Max Planck Institute for Social Anthropology
Department 'Resilience and Transformation in Eurasia'

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The Treadmill Paradox in the Anthropocene: unintentional consequences of competition under runaway globalisation

Goody Lecture 2021

MAX-PLANCK-GESELLSCHAFT

Jack Goody (1919–2015)

Sir John Rankine Goody was brought up near London and initially studied English at Cambridge. Formative experiences during the Second World War led him to switch to social anthropology. He undertook fieldwork in Northern Ghana during the last decade of British colonial rule and taught anthropology at Cambridge University alongside Meyer Fortes and Edmund Leach. After succeeding Fortes as William Wyse Professor of Social Anthropology in 1973, he began to explore long-term historical contrasts between sub-Saharan African societies and those of Europe and Asia. Following V. Gordon Childe, Goody emphasized commonalities across the Eurasian landmass since the urban revolution of the Bronze Age. In numerous publications he highlighted developments in East Asia and criticised the eurocentric bias of Western historians and social theorists. Core themes include productive systems, the transmission of property and class inequality in global history; kinship, marriage and the "domestic domain"; technologies of communication, especially writing, the transmission of myth, and of knowledge generally; and consumption, including cuisine and flowers. These topics are not approached in isolation but in their interconnections. Ethnographic insights are essential, but they form just one component of Goody's comparative vision. His best known works include *Death, Property and the Ancestors* (1962); *Technology, Tradition and the State in Africa* (1971); *Production and Reproduction* (1976); *The Domestication of the Savage Mind* (1977); *The Development of the Family and Marriage in Europe* (1983); *The Oriental, The Ancient and the Primitive* (1990); *The East in the West* (1996); *The Theft of History* (2006); *Renaissances: the one or the many?* (2010); *The Eurasian Miracle* (2010); *Metals, Culture and Capitalism: an essay on the origins of the modern world* (2012).

Goody's agenda is one which the Department 'Resilience and Transformation in Eurasia' at the Max Planck Institute for Social Anthropology seeks to continue. In an annual lecture series, a distinguished scholar addresses pertinent themes for anthropology and related fields:

Goody Lecture 2011: Keith Hart, "Jack Goody's Vision of World History and African Development Today".

Goody Lecture 2012: Peter Burke, "A Case of Cultural Hybridity: the European Renaissance".

Goody Lecture 2013: Martha Mundy, "The Solace of the Past in the Unspeakable Present: the historical anthropology of the 'Near East'".

Goody Lecture 2014: Francesca Bray, "Rice as Self: food, history and nation-building in Japan and Malaysia".

Goody Lecture 2015: David Wengrow, "Cities before the State in Early Eurasia".

Goody Lecture 2016: Martine Segalen, "On *Papies* and *Mammies*: the invention of a new relative in contemporary European kinship".

Goody Lecture 2017: Nur Yalman, "On Cultural Revolutions: observations on myth and history in Turkey".

Goody Lecture 2018: Sylvia Yanagisako, "Accumulating Family Values".

Goody Lecture 2019: Carola Lentz, "Class and Power in a Stateless Society: revisiting Jack Goody's ethnography of the LoDagaa (Ghana)".

Goody Lecture 2020: Stephen C. Levinson, "On 'Technologies of the Intellect'"

The eleventh Goody Lecture was given by Thomas Hylland Eriksen on 24th June 2020.

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> *'Well, in OUR country,' said Alice, still panting a little, 'you'd generally get to somewhere else – if you ran very fast for a long time, as we've been doing.'*
>
> *'A slow sort of country!' said the Queen. 'Now, HERE, you see, it takes all the running YOU can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!'*
>
> *'I'd rather not try, please!' said Alice.*
>
> — Lewis Carroll: *Through the Looking-Glass*

> *If a man has good corn or wood, or boards, or pigs, to sell, or can make better chairs or knives, crucibles or church organs, than anybody else, you will find a broad hard-beaten road to his house, though it be in the woods.*
>
> — Ralph Waldo Emerson

Introduction

To be invited to deliver the 2021 Goody lecture is a great honour, and before I start, I must thank the Institute for having given me this opportunity.[1] I never met Jack Goody, although we corresponded briefly in the early 1990s, but his work on kinship, political organisation, and especially literacy was a major

[1] Acknowledgements: I wish to thank the MPI for Social Anthropology in Halle for the invitation, the virtual audience for listening, asking questions and making incisive critical comments, and Iver B. Neumann for offering comments on an early draft. This is a revised and slightly expanded version of the lecture as it was read.

influence on my own development as an anthropologist. *The Domestication of the Savage Mind* was a favourite nearly four decades ago. It showed the potential of an anthropology that dares to ask big questions about human society and the relationship between cognition, technology, and social organisation by drawing on ethnographic, historical, and comparative materials. I would later follow Goody's intellectual itinerary with great interest, seeing how his work gradually formed a major œuvre departing from anthropology narrowly conceived and venturing into archaeology and global history, without lapsing into monocausality or otherwise reductionist explanatory models. This lecture takes the form of a dialogue with Goody's work, delving into a theme with which he did not himself engage, and showing how his kind of comparative cultural history may still have something to offer, although modernity has recently taken a direction that he did not anticipate.

Much can be said about Jack Goody's intellectual orientation and legacy, but a methodological individualist he was not. Trained as a social anthropologist, with a marked emphasis on *social*, at the height of British structural-functionalism in the decade after the Second World War, he had been taught mainly to study how societies functioned, not what it was that made people do whatever it was that they did. His early work in Ghana showed how kinship is a powerful principle of social integration but also a source of contestation; he also indicated, through holistic analysis, how property and inheritance, myth and ritual, production and reciprocity were connected, if loosely, to form a social whole.

