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2. CAN THE UNIVERSITY BE A LIVEABLE INSTITUTION IN THE ANTHROPOCENE?

WELCOME TO THE ANTHROPOCENE

On Monday 29 August 2016, the International Geological Congress meeting in Capetown, declared the start of a new geological epoch. The Holocene (defined by glaciers) was over. Its successor, the Anthropocene, is an epoch in which humans are the greatest shapers of the planet. They dated the start of the Anthropocene to 1950. That was when nuclear tests meant radioactive sediments, radionuclides, formed a new stratum on the earth's surface. The great acceleration in mid-20th century capitalism changed the carbon, nitrogen and phosphorous cycles, and saw the increased discarding of metals, concrete and plastic (AWG, 2016). Indeed a rival name for the era was the Plasticene, because another geological change in the world is the 288 million tons of plastic produced each year, much of which finds its way into the ocean so that by 2050 plastic will outweigh the fish in the seas (Oceans at MIT, 2014; WEF, 2016, p. 14). One quip was that dating in this era would not be by tree rings but by multinationals' product design manuals. The transition to each new geological epoch also has to be marked by a new fossil record – in this case, chicken bones. Chickens have become the world's most common bird – 60 billion were killed in 2015 – and their bones go into landfills. Between 1945 and 1950 in the U.S, a quick-fattening chicken with bigger bones of a distinctive shape called Arbor Acres was developed and it now dominates the world's genetic stock – half of all other chicken breeds have disappeared (Carrington, 2016). They spread so fast because of the development of factory farming and the liberalisation of trade.

Curiously, the literature most often represents the emergence of the Anthropocene as a switch in the binary relationship between 'humans' and 'nature': nature used to be a passive or supportive backdrop to human action; now human action is ruining nature and endangering the planet. This treats 'humans' as an essentialised species, as if they are all equally implicated, whereas there is a global landscape of inequality in which some people and some countries gain benefits by pursuing these changes and the peripheralised and dispossessed feel the negative effects. As Moore (2016) puts it, the Anthropocene is not the geology of a species, but of a system, capitalism. Indeed the above outline of the World Geological Congress' markers for the new epoch concerns the impacts of the post-Second World War military-industrial complex and the vast expansion of resource extraction and waste, factory farming and global trade. As Moore argues, the epoch really should be called the

R. Deem & H. Eggins (Eds.), The University as a Critical Institution?, 17–37.

Capitalocene. Such a focus on capitalism moves the argument away from how to patch up the damage humans cause to nature with technocratic fixes. Instead, a system approach turns attention to the social, political and economic processes involved, the institutions that people build and the political economy they form.

Even though universities are not the most important institution in the Capitalocene, they are nonetheless implicated in its formation. Since the 1950s, especially in the U.S., they have been bound up with the military-industrial complex and since the 1990s politicians have turned to universities to 'drive' what they call the 'global knowledge economy'. Universities have been reformed to make them focus more narrowly on producing what Slaughter and Rhoades (2004, p. 17) call the two crucial raw materials for this economy – knowledge and high-skilled labour – and to do so at a time when the negative consequences of such a constricted economic focus are finally being identified, named, measured and analysed in the Anthropocene/Capitalocene. This chapter explores the consequences of universities' becoming entangled with such a predatory system and, using Polanyi's (2001 [1944]) distinction between a 'formal economy' and a 'substantive economy' or 'ecology', asks instead how they can be re-embedded in a wider range of interlaced social, political and economic relations and responsibilities. The situation of academics within this political economy behoves us to question, how can we educate ourselves and our students to be critically reflexive about the 'scene' universities are in? In universities that have been reformed into alignment with the processes generating the Anthro/Capitalocene, how can we use our critical skills to find space to act, so as to develop universities as responsible institutions producing knowledge and citizens with a sense of care for the future not just of humanity but of the globe itself?

UNIVERSITY REFORMS

Since the 1990s, university reforms have been so widespread around the world that they resemble what Morton (2013) calls a Hyperobject. That is, something that is so massively distributed throughout the globe and takes so many different detailed forms, that it is hard to grasp how all its manifestations somehow contribute to a general trend and achieve similar effects. Morton develops this concept in relation to species extinction but it also seems applicable to university reforms and their contribution to what Sassen (2014) calls the 'expulsions' of capitalism. She argues that capitalist systems have developed much narrower interests and sharper edges, beyond which surplus people and unprofitable things are not just 'externalised' and marginalised but expelled and made invisible. How, through a range of different reforms, have universities gradually shifted from a responsibility for being the 'critic and conscience of society' (as framed in New Zealand's legislation) to becoming increasingly implicated in the expulsions of the Capitalocene? The range of ways that universities have been reformed can be illustrated by describing four main approaches: to create 'world class' universities; entrepreneurial universities; universities that are part of a market state; and universities that are drivers of a

competition state. The World Bank promoted the first policy, the idea that countries should compete in a so-called global knowledge economy by trying to ensure they had one or more 'World Class Universities' (Salmi, 2009). To achieve this, they should 'pick winners', focus their resources on those universities and engage in 'internationalisation'. The World Bank offered a smorgasbord of methods to achieve this: by distributing public funding on a competitive basis, privatisation of provision, or 'cost sharing' (i.e, charging students' fees). Even countries with state socialism, like Vietnam, found that when they implemented one of these methods, it quickly entailed the others, including pursuing the World Bank's agenda of bringing private and capitalist interests into the state sector (Dang, 2009). In Chile, where Milton Friedman's Chicago Boys created arguably the most privatised education sector in the world with the highest student fees, sustained street protests over many years have led to a change of government and a request to the World Bank to advise them on how to reverse that process (Bekhradnia, 2015). There is not yet a word for how to 're-public-ise' the sector and move out of neoliberal governance, privatisation and the market state.

