless contested. In its narrowest sense, a curriculum can be seen as the course to be run, often presented in an objective form. Yet a curriculum will always have an embodied set of values, whether they are explicitly expressed or not. Building on Bruner's ideas, Stenhouse (1975), argued that a curriculum should embody a philosophy of education; a justification of what it is and what it tries to achieve. Stenhouse's wider definition of curriculum includes what happens to students as a result of what teachers do and all the experiences for which the school should take responsibility. Cultural influences, values and pedagogy have a significant impact on teaching and learning and so a curriculum is much more than just a programme of study.

A curriculum may be conceptualised in a number of ways, from a statement of essential principles and features, like a recipe in a cookbook, to planned learning experiences that guide students towards stated objectives. Lawton (1996) identifies four broad models of curriculum: content, objectives, process and assessment; the models are not mutually exclusive for any curriculum will have normally elements of all four. While all curricula must have content, the content model places undue emphasis on pre-determined knowledge that has an existence independent of the learner, "knowledge in this sense consists not of facts, but of facts so structured by theory that they acquire meaning" (Stenhouse, 1975, p 17). The objectives model is characterised by measurable learning outcomes and often favoured in vocational training where specific competences can be described and tested. However, the "notion of competence and competency frameworks are not educational, curricular concepts" (Deng, 2020 p 93). A process model places more emphasis on pedagogy and relies on high-quality teaching for its efficacy, "the teacher must know his subject and he must be secure enough to rejoice when he is beaten or overtaken by his pupils" (Stenhouse, 1975, P 37). Knowledge, here, might be described as

a ‘voyage of discovery’ and learning typically takes the form of ‘enquiry’. The obvious allure of the objectives & assessment models is that it gives clarity to teachers and pupils of what will be tested, but its failing is that the parts of the curriculum that are easy to assess are often taught at the expense of those that are difficult to assess or can’t be assessed. Hattie’s (2008) assertion “that although there is more to education than academic achievement, in the end this is what is supposed to matter most” (pp 244-245) evidences this flaw.

Answering ‘Bruner’s question’ requires further exploration of the purpose of education, for curriculum decisions cannot be meaningfully made unless there is clarity of what one seeks to achieve. Biesta (2015) identifies three domains of education: qualification, socialisation and ‘subjectification’. Qualification concerns the acquisition of knowledge, skills and dispositions; socialisation prepares children for their lives in the complex modern world; and crucially, subjectification refers to the way in which children exist as subjects of initiative and responsibility rather than as objects of the actions of others. Biesta explains that education always functions in relation to these three domains and school curricula are asked to meet the demands of these domains. In the same vein, Deng (2020) explains that over the last century, “schooling has been asked to perform four different aims that are reflected in four curriculum conceptions” (p 25). Academic rationalism where the primary purpose of schooling is intellectual development through school subjects; child-centred education, engaging in a ‘voyage of discovery’; social efficiency, meeting the needs of the economy; and, social reconstructionism, addressing social problems and issues such as poverty. What this brief discussion has evidenced is that the aims of schooling compete against each other and that each aim asks something different of curriculum.

Educational jurisdictions around the world present curriculum differently. The 2013-14 ‘International Instructional Systems Study’ undertaken by a team of UCL Institute of Education researchers and funded by the Center on International Education Benchmarking, examined the instructional systems and intended curricula across nine jurisdictions in six high-performing countries according to rankings on the OECD's 2009 PISA assessments. The study reported that although the goals of the education systems varied, they were explicitly stated, concluding that the more explicit a system is about its underlying principles and objectives, the more coherent the curriculum that follows (Creesea, Gonzalezb and Isaacs, 2016). Also noteworthy was that all nine jurisdictions made specific and detailed reference to generic ‘twenty-first century skills’ (creativity and innovation; critical thinking; communication; collaboration; information literacy; personal and social responsibility; and cultural awareness and competence) as those necessary for citizens to thrive in a “globally competitive marketplace” (p 14). Even though in the globalised world of educational ‘policy borrowing’ (Scott 2021) “… has acted to reinforce the prevailing domination of established forms of educational practice” (p 251), Deng (2020) laments that globally, knowledge questions have been neglected over the last two decades. He notes a shift in counties’ curriculum policy from what is taught to a

preoccupation with competencies, expressed in terms of learning outcomes with teaching construed as the facilitation of learning: where a focus on knowledge has been marginalised.