The relationship of cognition to social organisation remained a central concern in Goody's work throughout the subsequent decades, and his work on literacy and its implications for cognition, scale, and social complexity continues to inspire new work in the field, as indicated in last year's Goody lecture (Levinson 2020). However, the contrast between Eurasian and sub-Saharan societies, explored already in *Bridewealth and Dowry* (Goody and Tambiah 1973) and *From Production to Reproduction* (1976), became a main concern in his thinking. Whereas the African component would later fade somewhat from view, his arguments against Eurocentrism, based on the conviction that the Eurasian continent should be seen as a whole from the Bronze Age onwards, was central to most of his later publications, which took on food, flowers, metals, script, inheritance, and other dimensions of Eurasian societies, tracing their origins, dissemination, and societal impact.

A key question concerns the relative dominance of European and Asian societies as regards social complexity, technological innovation, and cultural achievements. Beginning with the early states of the Bronze Age in Mesopotamia and the Fertile Crescent, Goody (e.g. 2006) argues that there has been alternation rather than unilinear development towards European hegemony, and that European dominance began in earnest with the Industrial Revolution from the end of the eighteenth century, fuelled by easily accessible coal and the technology to use it for industrial and military purposes (see also Pomeranz 2000). The flows of knowledge, techniques, goods, and artefacts travelled in both directions, and the East Asian influence on Western societies was significant for many centuries. The contemporary story is nevertheless not just one of mutual exchange and development, but of severe unintended side effects resulting from the growth of complexity and differentiation. The competitive relationships which are usually only hinted at in Goody's books create peculiar treadmill effects and spiralling runaway processes of change which he did not consider. There is an irony in the fact that it is precisely the alternation and mutual exchanges between Asia and Europe, increasingly linked with growth imperatives and the logic of capitalism, which have produced innovation and prosperity but are now becoming a recipe for disaster. In other words, the same forces of history that created the modern world as we know it currently threaten to undermine modernity and challenge what may be its most cherished idea: the belief in science, technology, and progress.

In the last few decades, an unusually hectic period for humanity, we have witnessed several changes with consequences not only for our understanding of the present, but also of the past. Allow me briefly to mention three.

- First, digitalisation and the rise of so-called artificial intelligence has changed and continues to change our modes of communication in fundamental ways. This development can easily be appended to Goody's theoretical framework; after all, to many, he is best known as a social theorist of literacy or what Levinson (2020) describes as the technologies of the intellect.
- Secondly, the rise of China as an emerging hegemonic power, certainly in the economic realm, and eventually possibly in the military and

diplomatic spheres as well, is redrawing the world map in a way that is not only compatible with, but confirms Goody's idea about alternation.

- The third change concerns Anthropocene causes and effects; in brief, this refers to a historical situation in which humanity is changing the biosphere irreversibly and at an accelerating speed, in which the ecological footprint of our species can be observed everywhere on the planet, even where no human has set foot. The dilemmas arising from massive environmental destruction, a kind of collateral damage resulting from a competition-driven quest for glory, power, and wealth, are difficult to reconcile with most accounts of the advent of modernity, since the destructive effects of contemporary capitalism are the trueborn children of the logic of modernity itself.

Are we entering a new phase – are we in the middle of a new great historical divide of comparable magnitude to writing, metallurgy, the plough, and the steam engine – and if the answer is yes, what are the theoretical tools required to explain this unprecedented situation in which modernity seems to be eating itself from the inside?

While arguments about alternation and a shifting power relationship between the East and the West are worth revisiting in this particular historical moment, there is a jigsaw piece which is usually missing from structural analyses of this relationship – namely, competition and its significance, both at the level of the enterprising individual and of the society collectively trying to improve its position vis-à-vis others. Exchange is crucial, and numerous authors dealing with this aspect of cultural history have indicated how innovation and increased social, cultural, and not least occupational complexity have resulted from imports and adaptations of foreign techniques and technologies, the spread of luxury products, and the rise of the merchant class. This is how the modern world as we have known it came about. Yet modernity is now at a crossroads. It has delivered beyond anyone's expectations, and a consequence of its success is that we are fast approaching the limits of planetary resources and sustainability.

In order to understand how this could happen, the missing piece has to be inserted. Competition, a recipe for success but also for our own collective undoing, has to be scaled down to the level of the individual lifetime for its

side effects to be fully understood. This is because the short term and the small scale that characterise most human enterprises, be it in the realm of culture, technology, or politics, produce counterfinality – a term coined by Sartre in *Critique de la raison dialectique* (Sartre 1960) – on the large scale and in the long term. A typical counterfinal effect arises when a group decides to denude a hillside to cultivate rice, resulting in erosion as well as an increased risk of landslides and flooding. Projected onto the global canvas, it is easy to see that the unprecedented growth in world population, energy use, prosperity, and consumption witnessed over the last two centuries has comparable unintended effects, but at a much larger scale. Since individuals, firms, and states act in their own perceived interests and within a limited temporal frame, the cumulative outcome of their efforts is an overheated world of accelerated growth, the ultimate outcome of which is likely to be global ecological disaster. Since there is no thermostat regulating this spiralling, runaway, accelerated growth and its cumulative effects, the outcome is a tragedy of the global commons – a tragedy of the global commons in an overheated world (Eriksen 2016, 2018).