A second reform route, to create what they call an entrepreneurial university, has been taken by Australia and New Zealand. This means that income generation pervades every aspect of the university. A consultancy report for Australian Universities recommends they should develop new business models for universities, 'streamlining' different income streams (EY, 2012). A report (Barber et al., 2013) staffed and funded by the education publisher and private provider, Pearson, used an older term (first used in Thorne, 1999). They proposed 'unbundling' the activities whose interlacing (and cross-subsidising) has up to now been the distinctive feature of a university. Each activity should be treated as a separate, income-generating stream, and organised in such a way as to maximise its own added value. Those that do not make a profit should be closed. Auckland University is perhaps New Zealand's most exemplary 'enterprise university'. In this case, income generation and the realisation of intellectual property assets are the most important criteria when setting research priorities. The appointment of staff is based on the enterprise unit's assessment of how much income their research will bring in (rather than academics' assessment of its intellectual quality or the person's contribution to teaching). The conditions of employment have also been changed to reward 'enterprise', with everyone responsible for leadership of the university in that direction (Amsler & Shore, 2015).

The third reform policy is best exemplified in England, where successive governments have attempted to turn the university sector into a competitive market for higher education. From the 1980s, reforms have had four main features: university activities were valued in purely economic terms; systems of top-down decision making were introduced, so that, mimicking a corporation, universities could respond to changes in the market; the sector was fragmented according to institutions' 'distinctive missions' so they could compete in different markets; and students were reinscribed as consumers and universities were reframed in terms of the discourses,

and to some extent the practices, of commercial enterprises (Wright, 2004). Much of the push for marketization has centred on student fees. In the 1960s, the state paid the fees of each qualified student and provided a means-tested maintenance grant. But from 1976 to 1997, government funding per student was reduced by 40% (Dearing, 1997, p. 267, para 17.16), resulting in a £2 billion annual shortfall in funding for teaching. The Dearing Report argued student numbers should increase to 45% of the 18–19 year cohort to meet the needs of the knowledge economy and graduates should repay 25% of their tuition costs as their personal benefits from higher education were greater than those of industry or society. Instead of following Dearing's plan, the new Labour government first introduced an up-front annual fee for all students of £1125 and then the 2004 Higher Education Bill turned the sector into a market by allowing universities to charge a variable fee based on how they ranked each course in the market. As McGettigan (2013) showed, taxpayers now paid for education twice, first in taxes and then in fees. And the government only squeezed the legislation through Parliament by 'capping' the fees at £3000 for three years. All universities charged the top fee for all courses because of the funding shortage, but the legislation for a higher education market had been put in place. Following another national review (The Browne Report, 2010) the Coalition Government in 2010 raised the cap on annual fees to £9,000, ended government funding of teaching through the block grant (except for STEM subjects), and replaced nearly all student grants with tax-funded student loans. Their argument was that this created a 'level playing field' between public universities and for-profit providers. The result was a spawning of companies offering higher education whose students were eligible for student loans to pay £6000 tuition fees and maintenance costs. Quality checks were not in place to see if the students attended, if the courses were actually taught, and to calculate the completion and drop-out rates. Vast profits were made. For example, St Patrick's International College was too small to register for public-backed loans for students in 2011–2012 but grew within a year to receive £11 million in public-backed funding in 2012–2013 from its 4,000 students. This so-called marketization has generated a system of risk free, state-funded capitalism (Wright, 2008, 2016).

In the fourth policy approach, in Denmark, the elements of the argument for reform were assembled in quite a different way to Chile, Australasia or England. A law in 2003 brought universities under wider public sector reforms to create a 'competition state' in which universities were given a special responsibility to drive Denmark's competitiveness in the Global Knowledge Economy and thence sustain its position as 'one of the richest countries in the world' (Danish Government, 2006). Rather than being directly marketised, privatised or expected to be enterprising themselves, public universities received vastly increased government funding in order for them to produce a faster throughput of qualified knowledge workers and research that could be turned into innovations by industry. The minister's catchphrase for the reform was 'from idea to invoice', and the purpose of increasing public investment was to yield knowledge and high-skilled labour that could be harvested effectively by private-sector knowledge industries. The 2003 law gave

universities the status of legal persons, which made them responsible for their own solvency, and meant they could enter into contracts with government and other private and public organisations. The government made them into 'free agents', no longer protected by the state against economic and political interests but responsible for exercising their own agency. Indeed, they were now legally obliged to exchange knowledge with 'surrounding society' whilst protecting their own research freedom and ethics. The law also changed the management of universities, establishing strategic leaders of clearly bounded organisations and units, who had the freedom to manage and to deliver on contracts. Perversely, the government could now steer these 'free agents' much more tightly by setting political aims for the sector, which were translated into performance indicators in 'development contracts' with the strategic leaders, and by tight control of universities' liquidity.