In the English-speaking world , in 2022, a rephrasing of Bruner's 1960 question might be expressed in the form: "what should students learn?" but adding "what should they learn for?" would most likely be understood in terms of 'skills needed for the twenty-first century', a very narrow interpretation of Bruner's intended question of purpose ("to what end?"). The change in language from 'teaching' to 'learning' is significant and in many ways makes it harder to ask curriculum questions concerning the purpose of education: that is, what should be taught and to what end? Biesta (2010) describes this change of language as the 'learnification' of education and suggests three broad explanations: a growing critique of authoritarian forms of education; the rise of constructivist theories of learning; and, the growing influence of neoliberal policies that "seek to burden individuals with tasks that used to be the responsibility of governments and the state" (p 76). It is beyond the scope off this paper to explore the reasons for the growth of learnification in proper depth, but it is a phenomenon that appears to be shaping perceptions of education. Mitchell (2020) labels these global-scale forces as hyper-socialisation. In addition to policy decisions, his research evidences that schoolteachers are making curriculum decisions in their classrooms under excessive pressures and controls flowing from changes in wider society. He makes the point that the 'learner-centred educational' language concerned with attainment and measurement of performance should not be confused with the curriculum question. Biesta (2015, p 75) argued "for the need to refocus the discussion on the normative question of good education, rather than on technical questions about effective learning or competitive questions about 'excellence'. "This requires that we focus above all on the question of the purpose of education and have an informed understanding of the particular character of how this manifests itself in education, i.e. as a multi-dimensional question."

The 'crisis of curriculum' (Wheelahan, 2012; Young, 2013) arises as a result of the displacement of knowledge from the curriculum, subordinated to other curricular goals that are primarily concerned about social relations of knowledge rather than epistemic relations. As I have argued above, the primary goal of educational administrations in the twenty-first century has been a preoccupation with competence frameworks expressed in terms of intended learning outcomes. Nevertheless, there is a growing 'voice' to 'bring knowledge back in' (Young, 2008; Young, 2013; Young and Muller, 2010; Young and Lambert, 2014; Deng, 2020, 2021; Lambert and Biddulph, 2015; Lambert, 2021; Wheelahan 2010, 2012). Mitchell (2020) makes a clear distinction between the curriculum set by government agencies and its enactment by schoolteachers. Lambert and Biddulph (2015) advocate the teacher as 'curriculum maker', having agency and teaching in a way that is authentic and empowering of students.

The difference between a teacher who 'delivers' a curriculum and one who is a 'curriculum maker' is the relationship that teachers and students have with knowledge;

where knowledge is presented and engaged with, where it is seen to be fallible where both teachers and students consider how we know what we claim to know. What one hopes for is students developing open minds, who can cope with contradictions and think in the abstract, and this requires a new perspective on curriculum.

The 'three scenarios for the futures model' (Young and Muller, 2010; Young and Lambert, 2014) offers a way of thinking about the question of knowledge in the curriculum; it is a simple heuristic designed to open up the tensions in the conflicting ways in which curriculum is understood and interpreted. The three 'futures' of school knowledge are simply referred to as Future 1, Future 2 and Future 3. Future 1 is characterised by conservative delivery models focusing the school curriculum on traditional subjects. Subject "boundaries are given and fixed" (Young and Muller, 2010, p.16) and such knowledge is fundamentally uncontested and consists of "sets of verifiable propositions and the methods of testing them" p 14). Pedagogy tends to be associated with one-way transmission and a view of learning that expects compliance from pupils, and as Harris (2012, p 42) observes, "many teachers are susceptible to the destructive disease of 'wemustimpartforyoutolearnitis'". A Future 1 view of knowledge is 'backward-looking', celebrating the best of the past, and views the future as an extended version of that past (Young and Muller, 2010). Although Future 2 is 'forward-looking' with its rhetoric about 21st century skills and learning to learn, it is characterised by technical-instrumentalism that is skills-based and careless about knowledge. Instead it is founded on the development of generic competencies and links education directly to the future needs of the (neoliberal) economy where the boundaries between the worlds of school and work are weakened (Young and Lambert, 2014). A Future 2 curriculum typically celebrates the experience of pupils and represents "the end of boundaries - an over-socialised concept of knowledge" (Young and Muller, 2010, p 18). Such curriculum under-plays the propositional character of knowledge.

Future 1 and Future 2 conceptualisations of curriculum correspond with my earlier description of the historic tension between traditionalists and progressives. Young and Muller (2014) observe that globally, educational policy and practice is a mix of Future 1 and Future 2 conceptions of curriculum and it appears a strange state of affairs where historically opposed conceptualisations of curriculum sit together, or at least share curriculum space. My argument is that both conceptions are inadequate in addressing the existentialist crisis facing humankind and if economics has a role to play in addressing real issues facing the world, a Future 3 curriculum for school economics (and school curriculum per se) is necessary, a curriculum that is progressive and based on the principles of 'powerful knowledge'.

