## Chapter 1

# The Sustainable Development Goals, knowledge production and the global struggle over values

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Since the knowledge produced and reproduced by universities matters more than ever, it should not be surprising that politicians are increasingly debating how to prioritise and make the best use of knowledge, as well as how to guide, evaluate and control the work of professionals and academics. It may seem paradoxical that some of the world's most highly educated experts are increasingly subject to high levels of monitoring and control, while their work is considered worthy of less and less respect, particularly by politicians.[1]

In fact, this is not a paradox at all. It is a sign of how much power and knowledge depend on, and yet are also in opposition to, one another in our modern age.

The 'power of knowledge' matters today in ways humans have probably never experienced before, and control, over both the content and holders of knowledge is crucial to those who aim to influence social development. The power inherent in the control of knowledge is particularly clear as we confront the global environmental crisis, and attempt to create a global discourse about how to understand and respond to it.

In the Western world, over the past century or so, neither academics, nor the professionals they have trained, have adjusted well to the power they hold and the ethical questions it raises. Rather, a range of unhealthy adjustments have undermined the ethical responsibility that academics and professionals are expected to take for the types of knowledge they pursue, how their data is used, and the wider consequences of these actions. Here, I am referring not only to engineers or the arms industry but to every single discipline and profession. The positivist notion that knowledge is 'technical' and 'objective', and therefore neutral and 'true', seems to have shielded academics and professionals from seeing and taking responsibility for effects of our actions.

Rather than perpetuating this situation, it is necessary to renew and

rebuild trust in the ability of the academic profession to *mediate knowledge in ways that presuppose democratic interaction*. Academics and professionals still have the power to influence how the global challenges facing our planet are defined, understood and addressed. We must therefore be much more explicit about the potential influence of our research, and much clearer about taking responsibility for this.

Everyone involved in knowledge production and research has some crucial questions to answer. Why are we developing the knowledge we are developing, and for whom? What consequences might this have? Who might use this knowledge, and what do we know about their intentions and ethical standards? How do we prevent the misuse of knowledge and make provision for any unforeseen harmful consequences? While a number of ethical standards already exist (and are overseen by research ethics committees as well as organisations such as UNESCO, the EU, etc.), these have proven insufficient given the critical turning point that the world has reached.

In this regard, the United Nations Development Programme, and its Research Institute for Social Development (UNRISD) identified six megatrends (UNDP and UNRISD: 2017; UNRISD 2016): poverty and inequality, demography, environmental degradation and climate change, shocks and crises, development co-operation and financing, and technical innovation. Others, such as the G7 or the OECD, might focus on a different set of trends, but global debate around these issues led to the formulation of the 17 Sustainable Development Goals (SDGs). Through this, a common discourse with immense legitimacy seems to have been established, albeit one that is also having something of a standardising effect, as discussed later in this chapter.

Taken singly, all of the SDGs are crucial; together they starkly define our situation at a global level. As argued in the Introduction, the 17 SDGs (and their associated 'indicators' or sub-goals) represent a *new kind of global authority* – a new discourse that legitimises political action that supports social and environmental sustainability. Based on this authority, academics must take a new level of responsibility for developing a shared lexicon and deeper insights, and for highlighting what is left out (or left behind) as goals, norms and standards are institutionalised, thereby legitimising and favouring particular discourses over others.

## Re-embedding economic development

Through the adoption of the SDGs, most of the world's governments ostensibly committed themselves to developing their economies in ways that put social and environmental values first. This runs contrary to the so-called

*financialisation* of the global economy, which has seen economies becoming increasingly dependent on international finance and disengaged from local social and political agendas. That is, governments have agreed to shift back towards re-embedding social, economic and technological development within society and nature in ways that acknowledge that human survival relies on nature being able to flourish, and even to have 'veto powers'. That is, *if implemented, the SDGs will reframe the purpose of economic development as both social and environmental*; this will entail transforming the resource and energy base of many of the world's economies and putting an end to forms of development that threaten biodiversity.[2] Thus, although the SDGs do not explicitly refer to the Anthropocene (the view that the earth has moved into a new geological period), they are based on an understanding that humanity and the planet have reached a turning point. This demands new kinds of knowledge, new ways of legitimising knowledge, and new behaviours from those who produce and use knowledge.

When debates about the SDGs began, those leading the process proposed that they be both shaped and implemented in a context of close co-operation between researchers and policy-makers. In the foreword to the 2015 *Global Sustainable Development Report*, Wu Hongbo, United Nations Under-Secretary-General in the Department of Economic and Social Affairs noted that 'the scientific community has provided valuable guidelines in the formulation of the SDGs, and it will need to remain closely engaged as the world moves towards implementing the new agenda and reviewing our progress.' He added that 'more than 500 independent scientists and experts from many UN entities and affiliated organizations located in all regions of the globe have contributed to the report' (UN 2015: i; see also ICSU and ISSC 2015). Many universities and research institutions are taking this seriously and are already contributing in many ways;[3] hopefully, professional associations, especially those working at post-national level, will quickly follow suit. The ethical challenge is to find a way out of the contemporary growth paradigm, which creates wealth for a few at great cost to nature and the poor while insisting that wealth will eventually trickle down to everyone if we all seek economic growth. Despite much evidence that shows this to be false, a blind faith in the relationship between free trade and widespread prosperity continues to be proclaimed. Reducing inequality is an important aspect of the SDGs, particularly SDG 10 (reduced inequalities) but, so far, little has been said about the consequences this must have for those who are benefitting from the global economic system while keeping others poor and doing so much to destroy the biosphere.