These four examples of university reform illustrate how widespread they have been and also how they differ in terms of how the components have been put together and which aspect of the assemblage has been emphasised and made into the key concept and argument for reform. But if spread and variety are characteristic of a 'hyperobject', another feature of Morton's concept is that the reforms all somehow contribute to general trend and achieve similar effects. Taking this insight, the reforms seem to share two main features that are changing the place of universities in the world and implicate them in wider systemic relationships that were introduced above as the Anthropocene or Capitalocene. First, universities are conceptualised as a new kind of subject in a new context; and, second, this context is treated as an 'economy' in which universities are allocated an instrumental role in the production of knowledge and human capital deemed necessary for successful global competitiveness.

NEW CONTEXT OR FIELD OF HIGHER EDUCATION

The first shared feature of this torrent of reforms is that universities are no longer thought to be in a ring-fenced 'sector' supposedly protected from the dominance of economic and political interests and charged with providing education, research, and public service to the citizenry: they are now a site for value extraction in the Capitalocene. Since the Second World War, especially in the U.S., universities have been deeply engaged with capitalist agriculture and research and development for pharmaceuticals and defence, but now they are positioned amidst a complex array of industries and organisations that connects them to and makes them effective and intelligible within the 'global knowledge economy'. They range from publishers with new business models, to specialists in bibliometrics and data harvesting, organisations producing the university rankings that students use to select their university and other universities and industrial firms use to choose collaboration partners, and also credit ranking agencies whose grades affect the cost of bank loans or finance capital for developing the new buildings and campus services needed to attract 'world class' researchers and students. Whereas universities were meant to service a market, they have in many cases become markets themselves (Robertson & Komljenovic, 2016;

Hartmann, 2008). Companies are specialising in selling software to standardise and manage university administration, staff performance, 'learning platforms' and interfaces with students. Where university functions have been unbundled, a plethora of companies take over not only security, cleaning and catering, but admissions, course delivery, exam marking etc. Some universities have turned all their administration into a service delivery company that then bids to take over the administration of other universities. Internationalisation has spawned new for-profit student recruiters and 'pathway providers' who oil the international trade in fee-paying students, some offering pre-degree or first year courses, often on university campuses. Burgeoning for-profit providers of higher education are establishing colleges throughout the world using a range of business models, often linked to on-line courses, especially MOOCs (Massive Open Online Courses) in which companies developing computing hardware and software, information technology and social media have a major interest. Meanwhile consultancies and audit companies, such as McKinsey, Deloitte and PricewaterhouseCoopers, advise university leaders on how to manage their university's relations with these surrounding interests and ever-changing government policies. They also provide governments and increasingly influential international agencies, such as OECD, World Bank and EU, with ideas for future reforms.

In short, the first common feature of the reform hyperobject is that universities are now located in this vastly expanded field of higher education, surrounded by myriad interests all entitled to make demands on research and education. The university has to become a new kind of subject, responsible for negotiating its relations with these diverse economic, political and social interests in 'surrounding society', and is made responsible for determining its boundaries and maintaining its own values, research freedom and ethics.

THE FIELD OF HIGHER EDUCATION TREATED AS AN ECONOMY

The second common feature of the reform hyperobject that ties the university into the Capitalocene is the way this field of higher education is conceptualised as an economy. This has implications for how universities and their leaders, academics and students can act within this field and the space for manoeuvre they might find. An example of this economy discourse is found in the UK government's white paper, *Success as a Knowledge Economy* (BIS, 2016). The paper starts with a brief mention of the university's role in fostering democracy, culture, criticality and social change, but this discourse is quickly dropped in favour of a dominant focus on 'driving economic growth'. In the white paper emanating from the ministry for business, claims that the 'need for knowledge' is to drive competitiveness and innovation, and the purpose of 'excellent teaching' is to support students' future productivity. The white paper depicts universities in the language of a formal economy. Education and students are turned into commodities, described in terms of markets, competition, price, instrumental outcomes and pursuit of individual interests. It is as if all the university's relations with stakeholders were dislocated from academic and ethical

considerations and were market based. This approach abstracts and dislocates a model of the formal economy from the daily life, social relations, values and ethics of academics and students within the university and with surrounding society.

Polanyi's (2001 [1944]) contrast between what he calls two meanings of 'economy' or *oikos*, sheds light on the process of abstraction and dislocation visible not only in the UK's white paper, but in the other examples of reform quoted above. He shows how in the original meaning of *oikos*, as household management, economic activities were an integral part of – and relied on – a wide range of social, political, kinship relations and institutions. This he calls a 'substantive' idea of the economy. His historical anthropology showed how in 18th century England, the 'economy' came to be conceptually disembedded from these relations and treated as if it operated according to its own intrinsic logic and was an autonomous sphere. This he called the 'formal' meaning of the economy. Goods, services, labour and land were all ripped from their social context, or alienated, and transacted through price setting in markets. Key to his argument was that land and labour were 'fictitious commodities' that could only be transacted on a market by destroying their social and ecological fabric. This form of capitalism introduced a new notion of scarcity, an assumption that there would be an insufficiency of 'means' to meet everyone's 'ends'. In these transactions, individuals (whether individual organisations or individual people) were conceived of as autonomous, interest-bearing units, exercising rational choice in conditions of scarcity by competing to maximise gains. Polanyi then showed that this economic logic imposed itself back onto other spheres of life from which it had been abstracted. As a result, 'the economy' reshapes its context in its own image.