A Future 3 curriculum is a knowledge-led curriculum directed to promoting epistemic access to powerful knowledge for all students (Deng, 2020). A detailed discussion of powerful knowledge related to the teaching of economics follows later in this paper. Such knowledge is bounded (by academic disciplines) and school subjects may be seen as the most appropriate for enabling students to acquire knowledge to make sense of the world.

Disciplinary knowledge is the basis for powerful knowledge as it provides reliable explanations and new ways of thinking about the world. This is not to say that disciplinary boundaries cannot be crossed for the creation and acquisition of new knowledge (Mitchell and Lambert, 2015).

Powerful knowledge is distinct from common-sense knowledge acquired from everyday experiences as it is not tied to the personal experience of students. It is context-independent and therefore transferable to situations that are beyond a student's experience (Young and Muller, 2013). Concepts have 'systematicity': they are related to each other in groups in the form of disciplines and can be the basis for generalisations and thinking beyond particular contexts. Powerful knowledge is knowledge that has been developed within disciplinary communities and it is knowledge that can be challenged. This makes economics particularly interesting as a disciplinary field as the orthodoxy, characterised by neoclassical economics, is under sustained challenge (see: Aldread, 2019; Case & Deaton, 2020; Krueger, 2020; Skidelsky, 2020).

3 SCHOOL ECONOMICS

In this section I explore the nature of school economics and its relationship with the discipline of economics which, like all disciplines, is a dynamic and evolving field of study. However, typically the school subject embraces only neoclassical and Keynesian economics, which I collectively refer to as 'orthodox' economics.

Economics has been defined as the study of mankind in the ordinary business of life (Marshall, 1920) and as a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses (Robbins, 1984). The latter definition, or variations of it that embrace positivism and neoclassical economics' aspiration as 'scientific' are rarely questioned by teachers (Brant, 2011, 2015). Bernstein (2000) conceptualises disciplines as each having their own 'grammar', which can be strong or weak and Wheelahan (2010) suggests that economics is a good example of a discipline with strong grammar, characterised as possessing 'objective' knowledge. Such knowledge may appear to students as abstract and soulless and lack relevance because the approach generates positivist accounts that deny the involvement of social relations. Wheelahan further suggests that there is a danger that "Knowledge becomes an unmediated, direct account of its objects rather than an account which is socially mediated" (p 22). Wheelahan's observation that economics has 'strong grammar' applies to both neoclassical economics and Keynesian economics.

School economics is typically dominated by neoclassical economics, but often includes Keynesian economics. Keynes' (1936) General Theory of Employment, argued for the proactive role of government in addressing macroeconomic challenges. For example, when there is high unemployment, the government should increase aggregate demand (for example by increasing state spending on infrastructure projects) so as to stimulate economic growth, and vice versa when the economy 'overheats' (with the risk of inflation) the government should reduce aggregate demand (for example by raising taxes). The

Keynesian story is one of government intervention with an important role for the state in manging the level of aggregate demand with broad macroeconomic objectives of high employment, low inflation, a balance of payments equilibrium and strong economic growth. Hazlitt (1946) suggests that economics has inherent difficulties for two reasons: first because of the 'special pleading of selfish interests' and the second that the immediate effects of a given policy do not reveal the long-term consequences. Thus, neoclassical economists advocate a limited role for governments as they argue that too much government spending restricts private investment and that private actors should be allowed to pursue entrepreneurship. Where school economics includes both neoclassical and Keynesian perspectives, this creates two opposing narratives for students to comprehend; both have something to offer the student in helping them understand of the world in which we live, but this 'something' needs to be unpacked and explored. What schoolteachers may realise is that economics per se is already powerful and what they already teach is powerful knowledge but without context, explanation of 'challenge' it typifies the future 1 heuristic. Moving to a future 3 requires an understanding of static, 'given' canonical knowledge (Future 1) and knowledge that is contingent, dynamic and always in a state of becoming (Future 3).

A particular problem with neoclassical economics is its methodological individualism; that is, perceiving the social domain as an economic domain where economic individuals make constant cost-benefit calculations (Lackeus, 2017). Social phenomena are seen purely as the sum of individuals' behaviour and as individual choices are regarded as independent and specific to those making them, economists conclude that aggregate outcomes are the result of many rational choices taken by isolated individuals (Chang, 2014). As has been widely argued (McCloskey, 1983; Donaldson, 1984; Thomas, 1992; Houseman & McPherson, 1996; Lawton, 1997) under such purist rationalism many real-world problems have remained elusive to economics. This realisation has now become urgent as humankind now faces existentialist threat. Hannon (2015, p 14) for example, argues that "never before was the very planet's future (at least as a liveable home to humans) under threat" and asserts that "collectively and individually, we have to learn to live within the earth's renewable resources to be responsible consumers and reshape economies so that they are not predicated on endless growth and limitless consumption. Wide recognition of how broken our economic models are has not yet led to their reinvention" (p 15).