## The sad history of leaving too many behind

This turning point in history must also make us ask how knowledge has contributed to our situation. If knowledge has been a driving force in creating a world that is no longer viable, should we then place our hope for a better future in the hands of the very same knowledge producers and professionals? My suggestion is that *ethics*, based on a democratic polity and processes of popular participation, should guide the knowledge that is produced for the interpretation and implementation of the SDGs.

For example, the *basic* social commitment made in the SDGs: 'leave no one behind' – essentially the notion that everyone has the right to a decent life – was, until recently, ridiculed by science. In his book, *Race, Eugenics and American Economics in the Progressive Era*, Thomas Leonard (2016) describes how, in the last decades of the nineteenth century, economists who dominated both the academic institutions and offices of public administration in the United States, used the so-called science of eugenics to justify white male supremacy. The consequences of this are all too evident today in the behaviour of Donald Trump and his supporters. The ethical conviction behind the work of these economists and policy-makers, then as now, was 'America first'.

In the 1930s and early 1940s, eugenics was brutally applied in Germany with help of all kinds of professionals. We all know the story. Less widely known is what became of many of those who put their skills and knowledge as lawyers, doctors, natural scientists, engineers and civil servants to work so as to more efficiently murder people with disabilities, the so-called ethnically 'unclean', refugees, etc. Kjartan Fløgstad (2016), in his book '*Etter i saumane: Kultur og politikk i arbeideklassens hundreår*' (part 2 on 'Science' in particular), shows that, after the war, many of these same professionals were employed within Germany's public sector, the media and other institutions. Fløgstad shows how these academics and professionals not only made the Nazi system work, and never took responsibility for their actions, but also created a kind of continuity between the Nazi regime and the Adenauer era. Effectively, until very recently, they blocked studies that exposed how intertwined knowledge and politics had been in the Nazi period.

Following Fløgstad's lead, other contemporary historians such as Konrad Jarausch are researching the lives of academics who were active in the Nazi era. According to Jarausch (1990), more lawyers who supported National Socialism were employed within West Germany's public sector in 1952 than during the Nazi era. Jarausch's study of the Nazi regime reveals that the majority of Germany's doctors and lawyers supported National Socialism – doctors more out of scientific conviction (believing in the 'truth' of Hitler's views on race), and lawyers due to a lack of ethical awareness. After 1945, some even secured

academic careers based on work they had done during the war. One example is that of ornithologist Obersturmführer Günther Niethammer, whose PhD about birdlife in Auschwitz in 1941 marked the start of an illustrious career in science. From 1968 to 1973, Niethammer chaired Germany's ornithological society, and when he died, he was celebrated as a distinguished and reputable scientist, a man of 'truth' (see Fløgstad for details).

A similar situation occurred in South Africa, where lawyers, social scientists and biblical scholars, in particular, formed an alliance with the ruling party. Together they reinforced the foundations of colonialism and created the ideology of apartheid, which legalised and justified racial repression and exploitation on biblical grounds for over forty years. In the culmination of a long struggle, dating back to the start of the colonial period, apartheid rule was overthrown in a largely peaceful political revolution that occurred between 1991 and 1994. However, cultural and economic transformation has yet to follow. As this unfolds, the ways in which academics and professionals in all fields used their knowledge and skills to help policy-makers and public officials to entrench and uphold apartheid at every level will have to be unveiled.

## Learning to value knowledge again

What these examples show is that human rights is an ideal that professionals and academics have too often sacrificed to serve their own ethnic or national interests. In the First World War, Europe's democratic regimes, with the help of a *professional* military elite, in alliance with a range of other professionals forced their working populations into the trenches, creating a vast killing field. When the International Association of Universities (IAU) was created after the Second World War in 1948, its aim was to secure a stronger ethical voice among the academic community and broaden scholars' commitment to universal values. Their aim was to prevent anything similar to the development of the gas chambers and the atomic bomb from happening again. After this, a belief in knowledge gradually emerged that had seldom been seen before (Halvorsen 2012b). Indeed, the idea that no one should be left behind, is one that some say the human rights movement deserves credit for, in that it reflects the crucial and *positive* contributions since made by the legal profession.

Today, notwithstanding the rise of the new right, the real challenge facing the world is a global economy that promises prosperity for all, while, in fact, destabilising the earth's heat balance, causing mass extinctions and leaving more and more people vulnerable to poverty. For decades, Talcott Parsons, one of the United States' leading sociologists, suggested that the inclusion of academics into economic organisations would create a morally conscious capitalism that would be marked by values other than utility maximisation

(Halvorsen 1992). Gradually, the knowledge society emerged, and Jürgen Habermas (inspired by Parsons)[4] could criticise Marx's base and superstructure theory by showing that the professions cultivated in the universities (part of superstructure) brought ethics and moral commitment into the world of work, technology and market calculations.

In the 1970s, Daniel Bell (1973/1999) took these views further in his writing on knowledge societies and knowledge economies. Also from the 1970s, increasing numbers of professionals began to be employed in the public sector in many parts of the world, and ideas developed about how bureaucrats could make decisions not only by following legislation and rules but also by using their knowledge and initiative. Slowly, public servants came to a deeper understanding and awareness of the consequences of their actions, thus opening up the public sector to using knowledge for purposes other than law enforcement through bureaucratic means.

Thus, by the beginning of the 1980s, when neo-liberalism started to change everything, academics and professionals were widely trusted. They were expected to be able to transform the 'iron cage' of capitalist bureaucracy into regulated and well-intentioned houses of reason, in which the weak and vulnerable would be listened to, not left behind. As many Northern countries shifted towards welfare-state rights and a public service that had to treat everyone equally, it is probably fair to say that most citizens in higher-income countries, and the elites in lower-income countries, could be reasonably secure that their basic rights were protected.