Whereas this way of thinking was specific to 18th Century England, in neoclassical economics it is presumed to be true for all time and throughout the world. The dangers of disembedding market relations from a wider social and economic milieu are clearly demonstrated by anthropological studies such as Greenwood's (1976) research on Basque farming. In the 1960s, farmers engaged in mixed agriculture and had very complex circuits of exchange. A small component of this mixed economy was the sale of produce to the local garrison town. Farmers therefore always turned some of their yield into commodities for market sale, but treated this as what Polanyi (1963) called a 'port of trade'. That is, they kept these sales contained, only using them to raise the limited cash needed to support the subsistence economy. Their overarching priority was to maintain a sustainable subsistence economy and this is where they placed the highest value. When a younger generation took over the farms, they turned to commodity farming for the market in order to convert their produce into cash for a consumption lifestyle. They found the commercialisation of their farming subjected them to middle class people and they began leaving, preferring to be labourers rather than servants. Their economy also became vulnerable to price fluctuations, but by then the people had dispersed and the knowledge and community relations needed to restore a subsistence mixed economy had gone, with the result that the economy collapsed.

Davydd Greenwood, critical accountant Rebecca Boden and I related this Basque ethnography to recent developments in universities and developed a methodology aiming to distinguish between market and sustainable economic valuations of the work conducted by universities. We tabulated a university's complex circuits of exchange using distinctions between rivalrous and non-rivalrous, and excludable and non-excludable. To this we added the different kinds of exchange involved, using Polanyi's ideas of three major forms of exchange – reciprocity, redistribution and markets – and how each has radically different social consequences. Drawing on further anthropological theory, each mode of exchange (direct versus indirect, specified or not, commensurate or not, and immediate versus delayed or long-term) implies a different kind of relationship and degree of trust (Table 2.1).

Table 2.1. University's multiple circuits of exchange

	Excludable	*Non-excludable*
Rivalrous	*Usual example:*	*Usual example:*
	Private goods e.g. purchased food	Common goods e.g. fish in open sea
	University example:	*University example:*
	Patents	Open innovation systems
	Form of exchange:	*Form of exchange:*
	Market	Reciprocity or redistribution
	Direct, specific (contract) commensurate	Indirect, unspecified, non-commensurate
	Relationship:	*Relationship:*
	Low trust, not sustained	High or intermediate trust
Non-rivalrous	*Usual example:*	*Usual example:*
	Club goods, e.g. cable tv	Public goods, e.g. street lighting
	University example:	*University example:*
	Subscription journals	Public talk
	Form of exchange:	*Form of exchange:*
	Redistributive	Reciprocity
	Direct, access specified but usage not, immediate, commensurate	Indirect, delayed, unspecified, non-commensurate
	Relationship:	*Relationship:*
	Intermediate trust	High trust, long lasting

Source: Adapted from Rebecca Boden, Davydd Greenwood and Susan Wright presentation to 'The Trust University' conference, DPU, Copenhagen, June 2011

Activities which are rivalrous and excludable include research that results in patents, contracts that give the contractor restrictive rights over the results or similar ways that the service of a university is purchased for privileged or exclusive use by certain interests. Here a market form of exchange is based on price. It is also based on presentism, with all values calculated as if they can be stabilised at a particular moment in order to exchange two specified items (fee and service) that are agreed to be commensurate. As mentioned above, Polanyi showed that market exchange is based on the idea that there is a scarcity of means to meet competing ends, and the exchange is between commoditised goods and alienated 'hands', or what is now referred to as 'talent', in price-setting markets. Where each party is trying to get the best out of the deal, trust rests in fulfilment of the terms of the contract, and on its completion, the relationship is concluded.

At the other extreme, activities which are non-rivalrous and non-excludable are open to all and do not diminish with use, so there is no need to compete over scarcity. Many of the ways that universities engage with the public fall into this category and also ways that academics interact with each other and with their students, including public talks or colleagues reading and commenting on each other's drafts to share and develop ideas. Here the relationship is based on reciprocity, where one exchange does not close a deal but, on the contrary, creates a sense of obligation to find some way to make a further exchange. As Mauss (1990 [1925]) put it, gift begets gift, begets gift, begets gift. What is exchanged may not be immediately commensurate; nor is the exchange necessarily direct, as A can give something to B who gives something to C who gives something to A in a circuit of indirect exchange. The parties view their relationships with each other as symmetrical rather than hierarchical even if, in an extensive circuit of indirect exchange, they only vaguely know of each other's identity and presence. This kind of exchange generates high trust and long-lasting relationships.

Exchanges that are non-rivalrous and excludable cover activities where access is through subscription or membership of a club, but where the resource is not diminished by use. A simple example is access to professional journals through subscription (either privately or though membership of a university that has a subscription), and this category can also refer more widely to students' registration giving them access to the resources of the university. If reciprocity denoted exchange between symmetrical groupings, redistribution involves appropriation by a centre and then out of it again to ensure the distribution is sufficiently fair and even to keep the club going. Redistribution requires hierarchical groupings and may be marked by tensions and negotiations, and attempts to resolve them through set procedures and systems of accounting. To hold the groupings together there also needs to be a sense of mutual obligation, which increases with ascent up the hierarchy, to the point that leaders realise that their position depends on acting with care toward those for whom they are responsible and on sustaining rather than tearing the social fabric. Such a social system is characterised by long-term relationships with an intermediate or wary kind of trust.