Hedtke (2018) observes that around the turn of the millennium, many university students had turned against the perceived bias of syllabi, textbooks and examinations and economics' lack of contact with reality. He notes that some undergraduates may be fortunate to find a more pluralist place for studying, but secondary schools do not have such options as they have to accept established curricula, content, textbooks and exams. Shanks (2018) researching social studies schooling in the USA concludes that neoclassical economics is for most settings the only economics on offer. In his research with pre-service teachers of economics he analyses teachers' conceptualization of the neoclassical

narrative, counter narratives they develop, and the importance of acquiring pluralist perspectives as these were lacking. He concludes that "moving beyond the dominant narrative of the neoclassical paradigm is an imperative" (p 20). He regrets that a social studies teacher looking to integrate economics into their curriculum is then left with a vision of 'man' devoid of ethics or emotions, effectively rendering economics separate from other social sciences.

Across Europe, the school economics curriculum offer varies. In some cases economics is taught as a separate subject, in others it is incorporated into social studies or citizenship. Where economics is taught as a subject in its own right, it is usually taught by specialists (Brant, 2018), however, where it is taught as part of a social studies programme, it is less likely for this to be the case (Modig, 2020). In the latter scenario, the influence of the textbook is particularly significant as non-specialists are more likely to rely on their textbook for their core knowledge and in their lesson planning, and school textbooks reflect the orthodoxy (Graupe and Steffestun, 2018). Graupe and Steffestun in researching school economics textbooks' use of metaphors use textual analysis and conceptual metaphor theory and conclude that the textbooks inhibit critical reflection and also display elements of subliminal persuasion and manipulation. They describe 'Economics' by Paul A. Samuelson (since 1985 co-authored by William D. Nordhaus) as the archetype of the modern Economics textbook that "serves as a role model in content and style for the majority of currently published textbooks" (p 6). Samuelson's book is highly influential having sold four million copies worldwide over five decades and he has apparently been well aware of its influence on shaping its users' world view: he is widely quoted as saying, "I don't care who writes a nation's laws — or crafts its advanced treatises — if I can write its economics textbooks" (Saunders and Walstad, 1990, p. ix).

It is my argument that it is imperative to ask what kind of school economics teaching and learning would help our students to better understand the socio-economic world they live in and how it may give them agency to understand, let alone address, the existential issues facing humanity – in what Latour (2018) refers to as the New Climate Regime. An approach to teaching economics is needed that addresses the needs of humankind as part of the Earth's environmental systems, and not somehow separate from or 'above' nature. Whereas orthodox economists attempt to impose certainty through the use of uncritical models, by recognising the socially constructed and uncertain nature of economic theory, economics educators can begin to think of humans as socially, environmentally and politically contextualised and their behaviour as driven by factors other than the profit motive, and the Earth as something to be cherished (Lawson, 1997; Shanks, 2018).

Economics needs to be seen as part of an open system with a multiplicity of mechanisms, structures and agencies in play (Brant and Panjwani, 2015). It needs to strengthen its moral and social dimensions, it needs to consider more the idea of a compassionate human being who "operates on a level of values and who cares about other human beings, human justice and the environment" (Brant, 2015, p 14). The much lauded classical economist Adam Smith, a moral philosopher, argued that human nature is not

just self-regarding as humans are endowed with a natural tendency to care about the well-being of others (Smith, 1776). I have argued (Brant, 2011) that it is intellectually dishonest to hide behind the pretext of neutrality and propagate economics as a value-free discipline. Teachers and students bring along with them value positions to economics lessons and for an economics curriculum to empower students to think critically and to have agency, this must be considered in a socio-economics context.