## Learning to question knowledge

As Fløgstad revealed, between about 1880 and the mid-1940s, few academics or professionals in the West seem to have reflected on the role of knowledge or questioned the interests of those who put it to use. The West's post-war apparent success story of growing numbers of jobs for an increasingly highly educated and prosperous workforce left little room for questions about who or what knowledge should be for, or about how professions were being shaped to serve the perceived needs of clients in the capitalist nations. It is impossible to know what alternatives were lost along the way, and how these might have created a world that would have been more aware of and responsive to wider social and environmental issues. What is clear is that the research and knowledge that was supported simultaneously led to a myriad of other avenues of research and knowledge being closed off.

In hindsight, and given the values implicit in the SDGs, it is difficult to identify even one of the 17 goals where the pursuit of alternative avenues of knowledge would not have been more beneficial. In our own era, as historians

Christophe Bonneuil and Jean-Baptiste Fressoz show in *The Shock of the Anthropocene* (2015), crucial knowledge choices have been made that have massive consequences for the present and the future. These choices have led to the situation in which it is possible and even acceptable to some that the wealthiest 1 per cent of the world's population annually consume (or waste) one-and-a-half times what the planet is able to annually produce in a sustainable way. This consumption requires and sustains the building of dams at massive environmental cost, the emission of excessive amounts of greenhouse gas, the overfishing and acidification of the ocean, mono-cropping that depletes the soil and leads to the mass extinction of plants and animals, the building and operating of heavy industry that heats and poisons the atmosphere, and the generation of massive amounts of plastic and other waste that is contaminating our rivers and water supplies. Collectively, humanity is responsible for creating a global economic system that has forever changed the earth. The Anthropocene period can be seen as having begun with industrialisation and modernity. As Bonneuil and Fressoz (2015) point out, since it began, there have been warnings of its shortcomings, risks and dangers.

Through uncontrolled development, humans have initiated changes to the biosphere on a global scale and unleashed consequences that are far beyond human influence. To stand any chance of survival, Bonneuil and Fressoz argue that humanity has to change; and to do this, we need to know more about our own history. We need to see that alternative knowledge exists and understand why it has been suppressed, despite (or perhaps because of) having identified the potentially destructive consequences of industrialisation and modernity, and despite being more trusted by knowledge 'of the life world' to use a Habermasian expression.

> We have passed the exit gate from the Holocene. We have reached a threshold. Realization of this must revolutionize the views of the world that became dominant with the rise of industrial capitalism based on fossil fuel. What historical narratives can we offer of the last quarter of a millennium, able to help us change our worldviews and inhabit the Anthropocene more lucidly, respectfully and equitably? (Bonneuil and Fressoz 2015: xiii)

## Relearning social values

What we need now is a focus on the actors, institutions, knowledge and decisions that have produced the 'global challenges' we face. Instead, what is often foregrounded is an ahistorical notion of science's 'discovery' of global warming and climate change. This means we risk replacing one set of (old

modernist) experts with a new set, who see improved governance (based on Western ideals, obviously) and new technologies (including their production, marketing and sale, meaning 'economic growth') as the *only* possible solution.

While it is important to be wary of parallels that may not be valid, it is important to prevent a recurrence of what happened after the Second World War, when fascist academics simply slipped into new positions and continued to build careers without anyone questioning how the ethical positions and convictions they had held before continued to influence their work.

Western values and systems of knowledge production, reproduction and exploitation appear to be beyond debate despite overwhelming evidence from the United Nations' own global research on their environmental consequences. Instead of a concerted search for a new paradigm, the impression often created is that all that is required is improved governance, based on the extension of Western hegemony regarding knowledge and knowledge production. All too often, scientists (even natural scientists) present themselves as being at the vanguard of geo-engineering and high-tech solutions.[5]

Of utmost importance for our future is that the engineering profession becomes more engaged, vocal and independent. What we don't need is engineers at the vanguard of a new technocracy. Instead, as history shows, the strengthening of democracy is more likely to deliver the kinds of knowledge relevant to the broadest spread of the population, rather than just the elite and the 1 per cent.

Democracy should entail governance by the many, including the oppressed, and promote the basic value of equality. This means it has the potential to be a voice for the many who see nature not as a resource to be exploited, but rather an environment to inhabit. It is worth highlighting that one of the liveliest debates in contemporary Europe is about whether capitalism and democracy are different and (under neo-liberalism) contradictory value systems; of course, this question is central to debates on sustainability. As Merkel (2014:109) explains:

> Capitalism and democracy follow different logics: unequally distributed property rights on the one hand, equal civic and political rights on the other; profit-oriented trade within capitalism in contrast to the search for the common good within democracy; debate, compromise and majority decision-making within democratic politics versus hierarchical decision-making by managers and capital owner. Capitalism is not democratic, democracy not capitalist.

For example, in relation to SDG 10, it is only fair to ask why social and political scientists have not done more to challenge the economic theories

that have done so much to foster inequality, concentrate wealth in the hands of so few, and entrenched the hegemony of the global economic powers.

In a book that focuses on the history of the economics profession in the United States, Britain and France from the late nineteenth century, Marion Fourcade (2009) shows how alternative economic thinking has at times brutally been suppressed in favour of the kinds of economic reasoning that has led to the financialisation mentioned earlier. Writing about the contemporary era, Philip Mirowski shows how neo-liberalism evolved and even strengthened after the 2008 financial crises. He points out that the economics profession has been shaped by a view that conflates the market with 'nature', seeing it as a force that 'will never be adequately comprehended by human science'.[6] He argues that

> for neoliberals, humans can never be trusted to know whether the biosphere is in crisis or not, because both nature and society are dauntingly complex and evolving; therefore, the neoliberal solution is to enlist the strong state to allow the market to find its own way to the ultimate solution. (2013: 336)

For neo-liberal economists, the only way to solve the environmental crisis, if such a solution ever existed, is for the state to create secure markets in the environmental sector. The only really true science is economics, but of a particular kind (see also Evans and Musvipwa, this volume).