Activities that are non-excludable but rivalrous refer to common goods and may be based on either reciprocity or redistribution. They are exemplified by fish in the open sea, where supposedly everyone has access but where it is very clear that stocks are not infinitely replenishable. Universities' attempts to create open innovation systems are an equivalent example. Where these activities are successfully organised through reciprocity, the items exchanged can be unspecified and not commensurate and the exchanges can be indirect, between circuits of parties who see themselves as roughly equivalent and in long term relationships of mutual obligation and trust. But where resources are fast depleting and tensions rising, sometimes a redistributive system develops.

Polanyi points out that these four forms of exchange do not just denote personal interrelations, but their different patterns of social integration are 'conditioned by the presence of definite institutional arrangements, such as symmetrical organisations, central points and market systems' (Polanyi, 1957: 251). In universities, and as seen in the example of Basque farming above, these forms of exchange and their associated patterns of integration may be found side by side (Polanyi, 1957: 205). These ideas provide a way of analysing the co-existing circuits of exchange within a university and their interwoven patterns of individual and organisational integration. Universities rely heavily on reciprocities and redistributions as well as markets, but in order to manage the balance between these circuits of exchange, they have to be distinguished. In particular the fundamental difference needs to be clear between reciprocity and redistribution on the one hand and markets on the other, as, although they all redistribute resources, they do so in very different ways and they relate to quite different modes of organisational integration.

Using the analogy of the Basque farmers, for a university to sustain its core values, it would need to maintain its subsistence through a mixed economy with multiple circuits of exchange. To achieve an optimal balance, there would be a small level of activity devoted to rivalrous and excludable research, such as commissioned research or research resulting in patents, but this should be tightly limited as a 'port of trade'; it would be used to support the university's other activities and not allowed to dominate. Slightly more activity would be devoted to excludable and non-rivalrous club goods, such as writing and editing articles in subscription journals. The income from these two categories of work should go towards sustaining the production of common goods, like open access to research, which is important but unfunded, and public goods like contributions to media discussions and public talks, which do not yield sufficient income to cover costs. The overall priority would be to maintain the organisation's subsistence and sustain its core values. Instead, universities' circuits of exchange have gone out of balance, and, private goods are predominating and drawing on the resources of the other activities to maintain their greedy growth.

The important distinction here is not between private and public but between a market-based and a sustainable valuation of the work of universities. As Cantini (2017) shows, differences between ostensibly public versus private institutions

cannot be used to make normative judgements about their values and roles in society. In some countries public universities and their state funding have been captured by elites, while some privately funded universities are fulfilling a public purpose by locating and investing in poorer neighbourhoods and providing education for upward social mobility. Rather, it is a question of whether private, excludable, rivalrous goods are allowed to play a dominant and destructive role in the overall political economy of a university and in the field of higher education through separation from their social context, or whether an optimal balance is achieved between the four circuits of exchange. Achieving such a balance, means holding in check the logic of the formal economy, in which the focus is on commodities, comp through etition, markets and price, and all other factors are treated as 'externalities' that either provide unacknowledged support for the expansion of the market sector, or are 'noise' factors that get in the way. The designation of the Anthropocene, or more accurately, the Capitalocene, highlights the dangerous consequences of the 20th century's externalisation of the environment. If the focus is turned towards the institutions that have been reshaped by the Capitalocene, like universities, the most dangerous move has been turning the public good into an externality. As Jiménez (2006, p. 7) phrases it: the definition of a public good as an externality is 'a residual precipitate of a market transaction' and 'this model works by stabilizing "market" and "society" as distinct arenas of interaction: externalities move from one to the other, hence their separation'. When the language of neoclassical economic capitalism is used to describe the university, it externalises all other relationships and values. More than this, it is used to invade and reorganise the social life of the university in its own 'economic' image. This tries to turn academia into 'fictitious commodities' that can only be transacted on a market by destroying their social and ecological fabric. It repurposes the institution as a driver of a global knowledge economy with the danger that it channels and limits the activities of academics and the aspirations of students. This implicates the university in driving a system that it is responsible for critiquing.

OIKOS AS ECOLOGY

If the university is to have a relationship of responsibility and care towards humanity and the planet, it has to be the 'critic and conscience' of society, rather than the driver of a particular market-driven model of the formal economy. This requires a different way of thinking about the 'scene' or world that universities could inhabit and the relationships that would bring it about. Polanyi (1944) provided an image of such a world when he pointed to the meaning of *oikos* as a 'substantive' or embedded economy. Using examples from anthropology, he showed that household and social relations, kinship, politics and religion all have economic dimensions: the 'economic' is entangled with all other aspects of living. This links Polanyi's idea of the substantive economy to *oikos* as the root of 'ecology'. Tsing argues similarly, that

whereas the formal economy isolates people and things as resources for investment and exchange, and imbues them 'with alienation, that is, the ability to stand alone, as if the entanglements of living did not matter' (Tsing, 2015a, p. 5), in an ecological approach people conceive of themselves and their institution as actively entangled in worlds made up of interdependencies. This raises the question, what would be the implications of thinking about the university as situated in an ecology, rather than an economy?