The canaries in the coalmine are beginning to expire. Only 4 per cent of the mammalian biomass on Earth now consists of wild animals. 36 per cent are humans, while 60 per cent are our domesticated animals, mainly cattle and pigs. 70 per cent of the birds alive – most of them chickens – are owned by humans. 35 per cent of the world's wetlands, unloved by humans, but ecologically essential biotopes, have been drained and appropriated by humans since 1970. Economic growth continues. Just between 2002 and 2015, worldwide coal exports doubled. This is excellent news for mining corporations and for governments collecting revenue, and it keeps houses heated or cooled and factories running, but it goes without saying that this development has its cost – for people living in affected areas, e.g. in Indonesia, for the global environment and climate. From 2004 to 2019, the number of flight tickets sold worldwide more than doubled, from two billion to nearly four and a half billion. Earth Overshoot Day, the date on which humanity has used up the annual resources at its disposal, was, in 2019, on 29 July (for obvious reasons, in 2020 it came only in late August). This means that we would need about 1.6 planets to remain sustainable, and that presupposes no future growth in resource use, emissions, and pollution.

The Significance of Competition

Although competition is not analysed as a driving force in Goody's cultural history, it is not absent. He writes about the quest for luxuries and conspicuous consumption and its spiralling results resembling the potlatch described by Boas and analysed by Mauss a century ago; and in his book about food and social hierarchy (Goody 1982), he notes that the fact that the powerful King Shaka had to eat the same beef as his soldiers, indicated a relative lack of social differentiation. While exploring the growth of metallurgy, the eventual replacement of bronze with iron and the dissemination of both metals throughout most of Eurasia (Goody 2012), Goody does to some extent describe *who* ensured the spread of the new technologies, but not *why*. Obviously, if your neighbour has a metal plough, you follow suit; if an enemy obtains iron swords, you will do your best to get the same or, if possible, superior ones. Individual agents, be they entrepreneurs, inventors, political leaders, or military strategists, are absent from his account, as are the frustratingly long periods of trial and error preceding a breakthrough, whether in technology or institutional arrangements.

Though keenly aware of the expansion of markets and the ways in which production, distribution, and consumption were connected, Goody rarely ventures to consider individual motivations and the microsociology of innovation which have been fundamental for the changes – revolutionary or incremental, as the case might be – that are equally important for an understanding of contemporary global modernity as for the current impasse in which we find ourselves, because they lie at the origin of the counterfinalities which are now bouncing back, boomerang-like, to modern men and women, until recently complacent and pleased with their achievements. The most influential analysis of this aspect of economics was probably Schumpeter's *Capitalism, Socialism and Democracy* (1942), which placed entrepreneurship, individualism, and innovation at the core of the capitalist enterprise. But of course Weber had said this already, with Calvinism's doctrine of predestination as the historical subject.

The significance of entrepreneurship in economic history can easily be revealed by asking simple, naïve questions, such as what it was that motivated fifteenth-century Portuguese sailors to explore the West African coast, or West Africans to develop metallurgy, or European craftsmen to imitate Chinese porcelain, Arabian glass, and Indian fabrics – glory, wealth, power, women, or just an innate desire to perform better than others.

These competitive processes, driven by personal ambition or fear, have a ring of symmetrical schismogenesis, Bateson's (1972 [1935]) term for escalating processes in which each protagonist tries to outperform the other. A more general theoretical model, derived from evolutionary biology, is that of treadmill competition.

Treadmills in Evolution and Society

It is not in *Alice in Wonderland*, but in the follow-up *Through the Looking-Glass*, that Alice encounters the Red Queen in the guise of a chess piece of human size (Carroll 2003 [1872]). In the first book, the Queen of Hearts made her appearance as a despotic playing card ("Off with his head!"). The ability of the Red Queen to run incredibly fast from one square to another on the chessboard shocks Alice, but in fact, she just behaves the way a chess queen should.

Alice discovers that no matter how fast she runs, she remains in the same place. She expresses her astonishment to the queen, explaining that in her country you would normally get to another place if you ran really fast. The queen is unimpressed. She says that all the speed you can muster is necessary just to remain in the same place. If you want to go somewhere else, you have to run at least twice as fast, she adds, helpfully.

The analogy to chess is pertinent. A chess player cannot implement their strategy independently of that of the opponent, and if the two players are roughly at the same level of skill and move their pieces accordingly, a game of chess may take many hours and risks ending in a frustrating stalemate, like a fistfight between equal opponents where both end lying in the dust, gasping, exhausted, with bloody noses and missing teeth, without either having succeeded.

The art of moving at great speed without getting anywhere is also familiar outside the fairy tale, the game of chess, and the fistfight. It is a familiar phenomenon in evolutionary biology, where ‘arms races’ are common both between and within species, and Carroll, who was passionate about science, was clearly influenced by his older contemporary Darwin. *Through the Looking-Glass* does introduces not just the Red Queen, but also the bread-and-butter fly, an insect whose wings are made of gossamer slices of toast, while its head is a lump of sugar. Its only source of nourishment is lukewarm, thin tea. Accordingly, the head dissolves during its first meal, but in theory, the species can survive perfectly well provided it reproduces before it has to eat.

Treadmill competition applies both between and within species. The fastest hares outrun the foxes, while the slowest are eaten. Some of you likely know the story about the two hikers in the savannah who spot a lion approaching them from a distance. One of them bends down and ties on his running shoes. The other shrugs and says, look, do you really think you can outrun a lion? No, his friend responds, but I think I can outrun you.

Through a ruthless and efficient process of natural selection, the hares slowly become faster, as a result of which the foxes need to develop their speed and cunning. This explains why the spruces in the forest near my home in Oslo have to reach twenty metres or more, while it would seem reasonable that four or five metres would do. The explanation is simple: they have to spend huge resources growing to this height because the neighbouring trees do. Similarly, audiences at rock concerts have to stand up, even if they would have preferred to stay in their seats, because those in front of them have stood up.