Instead of supporting an economic system capable of reproducing democracy, neo-liberalism reproduces power relations that, as 2016 Holberg Prize winner Jürgen Kocka (2016) observed, undermine democracy at all levels, particularly when democracy asks for alternatives to the knowledge that the market allows to develop.

When I want to be controversial, I often argue that London's financial district has a higher ratio of crooks per square metre than any other place on earth. The main role of its bankers and brokers is to find ways of placing money in tax havens, to speculate against 'bad papers', and avoid public oversight over large financial deals, including those that will inevitably create greenhouse gas emissions. In London, on Wall Street, or in any other financial centre, career progression is often linked to an ability to find loopholes in laws created to control 'market externalities' (a category neo-liberals have no use for). Do they really do this, in the conviction that they are merely allowing natural market forces to operate, and that this is the best and most ethical way for them to use their knowledge, skills and insights?

Universities that educate accountants, lawyers and economists seldom seem concerned about the destructive consequences of the 'free market' or the

'ethics' of their graduates. Ethics courses taught in universities seldom inform the practising of professions in ways that humanise or democratise capitalism – at least, not in the ways that Parsons, Habermas and Bell hoped they might. The age of enlightenment has little bearing on late modernity. These three highly revered social scientists got it all wrong, never anticipating the strength of neo-liberalism and the many think tanks that now spread its gospel.

**Responsible consumption and production**

This leads us to SDG 12 (responsible production and consumption). Without constantly expanding consumption, capitalism cannot survive. This was a worry for economists a hundred or so years ago. As human needs were satisfied by industrial production, what demands would remain to stimulate further growth? The answer, of course, is that not all needs are a given, many are socially constructed. Industrialists then sought help from psychologists who studied consumer behaviour and fed this knowledge to the advertising industry.

Psychologists and marketing professionals have, through advertising, played a huge role in cultivating many of the consumer behaviours we take for granted, especially in higher-income countries and regions. This behaviour, often expressed in terms of 'individual freedom' and 'freedom of choice', has created habits and personalities that have not only saved capitalism from stagnation, but created the basis for our present crises of both environment and identity. This is a highly under-discussed aspect of the much-debated book by the great German social philosopher, Axel Honneth about individual freedom, *Freedom's Right*. Honneth's major concern is how capitalism in its present form undermines constitutional democracies by making states instrumental in and subject to the global economy. Yet, on the other hand,

> Free market participation, self-aware democratic citizens and emancipated family members – all of whom correspond to ideals institutionalized in our society – mutually influence each other, because the properties of the one cannot be realized without those of the other two. (Honneth 2011: 330)

Although Honneth argues that, of these three institutions, democracy holds first position since it alone is primarily reflexive (that is, a realm in which knowledge developed within academia matters in the form of 'better arguments'), he does not discuss the role of knowledge in shaping 'unfree' citizens into consumers. Neither does he discuss the role of knowledge in constructing the notion of the free market as a 'force of nature' to which we have to adjust. Is democratic participation in the 'free-market' even possible? Only, it seems, in Honneth's world, if the market is re-embedded.[7] To this,

I would add, only if the academic professions commit themselves to such a project in alliance with the democratic forces Honneth refers to, and in ways that these forces can trust in knowledge as a force for change in line with the SDGs, and particularly with the achievement of SDG 1 (no poverty).

This construction of needs fulfilment as a way of realising success (and forming a view of the self as successful), is so integrated in contemporary culture in so many parts of the world, that the idea of responsible consumption (among the wealthy) is fiercely resisted by many as an attack on their freedom, culture and identity as individuals. It is difficult to see any alternatives emanating from psychologists or marketing professionals (except perhaps in Argentina where psychoanalysis is valued more highly than behaviourism).[8] In the developing world, the argument is, why should these long-suffering nations not 'catch up' with the rest; why deprive them of owning their own oil-refineries and petrol-driven cars or air-conditioners and coal-fired power stations? As long as economic growth and shareholder value remains the key priority, the same kind of development that has blighted and blinded the rich world must trickle down to the suffering masses of the poorer nations; or at least, that is, until the rich nations want to start talking about 'sharing the burden' created by the environmental crisis.

Human 'needs' – and the associated resources needed for their satisfaction – are of course very unequal in the world, as are the consequences for energy consumption and pollution. On average, US citizens consume many times more energy and resources and create many times more carbon emissions and other waste than Amazonian Indians for example (who consume next to nothing). And if everyone in the world were to consume the same amount of resources and energy as the average US citizen, all the psychological problems linked to consumerism would count for nothing compared with the speed of global destruction.

However, no mechanism exists to equal things out in a way that values or protects the lives of Amazonians or their environment. So, while real living alternatives to consumerist culture still exist, they tend to be portrayed either as fringe elements or as lost and vulnerable communities that need to be rescued and set on the path towards the kind of 'freedoms' enjoyed by high-end consumers. Such alternatives are seen as losing what Western culture perceives as humanity's 'battle with nature', and the need to 'free society from nature', as if humans are not part of nature too.

The question is, how do we secure a good-enough life for all, in which 'no one is left behind', while still opposing the blind consumerism that capitalist accumulation requires and presupposes? According to Bonneuil and Fressoz (2015), no evidence exists of the West revising its basic ethical framework,

and the alliance between behavioural psychologists and economists remains solid as they continue to seek ways of conquering nature for the sake of the 'free market'. As noted, in *The Shock of the Anthropocene*, Bonneuil and Fressos show that alternative voices have figured in history, but many alternative economic models were destroyed by imperialism that was, in turn, justified by science that kept itself 'above' popular knowledge.