As explained above, universities now find themselves in a much more complex world. The idea of the ivory tower was always fictional and universities, especially since the Second World War, have had excludable and rivalrous relations with certain industries that they negotiated through the language of the market. But now the university has to relate to a world made up of many different 'species' of actors, many inspired by economic rationales, price and competition, but others pursuing cultural, democratic and social values. Within the university, relations are not just based on economic considerations and research is not produced by competition and incentives: ideas often emerge through serendipitous conversations and are always refined through debate with academic friends and spread through illicit pdfs of publications as much as through conferences and journals. Teaching encounters, inspiring supervisions and corridor conversations as well as staff meetings spark developments in disciplines and new ideas for teaching. There is a whole social infrastructure of friendships, rivalries, admiration, respect and disagreement behind the generation and dissemination of academic ideas. In Polanyi's terms, this economy of ideas is an 'instituted process' that is tied into many relationships, social institutions and interactions, not only between university people but connected to many different institutions in the higher education field, like editors, rankers, industrial researchers, local authorities, and associations in civil society and local communities. To focus on only the features that 'count' as world class, entrepreneurial, profitable or competitive in a knowledge economy is to externalise, deny, and worse, ruin, the complexity of entanglements and interdependencies that make up a university ecology.

Tsing (2015a) has explored the ruins produced by capitalism's formal economies where only one stand-alone asset mattered, all else was weeds or waste, and where, when exhausted, the disturbed landscape was abandoned. She shows that in such externalised spaces, through an unpredictable interplay of many kinds of beings, which she calls 'interspecies entanglements', a new 'interactive ecology' can emerge in which it is sometimes possible for people to remake 'liveable landscapes'. In her case, she is concerned with the failed industrial forestry policies. For example, after clear cutting the original forests on the U.S. west coast, pine forests were planted amidst the stumps and disturbance, but soon afterwards the market collapsed and the pine forests remained, unharvested. This is one of the ruined spaces of the formal economy; the kind of disturbed and no longer profitable terrain that the Anthropocene externalises and does not recognise. Refugees from the U.S. wars in Laos and Cambodia arrived on the west coast at a time when the state had ceased to invest in immigrants' social and economic integration, and they found in the pine

forests a setting where they could recreate a familiar cultural landscape. There, they also found the matsutake mushroom, which only grows in disturbed pine forests. This mushroom is prized in Japan, where it is the highly prestigious gift used to make social relationships, like a present to in-laws over a marriage, or to seal economic deals or heal a rift. But in Japan it had become a rarity. Tsing traces the chain of complex relationships and mutualisms by which the mushrooms collected by forest forages are sold locally to collectors, who sell to exporters who send them to distributors in Japan, who 'place' the mushrooms with well-established clients, so that they end up as prestigious gifts. In their journey, it is only for the brief time it takes to export the mushrooms that are they part of a formal economy, torn from their social context, turned into inventory and transacted as alienated commodities based on price-setting in markets. For the most part, they are embedded with social value in particular life worlds and only need one aspect of commensurality to pass from one social context to another. The result is a supply chain linking varied spaces, but in each the economic value of the mushroom is embedded in other institutions (e.g. community building among refugees and gift giving among Japanese deal makers) so that capitalism extracts value without disturbing the lifeworld. Tsing focuses in particular on how the forest foragers have become part of a 'liveable landscape'. They inhabit the spaces disturbed and ruined by the formal economics of the Anthropocene/Capitalocene; they find ways to circumvent the restrictions on forest use; and recognise that mushrooms, pines, refugees, buyers and forest rangers are all interwoven and transforming each other in what Tsing calls 'necessary mutualisms'. She describes how, in these ever-shifting, unstable mutual relations, each organism disturbs and remakes the worlds around them, shaping the evolution of other organisms to try and make them advantageous for themselves. Sometimes these relations are brutal, hierarchical and predatory; at other times they are synergistic and mutually productive. In this process of continuously coordinating with others, mutualisms are rarely planned and symbiosis occurs 'when unexpected historical conjunctions fall into new coordinations' (Tsing, 2015b, p. 4).

A UNIVERSITY ECOLOGY AND LIVEABLE LANDSCAPE

Universities, especially where they are being 'unbundled', can be the 'forest' or source of several supply chains for capitalist extraction by the multiple interests, described above, who now surround the university. It takes systematic and comprehensive ethnography and a very self-critical, reflexive approach on the part of all the people involved – managers, academics, students – for them to understand the ways in which they are implicated in each other's welfare through their participation in different circuits of exchange and patterns of organisational integration in the university. How are managers, academics and students already contributing to a formal and alienating 'economy'? And, on the contrary how they can develop and sustain a university 'ecology' with a liveable landscape? Levin and Greenwood (2016) have shown how current authoritarian, hierarchical and NeoTaylorist ways

of organizing the university are unable to achieve such a change: instead, they see matrix organizations, learning communities and socio-technical systems design, with the participants in the driver's seat and leaders as their coordinators and servants, as the only way forward.

While there is widespread literature referring to the marketization, privatisation and consumerisation of higher education, ethnographic studies are still rare that track in detail the ways universities' activities are the source of capitalist value extraction. In England, Komljenovic (2016) and Komljenovic and Robertson (2016) have traced the multiple ways that a university's administration was interacting with, and contracting functions to, for-profit providers. Wright (2016) has shown how vice chancellors can turn a university into an umbrella or carapace, which enables them to maintain they are working for a public purpose and keep their tax-beneficial charitable status, but under which they not only unbundle higher education into different enterprises and profit streams, but propose a business model of creating what one vice chancellor calls a 'family' of enterprises including further education colleges, Academy schools, technical professional and adult education (Phoenix, 2017). A similar example in the U.S. involves Indiana's major public land-grant university, Purdue University. It has tried to jump into on-line education by purchasing for-profit Kaplan University, and in the process has tied itself into a long term contract to support this huge operation from the failing for-profit sector (Seltzer, 2017). Newfield's (2016) detailed study shows the 'great mistake' over the way public universities in the U.S. have been funded and operated. Fridell (2017) traces similar changes in the political economy of higher education in Canada and drills down to how management consultants, private equity firms and software companies have developed strategies to reduce scholarly costs and turn 'discretionary budgets' into revenue streams for themselves. Some of these studies have derived from reflexive analysis as part of activism in Senate, through an academic union or through an education programme, and they all provide members of the academic community with the information and analytical tools to understand how their universities are being turned into formal economies.