This simple principle describes quite accurately not only evolution, but also many aspects of cultural and social dynamics. The circuit connecting products and markets, especially but not exclusively in affluent societies, follows the same principle, and whereas product developers run frantically on their treadmills in order to keep up with the competition, the so-called market – you and me – is assumed to profit from the competition-driven improvement of products. This particular treadmill mechanism is a descendant of libertarianism in its nineteenth-century version, which itself was almost a mirror image of Darwinian natural selection, where competition was assumed to be healthy for the economy because it was a mechanism ensuring that only the most

efficient and profitable activities could endure. (More recently, a similar way of thinking, New Public Management, has entered into public administration and universities in many countries.) The tendency for larger entities to crush the smaller ones is a direct result of this logic, but unexpected innovations may also destroy giants, as the recent history of Kodak reminds us or, a century earlier, the sailing ship industry faced with competition from steam ships that it failed to own up to until it was too late.

In evolutionary biology, the treadmill principle or Red Queen Effect thus refers to a particular aspect of competition (van Valen 1973) or an outcome of natural selection. As in the episode with Alice and the Red Queen, an organism or species is forced to evolve continuously merely to survive, since its competitors, prey, or predators evolve. As rabbits become faster, foxes have to follow suit in the *longue durée* of evolution. An organism has to evolve merely to retain its niche, simply because its prey, predators, or competitors evolve. In Matt Ridley's (1993) account, the emphasis is on intraspecies competition and sexual selection. There is no immediate evolutionary or individual advantage in the competitive race involving the conifers, which is why it can be called a treadmill syndrome.

Technological innovations modify the conditions for competition, and when someone innovates, others are forced to follow. A typical argument against divestment from fossil fuels is that a single country cannot make a difference, and as long as others use and produce fossil fuels, it would be foolish – a self-imposed handicap – not to do it oneself. The typical argument in favour of frequent flying is that the plane takes off anyway, so my input makes little difference. This kind of argument shows how neoliberal thinking has become second nature: Societies do not exist, changes can only be made to happen through consumer choices, and the only relevant scale is that of individual action and its immediate results. There seems to be no instance at a higher scale which can regulate, slow down, and scale down the subsystems of globalisation in order to make them more sustainable and to prevent a catastrophic tragedy of the commons. In the world of competitive elite sports, we find social treadmills of a pure kind. In this realm, ecological sustainability is barely on the agenda, and technical innovations, specialisation, and intensified competition, as witnessed in ever more frequent international tournaments, is consistent with the treadmill principle, where the spiralling growth is assumed to lead to progress (but

which may *de facto* lead to everybody standing still at full speed) and requires increased consumption, infrastructural developments, incessant travel (with a growing support system in tow) and sometimes environmental destruction, as when those – admittedly unnecessarily tall – spruce trees in the hills above Oslo are unceremoniously removed to make space for wide ski tracks enabling easy monitoring and filming for the benefit of TV viewers, whose habits have changed, in the space of just a few years of intensive competition for their attention, such that live sporting events, including war reporting from the frontline, are about the only forms of programming that make sense as linear television (see Eriksen 2021 for a full analysis).

Although it may look like an accelerated standstill, treadmill competition drives evolution, forcing species and individuals to improve their achievements relative to others over the generations. The 'competitive edge' often invoked in technology and business refers to a quality enabling a company, product, or activity to 'edge' ahead of the others, who will in turn have to follow suit. There is a resemblance, in other words, between the cheetah evolving greater speed to catch gazelles who are nimbler and faster than their ancestors, and mobile phone developers looking to eclipse their competitors with a sleeker design, better camera, or larger screen.

There is widespread wariness about applying evolutionary models in the social sciences, often with good reason. Yet, treadmill phenomena are so easily identifiable in social life – in sports, fashion, technology, academic publishing, just to mention a few examples – that the pattern resemblance to events on the savannah, or in the forest, is nothing less than striking (Hessen and Eriksen 2012 is a book-length exploration of this phenomenon in Norwegian, by an anthropologist and a biologist,). A main difference between cultural and evolutionary treadmills is the fact that humans can decide to do things differently if the spirals of the treadmill threaten to become destructive. One characteristic of the globalised resource economy is nevertheless the lack of an instance, a governor or thermostat which could regulate growth and slow change down when necessary. Like industrialists or investors, the decision-makers in the world of competitive sports have no choice but to play according to the rules, trying to gain those extra inches enabling them to catch more sunlight, as it were, than their close neighbours. While this form of competition is integral to capitalist growth and what is known as progress, it is also, as a guiding principle

for life and economic activity, a recipe for ecological disaster. It encapsulates, in a nutshell, the double bind of contemporary industrial capitalism, suspended in mid-air between growth imperatives and a desire for sustainability.

The evolutionary scientist and sociologist David Sloan Wilson sums up his view of competition versus cooperation like this: “Selfishness beats altruism within groups. Altruistic groups beat selfish groups. Everything else is commentary.” (Wilson 2015: 61) Echoing the segmentary model in political anthropology proposed by Evans-Pritchard (1940), Sloan Wilson’s principle nevertheless lacks the inherent flexibility of the segmentary principle, and a main problem accordingly concerns how to delineate the group whose members compete internally and shift to a higher level externally. Is the relevant unit a neighbourhood, a city, a state, or a supra-national entity such as the European Union? Does it matter whether it is China, Mauritius or India? The tension between competition and cooperation that is foundational to social theory needs to be scaled properly. The formula, interestingly, opens for a compromise between Darwin and his contemporary Alfred Russell Wallace, the co-discoverer of the principle of natural selection. Darwin saw competition everywhere in nature, while Wallace, a socialist from a less wealthy family, argued that cooperation was imperative for peoples living in the “state of nature” to survive. The scaling of competition and cooperation suggested by Sloan Wilson nevertheless does not accord with anthropological studies of reciprocity (e.g. Sahlins 1972), which indicate an inverse dichotomy, namely that solidarity is a prerequisite in close, familiar relations, whereas the market principle tends to predominate in anonymous relationships beyond the moral community held together by literal or metaphoric kinship and place.