> Economic growth and the social model of the Western industrial countries would have been impossible without this unequal exchange. Economists have recently shown that two–thirds of the growth of the Western industrial countries has been due simply to an increasing use of fossil fuel, with only one-third resulting from sociotechnical progress…The Great Acceleration thus corresponds to a capture by the Western industrial countries of the ecological surpluses of the Third World. (Bonneuil and Fressoz 2015: 249)

The other side of SDG 12 is responsible production. For this, we need to shift our focus onto the engineers, whose job is to innovate, and whose success is often measured by their ability to make production cheaper and more effective or create products that stimulate new consumption. SDG 9 (industry, innovation and infrastructure) also speaks directly to engineers.

Today, as in the early days of industrialisation, engineers are being touted as the creators of technological solutions to our biggest challenge: how to delink economic growth from unsustainable and polluting energy use. If this were possible, engineers would have an opportunity to stand out as the green profession par excellence, but are they willing to take this on? Engineers still seem to be playing an ideological role in the debate rather than putting forward any real and convincing solutions (Klein 2015). For example, global energy companies are applying pressure on governments to allow them to combine resources and begin mining the ocean floor to which the endless frontier of knowledge is now apparently obliged to contribute in order to secure further economic growth. Only the most sophisticated engineering knowledge can make mining in the deep-sea areas possible. Therefore, it is engineers who have to say no to the risks that this poses for the life in and of the ocean (see SDG 14: life under water). But will they, if strong economic actors see prospects for profit?

In the West, engineers have long been at the forefront of conquering nature, as if this was the real purpose of life. So far, the battle has been brutal and life threatening for most life forms on the planet. Financial capital sustains and promotes the most energy-consuming (and polluting) companies but without having to reflect on this because the abstraction known as 'shareholder value'

is what counts. Despite their growing enthusiasm for alternative energy technologies, very few engineers raise their voices to reflect on the role of *real economics*, that is the real costs of what is produced as opposed to financial economics, which is about the circulation of money and credit.

Numerous attempts have been made to develop alternative technologies in parallel with the invention of fuel engines,[9] suburban urban planning with the associated household energy and transport needs, Fordist factory technologies, the arms industry, oil pipelines, and so on. Few have survived the logic of more convenience = bigger markets = larger profits. As big oil now prepares to industrialise the ocean floor, very few voices are heard speaking about the ethics of the SDGs. The idea that any production must first of all support social values related to reducing inequality within and between nations, ensuring that all citizens have an equitable influence on decision-making, enhancing gender equality, reducing or at least not increasing pollution levels, mitigating the impact of climate change (see SDG 16's sub-goals), seem to be absent from the discussion.

As early as 1921, Torstein Veblen saw the struggle within the engineering profession as crucial for democracy (1921/2012). Foremost among those who have spoken out since, is Jack Ellul (1964). Hannah Arendt and Herbert Marcuse are among many who have promoted his admittedly pessimistic ideas. Ellul wrote: 'In the modern world, the most dangerous form of determinism is the technological phenomenon. It is not a question of getting rid of it, but, by an act of freedom, of transcending it. How is this to be done? I do not yet know' (1964: xxxiii). Fifty years later, we are no wiser.

Bell (1973/1999), Habermas (1981) and Parsons (in his writing on professions – see Halvorsen 1992) tended to see engineers as a reflection of the technologies they created, leaving little room for ethical or environmental awareness, much less the courage to stand against the destruction wrought by capitalism and imperialism. Perhaps this occurred because alternative voices had so little space within the profession, but also because the profession gradually lost its independence within capitalist enterprises? In a book chapter titled 'Thanatocene power and ecocide', Bonneuil and Fressoz (2015) show how weak the engineering profession is if evaluated in terms of ethical values, and how alternative options have been repressed. They also highlight the roles of other professions in the technological complex, such as that played by geographers and environmental scientists during the Vietnam War.

## Agriculture

Despite the agriculture industry's greater proximity to nature and clear awareness of environmental feedback, several parallels exist between it and the

engineering sector. Agricultural professionals are responsible for enhancing our knowledge base to ensure that the targets related to SDG 2 (hunger), SDG 6 (clean water) (along with engineers) and SDG 15 (life on land) are met. These all also relate to SDG 11 (sustainable cities and communities), thus involving architects, engineers, city planners and others in an attempt to manage the enormous expansion of urbanisation which, according to politicians and multinational corporations, requires the industrialisation of agriculture and the creation of transport systems capable of meeting the needs of huge urban settlements.

Presupposing the continuation of the kinds of agricultural development we have seen so far, the agricultural industry is framed by its interactions with urban and rural spaces. The expansion of agricultural production will require an increase in fresh water use, the use of artificial fertilisers (soon to vanish from this earth),[10] the concentration of production on large farms, heavy technology for irrigation, harvesting, etc. and the ever-more sophisticated use of biotechnology. How Montsanto is attempting to take control of global trade in seeds and fertilisers is but one example (see Brown 2015).

Bonneuil and Fressoz describe how the global food regime came to be controlled by a few huge corporations:

> Whereas in the age of empires Western Europe had to import grain, meat and oilseeds, a new world 'food regime' set in after 1945. Stimulated by cheap oil and supported by state policy and export aid (the US Public Law 480 of 1954), the agriculture of the industrial countries (including continental Western Europe) became an exporter of agricultural products to the Third World, cereals in particular. This transformation promoted a rural exodus and a low labor cost in counties of the South seeking a path of industrialization, while the agribusiness multinationals conquered the world and shifted eating habits. (2015: 245)

Achieving SDGs 2, 6 and 15 calls for a different kind of development, where the protection of the soil fertility, and an ability to keep air and water sources clean, determines what the market can supply. This demands a different approach to food security and food production – one that aims to live in balance with nature, nourishing and sustaining soil, seeds and livestock, using natural fertilisers and conserving water. This approach is more labour intensive and has the potential to stem and even reverse the movement of people and resources from countryside to slums and cities. If successful, this will have beneficial consequences for people's health (SDG 3). Eating patterns might resemble those that were common before 1945, obesity and malnutrition rates would drop, and poverty would not necessarily mean poor nutrition.