4 POWERFUL ECONOMICS KNOWLEDGE

Powerful knowledge is knowledge that provides students with the intellectual ability to analyse, explain, predict, evaluate and think about the world in ways that are beyond their personal experience, helping learners to understand and navigate in the world in which they live. The starting point is discipline-based, subject-specific knowledge that can open up new perspectives beyond everyday experiences so that the world and solutions to problems in the world can be understood in alternative and more qualified ways. The 'power' that powerful knowledge gives students who acquire it, is the ability to make abstractions, to make generalisations, to critique and to present coherent arguments based on substantive knowledge. A substantial literature has built up that seeks to clarify the nature of 'powerful knowledge' in school subjects, especially in history and geography (See: Chapman, 2021; Kitson, 2021; Lambert, 2017; and Maude, 2016). There is a dearth of publications about powerful knowledge in economics; this article is a start in addressing this. I offer an original argument for economics to embrace a future 3 approach in the school curriculum.

I do acknowledge that Modig (2020) who surveyed 419 Swedish economics academics as to what they considered to be the most important economic concepts students should have access to in school to enable them to face economic issues in their private and public lives. He then related his research to Young's framing of powerful knowledge. This article builds on this conceptual framing.

Threshold concepts as identified by Meyer and Land (2003) are perhaps by their very nature 'powerful' and might therefore be a useful way to articulate powerful knowledge in economics. According to Meyer and Land they possess five characteristics. First, they should be transformative, in that once acquired would fundamentally shift understanding in the subject (for example, once price is understood as being determined by the forces of supply and demand, it is highly unlikely the student would conceive the price of a good or service as being determined solely by the cost of production). Second, thresholds concepts are irreversible, in that once someone 'breaks through to sees the world in a new way it is inconceivable that they would return to viewing it in a less sophisticated way. Third, threshold concepts are 'integrative', as the previously hidden interrelatedness or systematicity of something becomes revealed. Fourth, threshold concepts are specialist, being bounded by and emerging from within a discipline. Finally, threshold concepts are troublesome in the sense that they may be counter-intuitive and go against common sense understandings of how things work. In grasping a threshold concept a student moves from

common sense understanding to an understanding which may conflict with perceptions that have previously seemed self-evidently true. Threshold concepts do have an appeal in that they offer a theoretical construct, a way of thinking (about economics) and open a window to a Future 3 curriculum. Hence, they give access to deep thinking, relating substantive curriculum knowledge to problems encountered in the real world. Davies and Mangan (2007), identify a limited number of potential threshold concepts that include opportunity cost, economic modelling, margin, welfare and efficiency, comparative advantage, partial equilibrium, interactions between markets, elasticity and cumulative causation. For an 'important' concept in economics to be regarded as 'threshold' it should meet Meyer and Land's (2003) five characteristics. There are some ideas that are universal in the subject that may open a gateway for students to understanding economics in profound ways and so there is a clear relationship between threshold concepts and powerful knowledge. When students grasp economics threshold concepts, they then 'see' the world in a new light. These conceptual aspects of economics knowing become embedded in their thinking, providing access to disciplinary knowledge and understanding in economics that is beyond their everyday experience. Powerful knowledge has a dual aspect. It is evidence-based, abstract, theoretical, part of a system of thought, dynamic, evolving and changing, but reliable, testable and open to challenge. It is often counter-intuitive, discipline based and existing outside the direct experience of the teacher and the student (Lambert et al, 2022). It also enables students to discover new ways of thinking, better explain and understand the natural and the social world, imagine alternative futures and what they could do to influence these potential outcomes, engage in current debates of significance and exceed the limits of their personal experience (Maude, 2016).

In Young and Muller's (2010) Future 1, subject boundaries are given and fixed and knowledge is under-socialised. School economics, in the form of orthodox economics, typifies a Future 1 framing: knowledge is presented as objective, lacks real-world context and projects faux precision. In lessons, teachers typically explain abstract theory, then present a diagrammatical conceptualisation. Examples from the real world often follow, 'validating' or exemplifying the theory. This state of affairs displays an over-reliance on hypothetical static models that are presented as 'truths' (Author, 2011, 2015). Taking the ubiquitous theory of supply and demand as an example, standard texts state 'the law of demand' (demand extends as price falls and vice versa) and the 'law of supply' (supply contracts as price falls and vice versa) and the resulting formation of price is expressed diagrammatically falling at an exact point where supply equals demand. There is an implication that supply and demand curves/schedules are derived from real data, but are not; only the 'price' is known, a single figure in a mass of made-up data. And even price is not a 'fixed' entity as the same product or service will command different prices depending on location and socio-economic environments. The language of 'laws' and the presentation of hypothetical data as real leads many students to accepts these 'laws' uncritically, influenced by the 'certainty' in which they are presented. While the forces of

supply and demand certainly do exist and indeed exert powerful influence on prices, textbooks' and teachers' demand curves and supply curves are constructs that bear little resemblance to any form of reality. A future 1 economics curriculum is therefore inadequate, at best it is a partial curriculum.