However, the dichotomy is unsatisfactory, since competition is also familiar from close, multiplex relations. In his analysis of the Trobriand economy, Malinowski describes how he was struck by the sight of pyramids of yams on display outside many homes in the harvesting season. Most of the tubers would eventually spoil and would never be eaten. Trobriand men, who grew yams for their sister’s husband and not for themselves, gained prestige by showing off a large surplus, which indicated that one had many dependents and was well connected socially. A relative of the potlatch, the conspicuous display of yams and the demarcation of social rank it enacts suggest the theoretical possibility of a spiralling growth, but local constraints prevented a regular growth in

production. These limitations are not felt in today's globalised economy.

In the social sciences, the treadmill syndrome was analysed and satirised almost *avant la lettre* by Thorstein Veblen in *The Rise of the Leisure Class* (Veblen 1953 [1899]). Conspicuous consumption, easy to identify in the competitive individualist American society of his time, has become, at a time when consumerism is a global affliction, ubiquitous. Societies have become increasingly differentiated since Veblen wrote, and people may achieve recognition and admiration from others through consumption in a variety of ways depending on their position in society. In a consumerist society, the majority engage in this kind of treadmill competition, trying to outperform their neighbour or significant others. Treadmill competition in the intertwined realms of production and consumption drives innovation and invention, but it also currently drives species to extinction and the planet to the brink of catastrophe.

The Needham Question

I now return to the relationship between East Asia and the North Atlantic region regarding innovation, economy, and global dominance, but this time, I will view it through the double lens of the Red Queen or treadmill paradox and the looming threat of disastrous Anthropocene effects.

Let me begin with the Needham question: Why did Europe overtake China in science and technology, given the superiority of Chinese society in so many domains until the European Renaissance? Several answers have been proposed, arguing among other things that it is due to the significance of private property, feudal power, and surplus accumulation. Wittfogel's notion of centralised power through "hydraulic despotism" and Marx's analysis of the "Asian mode of production" have also informed responses to this question.

Others emphasise the emergence of capitalism in Europe and the resulting intensified competition as a major factor contributing to a widening gulf between Europe and China following the Renaissance. It may be the case that the question is wrongly stated. According to Francesca Bray (2000), China was overtaken by Europe in terms of production and consumption only by the time of the Industrial Revolution. Kenneth Pomeranz (2000) has similarly argued

that the core areas of China and Europe were comparable in terms of complexity and economic output until around 1800. This research, although disputed, lends credibility to the view that there was no hydraulic despotism preventing innovation and competition in imperial China in the centuries leading up to the European Industrial Revolution, and that the easy availability of affordable, movable energy in the form of coal could have been a major factor. While China continued to rely on muscle power, Europe entered the machine age with several "energy slaves" (Illich 1973) per capita, leading to that enormous growth in productivity which has occupied economists and economic historians ever since. At the same time, coal was also easily available in China, and it could not have led to an industrial revolution without an appropriate technological, institutional, and cultural infrastructure.

Two hundred years later, China is the world's largest coal producer, with an output of more than four times that of the second largest producer, which is another Asian country, namely India. In spite of mining about half the world's coal, China is also the largest importer of coal. This change is thought-provoking in two ways: it indicates the rise of China as a major industrial country; and the shift from Western Europe to China as the global epicentre of coal production is suggestive of other changes of the last two centuries. Coal was the future in 1821; by 2021, it is the past, or about to become the past, at least if we are to believe the implications of international agreements to which China and the EU countries are signatories and recent reports from the International Energy Agency (IEA).

I will not speculate on ultimate causes of the recent Chinese economic miracle, but the rapid industrialisation of much of the country is a fact and indicates that notwithstanding important cultural and historical differences between East Asia and Western Europe, they now are competing on the same treadmills framed by global capitalism.

Differences in the scale and interrelationships of the political entities may nevertheless be significant. At the onset of the modern era, China had been an established empire, albeit with shifting cores and borders, for two thousand years. Europe was a hodgepodge of city-states, poorly integrated imperial systems, territorial states, and loose federations. The Hanseatic League, never a territorial political entity, exercised considerable power from the Baltic Sea

to Norfolk – an early instance of a transnational corporation with economic muscle and de facto political power that could surpass that of the states in which it operated.

In the Late Middle Ages, Genoa competed with Venice for trade connections; England competed with France for territorial and military power; Protestants competed with Catholics for souls. When glasses were invented, possibly in Pisa in the late thirteenth century, no central imperial power could prevent them from spreading. Which they did, not just in an unchanged, timeless form, but with gradual improvements unimpeded by imperial decree or religious prohibitions. Interestingly, both convex and concave eyeglasses were in widespread use long before the science explaining their efficacy was developed, by Johannes Kepler, in the early seventeenth century. However, spectacles would soon spread to China and Japan, although only in their concave form, meaning that convex glasses correcting shortsightedness – a form more demanding to produce – were not developed. A possible result of this, according to Macfarlane and Martin (2002), who also point out that myopia seems to be more common in East Asia than in Europe, is an 'involution' in the arts and a preference for the minute detail, given that the horizon blurs in the absence of sight-enhancing implements. This may not have made much of a difference internally. In the land of the blind, the one-eyed is king, but the moment they begin to compete with seeing neighbours, their relative disadvantage becomes visible.

At a crucial point in history, China abandoned one of the largest competitive arenas, namely that of large-scale international trade. Successive sea bans in the fourteenth and fifteenth centuries effectively prevented Chinese economic expansion overseas for centuries. European expansion overseas began with the founding of the first European settlement in the tropics – Cidade Velha in Santiago, Cape Verde Islands, in 1462 – and subsequent conquests were soon to come. However, although it cannot be denied that the modern world is to a non-negligible extent the product of European conquest, slavery, the Columbian exchange, and plantation economies, it should also be kept in mind that China was and is a huge country with great internal diversity and plenty of opportunities to establish its own treadmills or competitive arenas.