Much more could be said about all the SDGs and the new orientations towards knowledge they entail, but I have just a few words on SDG 13 (climate action), which relies on SDG 7, (clean energy for all). Here, scientists and other academics have contributed convincingly, and gradually gained the support of most of the world. Certainly, some researchers are attempting to raise funding for the kinds of technocratic geo-engineering fantasies that please donors who wish to see the world continue as it is. However, the more common response is that the research results demand change at many levels, that must come about through processes of *democratic, not technocratic, engagement* (on relations between geoscience and neo-liberalism, see Mirwoski 2013).

## A return to ethics: four guiding principles

In a way, the SDGs affirm that responses to the global environmental crisis (caused primarily by the rising use of coal and oil, the ownership of which made first England, then the US, hegemonic) require shifts and transitions from all sectors of society.

*First*, the ethical basis of all knowledge must shift away from a focus on nature as a resource to be exploited or an enemy to be conquered and towards an understanding of how humanity and nature coexist (deep ecology). We need knowledge and professionals that are capable of bridging the chasm between nature and society.[11] Economists must be taught that 'environmental degradation' can no longer be seen as 'externalities':

> There can be no more talk of the linear and inexorable progress that used to silence those who challenged the market-based, industrial and consumerist order by accusing them of seeking to return to a bygone age; from now on, the future of the Earth and all its creatures is at stake. (Bonneuil and Fressoz 2015: 21)

As argued, the challenge for academics and professionals is to translate these insights into a new ethics for their work from now onwards. In my view, four new ethical principles are required.

The first is that all actions taken by industry or agriculture, the public or private sectors should demonstrably contribute to reducing poverty and inequality, improving access to employment and health, lowering the consumption of finite resources and ensuring zero waste. This is a formidable challenge, and presupposes a new kind of interaction between disciplines. We live in an age of specialisation and the proliferation of disciplines (over five thousand by some accounts; see Kocka 1987). To an extent this has enabled professionals to limit their ethical responsibilities to extremely small spheres of influence. If you were a birdwatcher and were ordered to throw people

in the oven, you could still be a birdwatcher. Not anymore. Not only is the decimation of the bird population likely to cause you alarm, but you have to link this insight to the general consequences of industrialisation, globalisation, and power dynamics that have made and continue to make genocide possible. Nazi scientists and engineers excused their own actions based on the neutrality of science and the political expectation of obedience (see Jarausch 1990).

A second ethical principle foregrounded by the SDGs debate is to think through the new kinds of knowledge we need about how humans and nature interact, and consider the implications of this for knowledge development. The professions themselves must be more alert to how the knowledge and assumptions embedded in existing practices predetermine the outcomes of this interaction. We must commit ourselves to acting more ethically towards both other humans and nature, the practicalities of which will come to the fore as professionals define and make plans to operationalise the 169 indicators embedded in the SDGs, and preferably in ways that allow for quantitative measurement.

Our societies are built around systems of classification, with indicators and evaluation measures. If the SDGs are to be taken seriously, dramatic reclassifications will be necessary. All academic fields will be affected. Some will probably resist. Those whose identity and prestige is bound up in disciplines as they are currently construed will be threatened. Nevertheless, the SDGS invite debate around this issue – debates that require academics not to remain specialists within established knowledge categories, but rather to dialogue across disciplines to capture a new human–nature paradigm.[12]

This implies the adoption of a third ethical principle related to achieving the SDGs; that is, to form an alliance with the universities to defend knowledge against political and economic actors who ask specialists to solve specific problems, but refuse to address the systemic causes of those problems. Psychologists might well be capable of helping each and every neurotic child, but it is important to question how their neuroses relate to our knowledge about other phenomena – such as how, in some parts of the world, humans have become totally alienated from nature, especially nature that is not 'pre-packaged' and 'consumable'.

This leads to the fourth ethical principle: to integrate knowledge development into processes that empower people, and thus contribute to building active democracy. At present, research councils, dominated by bureaucrats and budgets, act as a fortress against democratic influence other than as formally debated in parliament. If researchers are also to be committed to reproducing the social and environmental goals of the SDGs within all economic activities, they will require a much more vibrant and

democratic process in relation to setting knowledge priorities. Here we need some reorganisation as a political tool to create a societal university as Honneth (2011) argued. For economists and accountants, who often perceive themselves as contributing only by managing the means of achieving given goals, this will be a big challenge. They have to see that the means that they present as neutral may in fact be contradictory to achieving the SDGs.[13]

But this is also a general point; professional associations, in alliance with the universities, have to be aware of the power of knowledge in times of critical transition like the one we are in now, and take responsibility not only for how knowledge is used (in relation to clients, for example), but also for preventing its misuse. The City of London should not be able to exist as a knowledge hub without being ethically embedded in better-intentioned tax policies, attempts to abolish tax-havens, the need to train financial experts and brokers to understand the consequences of continuing to invest in coal and oil, beyond widening their and their shareholders' profit margins.

**Universities and the role of academics**

The global challenges we all face also present challenges of global proportions to the universities. This is particularly so since the adoption of the 17 SDGs. Without university-based knowledge, the goals will not be achieved in time. In the debates that led up to the formulation of the SDGs, participants asked that the close relationship between knowledge and politics be acknowledged.[14] In other words, it is up to universities, the academic profession, and the professionals we train, to make ourselves heard by the political leaders in our countries. To use knowledge to influence how the different goals and sub-goals address and offer solutions to the global challenges we face is a task academics must be particularly concerned with.