In Young and Muller's (2010) Future 2, knowledge is less bounded and over-socialised; this is not a normal characteristic of school economics. Nevertheless, the pervasive Future 2 curriculum framing may leave an indelible mark on the teaching of economics. Such a curriculum is characterised by technical-instrumentalism that is skills-based and founded on the development of generic competencies. Assessment arrangements that use a Bloom's taxonomy (Bloom, 1956) approach (or similar) treat knowledge as generic and subservient to other generic competences. At its worse, Bloom's taxonomy is treated as a learning theory (rather than an assessment one which it is) and students are taught to present content, then its application, then to analyse, synthesis and finally to evaluate as part of their day-to-day economics lessons (rather than in times of preparation for an examination which would seem to be more appropriate). In school economics, knowledge is assumed to be bounded, as in Future 1, but subservient to a competency framework, so a Future 2 curriculum is likewise inadequate.

Bruner (1960) famously stated that "…any subject can be taught effectively in some intellectually honest form to any child at any stage of development" (P33). A Future 3 curriculum is characterised by a knowledge-led curriculum directed to promoting epistemic access to powerful knowledge for all students. For powerful economics knowledge it may include providing reliable explanations of economic phenomena and new ways of thinking about the world. Even taking in to account educational policy, assessment arrangements, and available textbooks, an enacted Future 3 curriculum would allow for the teaching of economics in an intellectually honest way. In his application of powerful knowledge to school geography Maude (2016) analysed the characteristics that makes geographical knowledge powerful in the first place; he then explored the kind of power this knowledge gives to those who possess it. The result is a five-part typology of powerful knowledge intended as a professional thinking tool: thinking about the epistemic quality of what was to be taught before approaching the more technical, pedagogic questions about how we are to teach. (Lambert et al, 2017). Starting with the premise that economics is a powerful subject with 'strong grammar', I now adapt Maude's (2016) typology of powerful knowledge for economics and then illustrate and exemplify.

Table 1: A typology of powerful knowledge in economics (adapted from Maude, 2016)

Type	**Characteristics**
1. Knowledge that provides students with new ways of thinking about the world.	Using *big ideas* such as: • opportunity cost • money • price • marginality • economic growth

2. Knowledge that provides students with powerful ways of analysing, explaining and understanding.	Using ideas to: • *analyse* – e.g. changes in price • *explain* – e.g. elasticity • *generalise* – e.g. models such as supply and demand
3. Knowledge that gives students some power over their own knowledge.	To do this, students need to know something about the ways knowledge is developed and tested in economics. This is about having an answer to the question: *how do you know*? This is an underdeveloped area of economics education, but is an important aspect of 'epistemic quality'.
4. Knowledge that enables young people to follow and participate in debates on significant local, national and global issues.	Examples may include economic response to crises such as the covid-19 pandemic; effect of Brexit; causes of unemployment/inflation; high/low taxes and the role of the state.
5. Knowledge of the world	This takes students beyond their own experience – geopolitics; trading-blocks such as the EU and world trade agreements. In a sense, this knowledge is closest to how economics is perceived in the popular imagination. It contributes strongly to a student's 'general knowledge'.

Type 1: Knowledge that provides students with 'new ways of thinking about the world'. Maude (2016, p72) explains that "ways of thinking are powerful because they may provide a student with new perceptions, values and understandings, new questions to ask and new explanations to explore and may change their behaviour". Economics as a school subject is in itself concept-rich, many of its 'big' ideas (opportunity cost, money, price etc.) will generate conceptual tools that offer explanatory frameworks or substantive theories. The 'margin' is one such big idea and offers the potential to transform economic thinking and decision making. Marginalism defined modern economics: understanding the margin can better explain human action, subjective valuation, and market prices, with firms better understand how to price their products or make investment decisions (Hazlitt, 1946 [1952]). Marginality and other big ideas in economics are powerful because once understood, they change the way students think.

Type 2: Knowledge that provides students with powerful ways to analyse, explain and understand the world. Economics offers students conceptual ways to explain, analyse and understand the world in which we live. Taking a big idea such as 'price'; the price of a product or service in a competitive market is largely determined by forces of supply and demand. A rise in market price will occur if there is a 'supply shock'. The Russian invasion of Ukraine in 2022 caused such a supply shock with gas and oil process rising substantially direct affecting the price of energy and fuel. There was also a rise in the price of bread in the Middle-east due to shortages of flour with Ukraine being a major exporter to that region. Likewise, significant changes in demand (for example due to a rise/fall in income) led to changes in price. But by how much might prices change? The further concepts of price elasticity of demand, supply, cross elasticity and income elasticity help explain the degree of change of price. At this point I have described concepts that have analytical and explanatory power. Generalisations, a synthesis of factual information that state a relationship between two or more concepts, can be powerful for two reasons. One is that they summarise lots of information, making it easier to remember and understand and more importantly, they allow students to apply what they have learned to new situations (Maude, 2016). This offers conceptual tools for teachers and students to explore possible scenarios and make (qualified) predictions for each. This approach would equip students to engage with serious debate in the area of geo-politics and economics.