The deregulation of the Chinese economy – heralded years before it happened in Deng Xiaoping's famous speech in 1978, when he said that it didn't matter

whether the cat was black or white as long as it caught mice – is important. So is containerisation of sea transport, which has rendered Chinese industry globally competitive by reducing transport costs by more than 90 per cent since the 1970s. Other contextual factors may also contribute to an explanation. The point here is that China's meteoric rise as an economic superpower does not represent something completely new in world history, but rather confirms the view that hegemony, or dominance, alternates between different core areas in Eurasia. In 1800, the largest cities in the world were in China and Japan, and urban life is a recipe for differentiation and hierarchy anywhere and anytime. As late as 1907, Qing China contained 24 per cent of the world's population and the British Empire just 22 per cent. By 1939, the British Empire had increased its share to 24 per cent, while China's percentage was now just 11.

Throughout the nineteenth and twentieth centuries, European countries avoided falling into Malthusian traps (of relative overpopulation) through technological advances, while China and India, lacking these means, tried to increase food production through increased labour input. They lost – a catastrophic famine happened in West Bengal in 1943, and during the Great Leap Forward from 1958 to 1962, perhaps twenty million Chinese starved to death. In other words, the balance of economic muscle was by no means uncertain in the twentieth century, until it began to shift from the Atlantic to the Pacific Rim just before the new millennium.

During the period of Japanese ascendancy in the latter half of the twentieth century, it was often alleged by critics from the North Atlantic region, that the Japanese were efficient producers and skilled copycats, but lacked creativity. This stereotype seems to have become less common, but instead similar comments are made about the Chinese. Owing to the pressure to improve, grow, and defend one's place at the cutting edge, not only is this kind of stereotyping common in the West, but there is also a mounting concern about alleged industrial espionage and theft of intellectual property rights by the Chinese.

Guarding one's property is not new, and the fact that much of this property is now immaterial only illustrates Castells's (1996) main point about the information age – namely, that it is not defined by the omnipresence of information (in that respect, every human society is an information society), but refers to a society where information is simultaneously a product, a means

of production, and a means of distribution. In the sixth century, physical objects may have had a higher relative value than knowledge or mere information. Under Emperor Justinian, silkworms were smuggled out of China by Orthodox monks hiding the eggs in their staffs, thereby breaking the Chinese monopoly on silk production. A thousand years later, sweet potatoes, originally from South America but grown in the Spanish colony of the Philippines, were similarly smuggled into China, eventually saving millions of peasants from starvation (Mann 2012). As the Red Queen explains to Alice, if you want to keep your place in the hierarchy, you have to run as fast as you can while trying to prevent your special diet or training regime from being transmitted to your competitors.

The Chinese economic take-off in the last decades may be described as a short-term miracle or as a long-term catastrophe, depending on the perspective, and both dimensions deserve a place in the analysis. It creates affluence for some, material security for many, and has severe ecological implications for everybody. As a boy in the 1970s, I was fascinated by press photos of busy Chinese crossroads depicting vast armies of workers on bicycles, uniformly dressed in Mao suits, waiting for a signal from a uniformed human. The 2020s equivalent would show hundreds of cars, most of them new and shiny, now waiting at traffic lights (tellingly known as robots in South Africa), driven by people wearing all kinds of clothes, with the odd motorcyclist meandering their way between the cars. A list of the ten busiest containership ports in the world today reveals nine of them to be in East Asia, with seven in China itself. This growth in economic power and prosperity is miraculous, judged according to the standard criteria of modernity. Yet China's great rivers are now often clogged, the fertile loess soil on the productive agricultural plains contaminated, the hills plagued by erosion and landslides owing to logging, the urban skies grey with coal smoke and emissions from industry – ominous signs of overstretching, like so many canaries in the global coalmine.

It is debatable how dominant the Chinese economy has become or is about to become. Much is made of China's GDP growth, but at the moment, China is only the 78th-richest country in the world in terms of nominal GDP per capita, and inequality is high, especially along the urban/rural dimension. Yet the growth has been nothing short of spectacular. In just a generation, from 1990 to 2019, GDP per capita grew almost 2,000 per cent, from US$ 971 to US$ 16,651 (IMF figures). It is unlikely that this growth rate can continue for long.

The so-called Lewisian turning point, named after the St. Lucian economist and Nobel laureate W. Arthur Lewis, occurs when the supply of mainly non-monetised people, often subsistence farmers, dries up and the cost of labour in the modern or capitalist sector rises (Lewis 1954). More than a decade ago, the business magazine *Bloomberg* asserted that China had reached this turning point (Bloomberg 2010), but in the subsequent decade, Chinese GDP per capita nearly doubled.

Treadmill competition fuels contemporary Chinese society in many ways and across domains. At the domestic scale, conspicuous consumption is evident in the growing demand for luxury goods – what used to be luxury goods have become consumer goods for the masses – but also in the phenomenal growth of Chinese overseas tourism in the present century. At the transnational scale, Chinese companies cut costs, increase volumes, and search for – or, rather, create – market niches in order to keep abreast with competitors from other countries. The Belt and Road project, aiming to link China with most of the 'Old World' through an ambitious network of transport infrastructure, attempts to eclipse old transport routes and hubs centred on Europe, many with a colonial legacy. The dominance of Chinese trade in container transport indicates that this ambition is on its way to being fulfilled.