As actors seeking to contribute to the implementation of the SDGs, the universities face challenges at all levels. From dealing with the politics of knowledge in international arenas to how we mediate knowledge within our own states, to changing how we teach, research and manage our own campuses sustainably.

The process of change has already begun: many universities and scholarly networks have created centres for global studies, focusing on the SDGs. Master's and doctoral students are being encouraged to submit research proposals related to the goals. Discussions are taking place about how to reform curriculum content and teaching practices to bring them more in line with the global challenges. There seems to be consensus that universities must take more responsibility for bringing different kinds of specialists and experts into contact with one another. The knowledge that evolves out of

inter-disciplinary work, should – for the sake of *university-based* influence on the implementation of the SDGs – be at the centre of how universities promote themselves as actors for global change.

Another area of consensus is that the students, at their own insistence, should be more involved in both curriculum change and in building course content. Their engagement will be crucial. Such students will undoubtedly be sought after, particularly among firms that see they have to become more socially and environmentally responsible in line with the SDGs, and in line with the general argument that those who (previously) caused the most damage must now take the lead in making amends.

As a development strategy that takes global cultural variations seriously, the SDGs do seem to carry a new kind of authority and a much wider level of legitimacy. The OECD countries are no longer being held up as the model for development or providing a roadmap for modernisation. In fact, in the attempts to reach the SDG indicators, Norway scores badly in relation to energy and technology policies, while Malawi scores very well in terms of per capita energy consumption. The US, once seen as the epitome of modernity and development scores low in many of the SDG indicators, including, for example, on inequality, access to health and education, energy consumption and poverty levels (Sachs et al. 2016).

Perhaps the most important role for universities, both as separate institutions and in networks, is to contribute to affirming the global mandate of the SDGs and the moral commitment made by most nation states to implementing them. The SDGs offer universities and professional associations a new opportunity to develop knowledge and practices that support the idea of development only having value when it reduces social and economic inequality and is beneficial to the environment (or at least does no further harm). The universities also need to ask critical questions about the role of the SDGs – about the processes leading up to their formulation and about how their implementation will be measured**?** Methodological questions about how to measure achievements and progress will be crucial in relation to how we learn from new practices.

In addition, as argued above, more often than academics tend to do, we have to explore the consequences of the knowledge and the detailed data we produce, and take responsibility for this in terms of its ongoing impacts and effects. For example, the links between technological development and poverty, the industrialisation of agriculture and biodiversity loss, urbanisation and food insecurity, product development and energy consumption have to be made clearer, and conscious choices have to be made. All actors and stakeholders involved in research need to focus more on producing solid

evidence-based knowledge while being explicit about the ethics and politics of this knowledge production. North–South knowledge networks offer unique opportunities for the revival of alternative forms and systems of knowledge that have the potential to change the way we understand how knowledge should be developed, and shared or not. In this respect, Susanna Koch and Peter Weingart (2016) have warned of 'the delusion of knowledge transfer'. They not only show how bad knowledge transferred via experts can be, but also what must be done to make the *co-creation* of knowledge possible. This co-creation of knowledge is what the implementation of the SDGs relies upon (see Halvorsen and Nossum 2016). It is also crucial if we are to achieve SDG 1 (no poverty), and meet the greatest social and political challenge of all: to transform the global economic system and secure better lives for everyone whose living conditions cannot now be described as good. This is our common challenge, both within countries where inequality is growing and between countries where power imbalances are growing faster than ever.

Fortunately, some of the world's best brains have started reflecting on these challenges. I will end by describing just one inspiring example: the work of Finnish philosopher Pekka Himanen who has collaborated with academics around the world, in particular from South Africa, to promote the concept of 'dignity as development'. Himanen argues that dignity is a globally valid value in a multicultural world, and one around which we can categorise, measure and evaluate what a 'good life' means. Using elaborate models, he developed alternatives to the standard models that measure 'gross domestic product' and economic growth. His model relies on and allows for human, environmental and economic sustainability. While using the tools of our information society to facilitate this shift in understanding, he suggests using a Dignity Index to measure progress (Himanen 2014). This focus on dignity is important because it offers an effective alternative to the OECD's destructive but massively hegemonic views on growth (so well described by Schmelzer 2016; see also Halvorsen 2012a, 2017). His work also opens up debates about broader understandings of knowledge, and the need to link what we call scientific knowledge to other forms of knowledge about living with nature.

As Bruno Latour (2013: 8) so succinctly said, 'Between modernizing and ecologizing, we have to choose.' Our challenge then is to develop the power of knowledge in relation to new ethical and social standards to which the academic communities are committed. The debate about the role of knowledge in relation to the SDGs is thus also a debate about this new and democratic kind of knowledge society that must urgently turn modernity to face ecology.

## Notes

1 Stefan Collini, for example, observed that 'universities across the world in the early twenty-first century find themselves in a paradoxical position. Never before in human history have they been so numerous and so important, yet never before have they suffered from such a disabling lack of confidence and loss of identity. They receive more public money than they have ever done and yet they are more defensive about their public standing than they have ever been.' (2012: 3)

2 This is already taking effect at the level of policy change in many countries; Norway's 2017 White Paper is an interesting example of one government's response to the SDGs (see Government of Norway 2017).