Type 3: Knowledge that gives students some power over their own knowledge. Students should know something about the ways knowledge is created, tested and evaluated within economics for this will give them the opportunity to be independent and critical thinkers and make their own judgements. I have noted above that in many economics lessons abstract theory is presented uncritically together with an over-reliance on hypothetical static models. Teachers could ask, how do we know this is true? and how might we test these theories? thus giving students opportunity to be independent thinkers and able to critique the opinions of others. Heterodox approaches and being able to find knowledge for themselves are further building blocks that would give students some power of their own knowledge. Maude's Type 3 knowledge captures the 'ambition' of a Future 3 curriculum, but it may be the element that is most difficult to find in schools, and, the most difficult to teach.

Type 4: Knowledge that enables young people to follow and participate in debates on significant local, national and global issues. As Maude (2016, p75) notes, "The ability to follow and participate in public debates is essential to full and equal participation in society and its conversations about itself, and without this ability young people lack power". A deep understanding of economics offers students a way of assessing issues in current affairs. For the first time since the 1970s, the spectre of 'stagflation' faces many western economies in 2022, a stagnant economy with rising prices. Students could first

understand how we 'got where we are': central banks' quantitative easing, supply side shocks and pent-up demand over the 2020-22 period created this 'perfect storm'. The dilemma is how to tackle rising prices without 'chocking off' the economy.

Type 5: Knowledge of the world. Humankind does not live in a 'perfect' world of 'perfect' markets inhabited by 'rational' human beings. Good teachers know this and for students to be able to discuss local, national and international contexts they need to be well-read. A Future 1 economics curriculum is insufficient because powerful economic ideas need a context. A Future 2 curriculum is insufficient in that real world explanations need a disciplinary theoretical framing. If powerful knowledge is knowledge that takes students beyond the limits of their own experience, then economics needs to be situated in real contexts and 'big ideas' need to be tested in these circumstances. Economics can offer tools of explanation and analysis to help students make sense of the world in which they live but also to equip students with capabilities to act in the interests of humankind.

The framework I have suggested does not suggest specific economic content to teach, but rather approaches to thinking developed through whatever content is selected. An individual economics lesson may show aspects of this typology, but over a whole course one may expect a balance across all five types of knowledge. In this sense, the typology may have genuine potential in helping teachers stand back and organise their teaching with a clear sense of purpose. Such an approach can provide a progressive way to link the contents of economics with the notion of educational aims and purposes. With regards the three futures heuristic, what distinguishes Future 3 from Futures 1 and 2 in economics is the epistemic quality of the economics in the enacted curriculum (Gericke et al, 2022).

It is my argument that an economics curriculum cannot exist in isolation and that it should be contextualised socially, historically, environmentally and politically. Let me offer an example. In late September/early October 2021, Great Britain suffered a shortage of fuel at petrol stations. Actual physical shortages are usually associated with planned economies, such as famously in the former Soviet Union where state planning misaligned with the forces of supply and demand. In capitalist economies, physical shortages should not occur because the market fixes price so that supply equals demand. Using neoclassical theory, if there was a 'shortage' of petrol, we would expect prices to rise and for the market to move to a new equilibrium where once again supply equalled demand, but in Britain there were tangible shortages of fuel at petrol stations. How could such a state of affairs arise in a capitalist market economy? A Future 1 explanation using the static equilibrium Supply and Demand analysis could not properly explain this state of affairs. A Future 2 explanation, drawing on students' own experiences may lead to interesting class discussions, noting that there was sufficient fuel at refineries and depots, but petrol station shortages were caused by HGV-driver shortages, noting that the UK government brought in the army to alleviate the crisis. Such an explanation appears

to be over-socialised and under-theorised. A combination of Future 1 and Future 2 thinking in itself is still inadequate but has potential to become 'more than the sum of its parts'. A teacher as a curriculum-maker might examine static neoclassical models, look at their strengths and deficiencies but discuss the real forces of supply and demand that do function unseen. By considering what forces and mechanisms might be operating within the open system - the local, national and European market for fuel on the one hand and HGV drivers on the other, students, 'thinking like an economist' might start to make sense of the complicated socio-economic phenomenon.