Not all forms of competition-driven growth can usefully be interpreted as treadmill phenomena, but the further economic activities depart from satisfying basic material needs for food, shelter, and so on, the more visible the treadmill becomes. This implies that unequal societies are more prone to treadmill consumption. Treadmills are also highly visible in international competition for market shares. At both of these scales, China has excelled spectacularly in this century, and notwithstanding its official socialist ideology, the authorities are no strangers to competition when it can boost national pride and flatter the state. When, in 2012, Mo Yan won the Nobel Prize for Literature, it transpired that the Chinese literary sphere had worked for years for a Chinese author to win a Nobel Prize. When the prize was awarded, the *People's Daily* wrote: "Congratulations to Mo Yan for winning the Nobel Prize in Literature! It is the first time for a writer of Chinese nationality to win the Nobel Prize in Literature. Today is the day that Chinese writers have awaited for too long and that Chinese people have awaited for too long." The determination to succeed internationally in competitive sports, also evident in twenty-first-century China, is suggestive of a comparable treadmill.

Global hegemony may be about to shift from the North Atlantic region to the Middle Kingdom, mainly in the world economy, but also in other domains. However, whether or not China is about to become the new global hegemon is not the main point – rather, it is that the current Chinese economic system, including investments overseas in mines, infrastructure, and so on, is a major contributor to growth and prosperity within the country and ecological disaster for the planet. This simple, familiar fact is a major difference between the British and the Chinese industrial revolutions, separated by two centuries. The ecological conditions for human civilisation have changed since the time when resources seemed inexhaustible, people were few, and there was always a new frontier on the horizon. I shall therefore return to Anthropocene effects and predicaments by suggesting that its implications are likely to inspire a new approach to modern complexity, forcing us not only to rethink the present and the near future, but also to see the Eurasian past in a new light.

Treadmill Competition and the Overheated Anthropocene

Coal mining may have started in China as early as 3,500 BCE, long before Europe or the Levant. Coal was used in smelting furnaces from the eleventh century, owing to the destruction of forests, similar to what happened later in Europe. Coal consumption in China was nevertheless negligible until the early 1990s, since which time it has risen meteorically, closely paralleling the phenomenal growth in GDP. It is worth pondering the fact that until the late eighteenth century, nearly all energy input into production was mammalian (Smil 2017). A horsepower was simply the power of a horse, but manpower represented the greater proportion, not least thanks to chattel slavery in the New World plantation economies. For many centuries, the technologies used in transport, but also in production, tended to change slowly and incrementally in Europe just as in China. The concept of punctuated equilibrium from evolutionary theory comes to mind (Eldredge and Gould 1972). The normal situation in evolutionary processes consists in stability. Most of the time, there is very little evolutionary change. These long periods of stable reproduction are punctuated by brief flashes of frantic genetic activity, rapid change, extinctions, and viable

mutations, generally responses to changes in other parts of the biosphere, as a kind of chain reaction. Similarly, improvements in transportation technologies, both in the East and the West, were slow and incremental from antiquity until the beginning of the steam age. This does not imply that treadmill competition did not take place, and it could be complementary as well as symmetrical. If the Vikings improved their shipbuilding skills and upgraded their weaponry, coastal communities further south had to improve their defence systems. The gradual development of high-quality steel, which took place independently in China and Europe, surely had a competitive aspect, and unfolded for centuries after the smelting of iron was invented. With the marriage of the steam engine and coal, global changes, the grave unintended consequences of which we are now experiencing, began to accelerate.

In *The Great Acceleration*, McNeill and Engelke argue that the Anthropocene will last much longer than acceleration, which cannot logically last for very long: "Indeed, even if every human immigrated to another planet tomorrow, our impacts of the past few generations will linger for millennia in the Earth's crust, in the fossil record, and in climate" (McNeill and Engelke 2016: 208). Exponential growth curves always flatten out or crash.

What we are currently witnessing are runaway growth processes that reinforce one another. For example: air traffic boosts economic growth, which entails increased production, which in turn increases air traffic and consumption, creating digital markets and dedicated apps making purchases of anything from plane tickets to sunglasses more frictionless than ever before. Similarly, economic growth in China increases the demand for beef, leading to deforestation in Brazil, erosion and eventual desertification, stimulating migration into cities lacking the infrastructure necessary to deal with explosive population growth, with ensuing problems of waste and pollution. The treadmill in these examples results from a desire to keep up with others in an integrated system with shared criteria and rules, and its fallout can be enforced migration, increasing inequality, path dependencies, and environmental destruction.

The question is not whether treadmill competition is bad for the environment, which it clearly is, but what it tells us about current and hegemonic views of progress. It is as if modernity has shifted into a higher gear since the onset of global neoliberalism, flourishing after the end of the Cold War around 1990.

There has been an acceleration of acceleration. Ours is a world of high-speed global modernity where the fact that things change no longer needs to be explained by social scientists; what comes across as extraordinary or puzzling are instead the patches of continuity we occasionally discover. Modernity in itself entails change, but for decades change was synonymous with progress, and the standard narrative about the recent past was one of improvement and development. Things seemed to be getting better, and history had a direction.

In the last few decades, the confidence of the believers in unilinear progress has been dampened. Modernity and enlightenment did not eradicate atavistic ideologies, sectarian violence, and fanaticism. Wars continued to break out. Inequality and poverty did not go away. Recurrent crises with global repercussions forced economists to concede, reluctantly, at least when caught with their pants down (e.g. during the 2007–2008 financial crisis), that theirs was not a precise science after all. Although many countries were democratic in name, a growing number of people felt that highly consequential changes were taking place in their lives and immediate surroundings without them having been consulted beforehand. And, most significantly, as I have argued in this lecture, the forces of progress turned out to be a double-edged sword. What had been our salvation for 200 years, namely inexpensive and accessible energy, was about to become our damnation due to environmental destruction and climate change.