Other studies have begun exploring the possibilities of disrupting alienating supply chains in universities, finding ways of creating liveable landscapes in the spaces ruined and externalised by formal economic calculus by circumventing or sequestering restrictive or dangerous powers, and seeking new, if unpredictable, mutualisms. Three examples will be outlined here. The first way to create the university as a liveable landscape is exemplified by Hansen's (2017) study of the strategies of Danish 'project barons', university professors who are so successful at raising external funding that they run their own research centres, become highly influential in their own institutions and often contribute to shaping national research policy. One plant scientist used metaphors of multispecies symbiosis to explain how he created a liveable landscape for his own centre. He studies plant-insect relationships, and in particular one plant whose leaves make cyanide to poison predators. However, the larvae of the six-spotted burnet moth feed on these

plants and they circumvent the plant's defence system by sequestering the poison in their own bodies to protect themselves against predators. The larvae activate a positive response in the plants, so that rather than being a predatory relationship with a parasite logic, this becomes a successful symbiosis. Yet, the scientist points out, like Tsing, that there is no telling what a given species may be capable of, as its capabilities evolve in complex relationships with other species. Hansen saw a parallel between what the scientist had learnt from plant-insect relationships and how he engaged in governance-researcher relationships. Hansen showed that government research policy employed a parasite logic, imagining a unidirectional flow from university knowledge producers to industry innovators. Learning from the plant scientist, this way of extracting without giving weakens the exploited party. University leaders also imagined themselves as steering the university from the top, with their strategies 'trickling down' to shape researchers' actions. Instead, project barons also clearly had power as they are the active researchers with huge networks, big grants, and full professorships, and 'leaders can't move without them'. Hansen then gives an example of how the project baron acted in a toxic policy environment. At one point, the government required all grant applicants to have an industry partner, so the project baron split his lab into a spin-off company. He made an application based on a collaboration between the lab and the company and won the grant. The relationship developed, unexpectedly, into a symbiosis, as they found that the spin off company removed the toxin of repetitive procedures from the lab, and this freed the lab to be more experimental, and more competitive for grants. Using metaphors from plan science, this is a good example of finding spaces and ways to work within the university's new ecology to create a liveable landscape by circumventing restrictions, sequestering toxic powers and turning them to advantage by creating serendipitous synergies. This example does however also have a predatory aspect, as these fairly autonomous project barons draw on resources that sustain the broader basis of the university's activities, so that as Hansen points out, members of the lab were celebrating the lab's new grant whilst people from mainstream departments were learning whether they were hit by the university's latest firing round.

A second, more ambitious attempt to entangle universities in liveable landscapes involves engaging in system disturbance and contesting the very basis of a university as an institution of the Capitalcene. Examples of system disturbance are the manifestos and protest movements trying to assert the critical and public purpose of the university. Throughout 2016, Aberdeen University held a series of meetings and seminars to rebuild community, establish trust and reclaim freedom. They produced a manifesto, 'Reclaiming Our University', which has been widely distributed (Reclaiming Our University, 2016). A similar Auckland Declaration arose from the UNIKE project, an EU-funded project to train 14 PhD and Post Docs as future research leaders who not only gained expert knowledge in how universities were being reformed in Europe and the Asia-Pacific Rim, but developed the reflexive abilities to use this knowledge to shape research and higher education institutions. The Declaration elaborated six principles that should underpin the

organisation of a public university. These are: Public Good, Social Responsibility, Academic Freedom, Educational Autonomy, University Independence and Humane Workplace. These principles have been accepted at meetings of the Bologna Process, the Council of Europe and Education International and form a coherent basis for developing a university ecology with values and ways of organising internally that enables it to act as a progressive force in society.

A third example of a way to create a liveable landscape is by trying to build a new university based on the Auckland declaration principles. Another outcome of the UNIKE project was the creation of an international group of 37 scholar-activists all concerned to build universities based on mutuality. Using the experience of the very successful and well-established Mondragón university in Spain (Wright, Greenwood, & Boden, 2011), a process of designing a cooperative university in England is underway (Winn & Neary, 2017). Greenwood, Wright and Boden have been working on the design of a 'Trust University' in three senses of that word. First, is the idea of trust as a legal instrument of ownership. The aim is to make it impossible to realise, let alone privatise, the assets of the university by putting their ownership into a non-revocable trust. This is modelled on the experience of the very successful department store, the John Lewis Partnership, whose owner in 1929 separated the legal ownership from beneficial ownership. All employees (our case would include staff and students) are beneficial owners with rights to influence the direction of the business and the distribution of profits, but they cannot sell the business (or in our case the university) and deny its benefits to future generations. To avoid the moral hazard of managers extracting high rent and even (as increasingly in public universities) coming to speak *as* the organisation and even thinking of the institution as 'theirs', the John Lewis Partnership also has strictly fixed salary differentials between managers and rest of the partners. The second meaning of 'trust' is to create a High Trust Organisation based on mutually respectful relations between managers, academics, support workers and students. Greenwood draws on his experience of Scandinavian technical systems design and participatory organisation to develop the principles, values and methods of decision making. The third meaning of trust refers to creating a new social compact to achieve trust between university and surrounding society. Regular use of tried and tested technologies, such as search conferences, involving the university's beneficial owners in dialogue with different categories of people from 'surrounding society' are proposed to identify circuits of exchange and, referring back to the Basque analogy, the work to be done to develop future activities that keep them in optimal balance (Wright & Greenwood, 2017).