Iterating between inductive and deductive reasoning, a Future 3 framing would need to ask the question, why did the oil companies not 'hike-up' prices at the pump to equilibrate demand with supply? This is standard practice in hotel and airline industries, so why not petrol? One answer may be that the companies did not want to be accused of profiteering; physical shortages could be blamed (by both businesses and government) on the public for 'panic buying' petrol, a neoliberal take on blaming individuals. The shortage of HGV drivers (including tanker drivers) could be put down to the consequences of a hard BREXIT (by businesses) or inadequate planning by businesses (as the UK government has claimed). A neoclassical approach to resolving HGV driver shortages (and one advocated by the UK government) is the simple labour market solution for logistics companies to increase truck drivers' pay. In terms of addressing truck driver shortages, this reasoning is inadequate as a much broader framing, taking into account amongst other things, the time needed to train drivers, vocational training in more general terms at a national level, EU law and the consequences of government policy.

There is a driver shortage across the EU, yet the EU has not experienced actual fuel or product shortages at point of sale. Raising drivers' wages might be a partial answer, but on its own unlikely to address the shortfall of supply of drivers. Clearly more drivers are needed to satisfy logistical needs and this leads to discussions about training. The UK government putting blame on business for not training truck drivers is misplaced; businesses work in competitive markets and spending money training drivers, to potentially lose them to other firms who later offer higher wages does not make business sense. This state of affairs implies the need for at least a national if not an EU-wide training strategy. The role of the state in providing education and training and the tension of neo-liberal ideologies that are suspicious of the involvement of the state might be further points for a class to consider. Thus, while conceding the economic analysis here is brief, even superficial in some respects, it highlights the need to recognise that economic forces operate in a complex open-system and economic education must reflect this.

Fuel shortages at British petrol stations pale into insignificance compared to the potential effects of global warming caused by human activity. The Paris Agreement of 2015, a legally binding international treaty on climate change, has an agreed goal to limit global warming to 1.5 degrees Celsius compared to pre-industrial levels (UN Climate

Change, 2021). To achieve this temperature goal, countries need to control greenhouse gas emissions for failure to achieve this will result in catastrophic consequences. The new climate regime (Latour, 2018) highlights a potentially fatal ecological rift that has arisen between human beings and the earth emanating from the conflicts and contradictions of modern capitalist society (Foster et al, 2011). Difficult questions need to be asked, for example, can economic growth continue year on year? Do we need to shop so much? Might products be made to last longer than they do and might they be made so that they are repairable? (Gilding, 2018). In a market economy where companies answer to shareholders, should energy companies who have a vested interest in selling more energy, be under state control and not be influenced by the profit motive? Is it better to insulate the country's housing stock rather than build new power stations, should the government pay for this or at least offer subsidies? Is market capitalism part of the solution that could provide the ingenuity and entrepreneurial vision to deliver technical solutions? The UK government's actions to meet agreed greenhouse gas emission levels include encouraging the buying of electric-powered cars and moving from gas central heating to air source pumps but neoliberal, individualistic solutions that put responsibility on individuals are insufficient. What powerful knowledge can economics offer to help save our planet?

CONCLUSION

No subject has an automatic right to scarce school curriculum space and economics often needs to make a special case for its inclusion as it rarely features prominently in national curricula. Economics as a discipline per se is at a crossroads, with an increasingly loud voice rejecting 'homo economicus', the amoral, self-serving individual who is indifferent to the needs of others or even to the very survival of our planet. Economics in itself is a powerful subject and should be central to young people trying to make sense of the world in which they live and the challenges it faces.

What shall we teach and to what end? I have shown in this paper that the purpose of education as articulated in school systems is contested, strong neoliberal forces have shifted curriculum policy from a focus of what is taught to a preoccupation with competences and academic outcomes. My argument in this paper is for a Future 3 economics curriculum underpinned by a social and moral purpose. It is not enough for learning to be an end in itself - it must be a means to an end and a Future 3 denotes a curriculum of engagement with powerful disciplinary knowledge. It is not a matter of teaching 'effectively' for its primary concern is with the quality of what is being taught and for what purpose. It is about building teachers' confidence as curriculum makers. The implication of a Future 3 ideal is that it requires economics teachers to take responsibility for the epistemic quality of the curriculum as experienced by their students.

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AUTHOR BIOGRAPHY

Professor Jacek Brant is professor (teaching) at IOE, UCL's faculty of education and society. His research interests include: secondary school curriculum and pedagogy; economics curriculum and pedagogy at Secondary school level.