Some forms of treadmill competition have led to genuine progress and better lives, many of which can be classified as the ‘better mousetrap’ kind. One might think of the evolution of ordinary things, for example, such as the fork, the watch, or the paper clip (Petroski 1992), or the trials and errors that eventually produced the lightbulb, the chronometer, and the transatlantic telegraph cable. It is unlikely that these achievements would have been reached by way of centralised state planning. Other forms of treadmill competition are ecologically destructive, increase social inequality and have few net positive effects for humanity and the biosphere, such as the mammoth infrastructural project of building extraordinarily spectacular football stadiums in the hot desert country of Qatar in an attempt to outperform previous World Cup hosts. Yet others are physically debilitating to individual competitors, and this is the case with various sports, whether they may lead to brain damage, anorexia, or chronic pain. Athletes may, in a different argument, be likened to Roman

gladiators, sacrificed by the mediatised, jaded, and often nationalist public sphere, not to the gods or the Emperor, but to the spirit of modernity, losing their youth to unhealthy, monotonous, and ultimately futile exertion.

The simplest treadmill category is that in which two or several actors compete to take the lead relative to the others, typically when competing for a specific resource or niche, and where the costs and benefits are generally relevant only for those directly involved. Competition for a common but renewable resource may fit here, and certain aspects of competition within and between sports fall into this category; audiences are renewable resources. However, in most cases, a third party will be affected, positively or negatively: The upgrading of football stadiums in the UK from the 1980s onwards reduced hooliganism, but tickets became too expensive for fans on modest salaries. The scramble for minerals, including hydrocarbons, has led to a stunning economic growth rate worldwide since the 1980s, at the expense of undermining the conditions for the civilisation created on the back of hydrocarbons. An initially positive outcome of a competitive race, such as cheaper commodities and services, may eventually lead to a reduction in diversity (standardisation, economies of scale) and quality. An effect of cheap food is intensified exploitation of food producers, as is the increased use of antibiotics, pesticides, and chemical preservatives enabling the food to keep longer. A similar argument is often made about garments. Treadmill competition, while increasing production and consumption, can thus turn into a race to the bottom.

Now recall that the trees in the hills surrounding Oslo need to grow to twenty meters in order to reproduce, although the energy needed to achieve that height is largely wasted. One could by rights ask why on earth those trees cannot just get together and decide that as from next year, no tree is allowed to reach more than five meters. Those who violate the principle will be executed by chainsaw and exported as Christmas trees to Trafalgar Square or another remote area.

The short response to this proposition is that as far as we know, trees are incapable of making this kind of collective decision; but we human beings are. That is why this era is usually called the Anthropocene and not the Dendrocene. So, why do we humans continue to grow to twenty or thirty meters when we are perfectly aware that four or five would have been adequate?

Phrased differently, we humans have a choice, and here lies our privilege and our damnation, since self-consciousness and morality make us responsible for our actions. Perhaps, considering that treadmill competition will be with us forever, alternative niches for competing could be created or strengthened, ones which leave no ecological footprint and enable us to cool down, scale down, and slow down.

By now, the Eurasian miracle seems to have exhausted its potential and turned from a dream to a nightmare. Some would blame the predicament on the current culture of individualism, greed, and myopic profit-seeking that goes under the blanket term neoliberalism. And it is true that deregulation, market reforms, and technological innovations – from the containerisation of shipping to the smartphone – that have produced an overheated world without a thermostat, have coincided with the global dominance of neoliberalist ideology and practice. On the other hand, growth imperatives, ecological indifference, and a lack of foresight have characterised industrial society from the outset. This may change.

Some date the onset of the Anthropocene to the Industrial Revolution, some to the first nuclear weapons test in 1945. I have myself suggested 1991 as the year in which the Anthropocene was a reality and not just a prediction (Eriksen 2018), while – to take another extreme – Ian Morris (2010), while not using the term itself, argues that the cognitive, technological, and social take-off for *Homo sapiens* began after the last Ice Age. Although periodisation does matter, it is not relevant for the present argument, which has shown the counterproductive, counterfinal, and ultimately destructive effects of the Eurasian Miracle. In most accounts of the emergence of modernity, energy is fundamental, sometimes specified as EROI (Energy Return on Investment). And, whereas population has grown by a factor of eight since the beginning of the Industrial Revolution, energy consumption has increased thirty times, mainly because of fossil fuels, which are an exhaustible resource with very serious side effects.

In this lecture, I have indicated the relevance of an alternative, increasingly common interpretation of modernity, seen through the lens not of its successes but of its unintended consequences resulting from the kind of competition which historically has led to progress. In a world of limited good (Hornborg 2019), continued growth is a recipe for disaster. Thus, the alternation of dominance

between East and West, fuelled by mutual exchanges, internal and external competition, and a determination to defend one's turf in a changing ecology of power, has reached a point where a serious reevaluation is required. Will modernity be able to resolve this contradiction by its own means, or is a different approach to life on the planet necessary? Beyond the slogans of cooling down, scaling down, and slowing down, the solution to the Anthropocene dilemma may be found in a social ontology different from that of merchants, investor bankers, inventors, and politicians driven by personal ambition. The Polanyian "double movement" between the values of the market and the values of society (Polanyi 1957 [1944]) may serve as a starting point. For this approach to economy and society to remain relevant, it nevertheless needs revision for reasons mentioned. The values of society must be integrated with the values of the biosphere, and thus the double movement of this century takes place not merely between the opposing poles of market and society, but between a view of humanity as being embedded in the environment and a view reducing nature to mere resources for the benefit of humanity or part of it. We are now slowly beginning to see not only the present, but also the past, in a new light. This will not per se require a major revision of large-scale accounts of cultural history, but a new great divide may be appearing before our eyes, following on the heels of the Industrial Revolution, yet a trueborn child of the Bronze Age. And, as a matter of fact, even trees need to cooperate for their survival since they share microorganisms, nutrients, undergrowth, and water resources. So, there is hope for humanity as well.

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