3 See (UN 2016). In terms of academic networks taking up the SDGs, see for example, the Worldwide University Network (https://www.wun.ac.uk), which has prioritised the SDGs in networking activities and research collaborations; the same is true for the Southern African Nordic Centre (SANORD). The International Association of Universities held a conference in Thailand in October 2016 on how to support universities so that they align with the priorities of the SDGs. The UN's Sustainable Development Solutions Network (UNSDSN) also devotes most of its attention to its network of universities (see http://unsdsn.org).

4 This is a recurring topic for Habermas that is, in my view, best expressed in his work on university reforms, democracy, modernity and post-modernity, *Kleine Politische Schriften,* in which he confronted Daniel Bell among others; see 'Die Moderne, ein unvollendetes Project' in that collection (Habermas 1981).

5 For example, Hamilton (2013) argues that, in the Anthropocene era, the role of scientists is to guide society towards environmentally sustainable management, while Crutzen (2002: 23) affirmed that 'this will require appropriate human behaviour at all scales, and may well involve internationally accepted large-scale geo-engineering projects'.

6 As Mirowski put it, 'The market can dependably sanction success or failure of human endeavor because it is the Rock upon which the complex chaotic maelstrom dashes; the market is the zero point from which all motion and change is measured. The market itself is never chaotic; because it exists outside of time. The market must be generic and unwavering, because if it were completely embedded in historical time (like society, like nature), then it could in principle be just as clueless about the true telos of human striving as any deluded human being: in other words, it could get things wrong' (2013: 335).

7 Honneth himself seems to be in doubt about free-market idealism when he argues that 'Whereas eighty to hundred years ago, we could point to concrete events that demonstrated the class-specific selectivity of the state apparatus, today the bias of the state in favour of capitalist profit interests seems to be entirely hidden from public view, because the corresponding government measures are either not addressed in parliament at all or are justified with reference to *objective constraints*…The only way out of this

crisis of the democratic constitutional state would be to bundle public power or organizations, social movements, and civil associations in order to put coordinated and massive pressure on the parliamentary legislature, forcing it to take measures to ensure the social re-embedding of the capitalist market' (2011: 326, emphasis added). Since Honneth does little to highlight the ethical role of the academic profession, it must be said that the so-called 'objective constraints' he mentions are often the result of categories, standards, indices and types of qualifications set up and legitimised by a particular set of neo-liberal economists and accountants, whom Honneth describes as of the 'ordo-liberal' type.

8 The *Argentinian Independent* of 10 July 2009 quotes from Mariano Ben Plotkin's introduction to his book, *Freud in the Pampas*, as follows: 'One of the things that foreign visitors to any major city in Argentina find most surprising is the enormous presence of psychoanalysis in the urban culture. Anyone who questions the existence of the unconscious or of the Oedipus complex at a social gathering is made to feel as if he or she were denying the virginity of Mary before a synod of Catholic bishops.'

9 Rockefeller himself owned an electric car in about 1914, which can be seen at the house he lived in on the Hudson River in New York State.

10 The evidence of the harm done by such fertilizers is overwhelming, but only now that it is seen as a scarce resource, is its use declining (see GPRI 2010).

11 For example, Bonneuil and Fressoz explain how Emil Durkheim, one of the founders of the social sciences, helped to construct this break (2015: 31). With the exception of geography, almost all the research objectives of the social sciences were defined in ways that assiduously removed them from nature. Accordingly, social and cultural anthropology were separated from physical anthropology, creating a watertight division between society and the natural environment.

12 This issue is likely to dominate future debates about the SDGs. Its importance is already evident in French sociology. The work of Pierre Bourdieu (and particularly his 1984 book) is a common reference point. To me, Alain Desrosières' work, *The Politics of Large Numbers* (1998) is more significant, but see also Beckert and Musselin's 2013 text, which reflects the breadth of the French debate around categorisations, quantification and valuations. They write: 'The catégorie socio-professionelles in France have increasingly developed into a kind of statistical basic unit, categorizing French society according to socio-demographic variables… This also demonstrates the claim made by Durkheim and Mauss that classification system represents a whole by establishing the relationship between the parts of a social system. But contrary to Durkheim and Mauss, existing classification systems do not simply represent a social order, but also constitute it within the praxis of classification – a point made specially forcefully by Pierre Bourdieu (1972, 1977, 1990)' (Beckert and Musselin 2013: 7). In other words, as academics suggest new classifications and measurements for the sake of achieving the SDGs, they may also have to reclassify themselves and their own categories of knowledge. Of course, as those

of us working in the cross- and interdisciplinary space know too well, this is a dangerous process: in the existing paradigms, if you fall between categories you are lost.

13 For a more elaborate description of how the World Bank, and many international donor organisations, use the term 'technical expert' to hide the value orientations of their preferred brand of educational economists, see Koch and Weingart (2016).

14 Universities have not yet figured strongly as such. In the document that sets out the SDGs, *Transforming Our World: The 2030 Agenda for Sustainable Development* (UN 2015), universities are not mentioned. The United Nations mostly refers to the need for 'experts', but has appointed a team to follow the implementation of the goals, most of whom are university-based. Other references to university-based knowledge have however steadily increased. For example, the United Nations University, a global think tank and post-graduate teaching organisation headquartered in Japan that encompasses 13 research and training institutes and programmes in 12 countries across the world, notes that 'The SDGs will rely upon good scientific input in a number of different ways. Scientists were crucial in providing important inputs at the Rio+20 conference in 2012 and into the process at the Open Working Group meetings, which formed the content of the SDGs. However, the role of scientists and scientific communities does not end with these inputs. It will be necessary for these actors to help shape the SDGs at all levels, to integrate sustainability concerns into other decisions. Implementation, monitoring and reassessment of the SDGs will require continual engagement with science and scientific communities'. See their webpage at https://ias.unu.edu/en/events/archive/symposium/science-and-the-sustainable-development-goals.html#overview (accessed September 2017).

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