CONCLUSION

If universities are not to contribute to the economic and political processes that have brought about the Capitalocene and that are vividly depicted in the markers of nuclear fall-out, plastic waste and industrial agriculture chosen to demarcate the Anthropocene, then a renewal of the public purpose of the university is needed. At the moment,

universities are being increasing organised according to the logic of what Polanyi called the formal economy, with their hallmark interlaced activities of research, teaching, public engagement and service unbundled into separate strands of capitalist value extraction. The logic of for-profit activity then dominates and is imposed on all other activities. This attempt to mirror market-thinking inside the university is used to decide what 'counts' and what is accorded value – even if in fact universities are very poor at organising themselves on market principles (Ciancanelli, 2008). The result is a narrowing of the purpose of the public university to providing the raw materials for a competitive knowledge economy. This is the way that institutions get implicated in the Capitalocene, focusing on notions of the market and externalising the social and the public.

Rather than thinking of the university as a driver of a 'knowledge economy', using Polanyi's terms, the economy needs re-embedding in the social, political and cultural institutions of which, in an ecological approach, it is a part. If a university is conceptualised as located in a 'liveable landscape', this involves rethinking its relationships in a 'world' of multiple organisations with myriad interests in and demands on the university. If these relationships are thought of as interdependencies and entanglements between companion species, rather than contracts with abstracted balance sheets of benefit and cost, then substantive valuations of these relationships would be based on notions of responsibility, or as Haraway (1991) terms it, 'thinking with care'. This is not a 'longing for a smooth harmonious world'; it involves reflexive analysis 'to acknowledge our own involvements in perpetuating dominant values, rather than retreating into the secure position of an enlightened outsider who knows better' (Puig de la Bellacasa, 2012, pp. 199, 197). It involves leading 'an examined life' and troubling questions about how to act in companion-species webs with complexity, care, and the unsettling obligation of curiosity in order to sustain interdependent worlds (Haraway, 2008, p. 36). Instead of taking post 1945 chicken bones as a fossil marker of the Anthropocene, Haraway refers to the millennia of chicken-human co-existence and treats chickens as a vastly experienced companion species: 'laying hens know more about the alliances it will take to survive and flourish in multispecies, multicultural, multiordered associations than do all the secondary Bushes in Florida and Washington. Follow the chicken and find the world' (Haraway, 2008, p. 274). Such an admonition does not offer a single direction ahead; it involves, as Tsing puts it, finding means for collaborative survival in precarious times without the 'handrails' of the familiar stories of modernization and progress (Tsing, 2015, p. 2).

How then does the university negotiate its relations with the diverse organisations and interests that surround it to turn a 'knowledge economy' into what Tsing calls a liveable landscape? In an ecology conceptualised as an open system with intense interaction between an 'external' environment and the university's 'inner life', how do the members of a university work to achieve and vigilantly maintain a balance between the different circuits of exchange? And how do the staff and students organise themselves to achieve this in what is likely to be a tough and heavily contested process? One starting point is to imagine the principles on which such a

liveable landscape would be based. I have drawn on analogies from Basque farming to imagine a sustainable system with balanced circuits of exchange. I have referred to the Auckland Declaration which puts forward an explicit set of principles for discussion, and the work in designing those principles into the organisation of a cooperative or trust university. A second answer is to develop tactics for practical action, aimed at creating new mutualisms. Here analogies were drawn from the mushroom foragers in the U.S. west coast, but as always in such complex ecological relations between fungus, trees, refugees, marketers, and forest rangers, it is not predictable whether successful synergies will result. The project baron drew his own analogies from plant science to explain how he used tactics of circumvention and sequestering to operate in a toxic funding and governance environment. He found spaces and ways to work through new forms of collaboration to create serendipitous synergies and turn the environment to his advantage – although others in the university lost out. The third answer is for academics to educate ourselves and our students to be critically reflexive about the space we are in and how to act. Newfield and Fridell are examples of researchers who have used their positions within universities to analyse current trends undermining the public university and identify ways to act to create alternatives – sometimes with success. How should we, and our institution, act in a Capitalocene – should we continue to be implicated in the reproduction of the Capitalocene/Anthropocene or do we re-think the space that universities are in as an ecology and seek out ways to act with responsibility and care within the university and in interactions with society, in the hope of generating some mutually beneficial synergies and with the ambition of creating a liveable landscape?

ACKNOWLEDGEMENTS

This paper arises from work conducted for the UNIKE project (Universities in the Knowledge Economy) an EU PEOPLE Marie Curie ITN project from 2013 to 2017, project number 317452. Ideas about the dangers of treating the university as a formal economy were developed with Davydd Greenwood and Rebecca Boden and first presented at a conference to develop a blueprint for a ‘Trust University’, held at DPU, Copenhagen, in June 2011. I thank Davydd Greenwood and Jakob Williams Ørberg for their generous collegial encouragement and for the critical comments and creative suggestions that have helped me to write this paper.

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