kritisk etnografi – Swedish Journal of Anthropology
VOL. 6, NO. 1
http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-497381

Threats to diversity in the shadow of Anthropocene overheating: A biosemiotic perspective[1]

Thomas Hylland Eriksen | Professor of Social Anthropology, University of Oslo

ABSTRACT: There is currently a growing concern with the ways in which globalisation leads to a reduction in diversity. Biodiversity is declining in many areas, and the standardising forces of states and markets lead to perceptible cultural loss. This effect is evident not least in the accelerated disappearance of languages in our century. Moreover, biocultural worlds comprising people living with their environments in sustainable ways are threatened by infrastructural developments, the marginalisation of indigenous groups, and other standardising processes. At the same time, many scholars have argued that the increased mobility and communication entailed by global modernity creates a plethora of new forms of diversity in the realm of culture. Some biologists similarly argue that introduced species may lead to ecological diversification rather than simplification. For more than a century, anthropologists have warned about the obliteration of 'traditional cultures' owing to the spread of modernity, while the concern with reduced biodiversity is no less urgent. These questions, which are as old as modernity itself, deserve to be raised in a new way. By exploring parallels and similarities, but also differences between the two forms of homogenisation, which are largely due to the same causes, new theoretical perspectives may emerge. In addition, the very assumption of reduced diversity needs to be examined critically. Perhaps the widespread belief in global homogenisation – terms such as the Homogenocene and the Plantationocene have been suggested to supplement the Anthropocene – can be misleading. It is therefore important to retain an interest in new, emerging or formerly unmarked forms of diversity as well, in the spirit of the intellectual quest which has animated anthropology for generations, that is the study of the relationship between similarity and difference.

Keywords: Biodiversity, cultural diversity, homogenisation, globalisation, Indigenous peoples

Preamble: Alta, Norway, 1979

As early as the 1960s, the Norwegian state laid down plans to dam the Alta river in Finnmark country, in the far north of the country, in order to build a hydroelectric plant. The main political parties in the county were favourable to the plans, which signalled a desire to contribute to economic growth in the region, but resistance was perceptible and vocal from the beginning. Sámi organisations, in particular, were concerned that the damming of the

[1] This is a revised and expanded version of the Vega Lecture, given at Stockholm University on 25 April 2022. I am humbled and grateful to have received the Vega Medal and would like to express my gratitude to the Swedish Society of Anthropology and Geography for the honour and the wonderful hospitality making the day a memorable one. I am also grateful to my colleagues Paige West, Alf Hornborg, and Veronica Strang for their stimulating and not least diverse contributions to the symposium.

Contact: Thomas Hylland Eriksen ✉t.h.eriksen@sai.uio.no

river would disturb the annual reindeer migrations and salmon fishing, both of which were significant elements of the traditional livelihood among the indigenous people. In 1978, the Popular Movement against Development of the Alta-Kautokeino River (*Folkeaksjonen mot utbygging av Alta–Kautokeino-vassdraget*) was founded in the town of Alta. In the following year, the Movement announced that it was prepared to engage in civil disobedience in a bid to thwart the plans of the insensitive Labour government in distant Oslo.

The resistance against the dam reached a climax in the autumn of 1979, when Sámi activists organised a much-publicised hunger strike in front of the parliament building in Oslo. Thousands of demonstrators gathered at a billabong called Stilla along the river, some chaining themselves together to make their removal by the police difficult (they were collectively known as *lenkegjengen*, the chain gang). Many were locals, a fair number of them Sámi; but there was also an important contingent of environmentalists from other parts of the country and internationally.

I shared the environmental engagement of the activists and would have gone to Alta if it had been practically possible. But I was just 17 and in my last year of school. Instead of making the long trip north, I co-organised a local demonstration of support in my hometown, painting banners and producing leaflets on a mimeograph machine. We were not arrested, and the march through the small, conservative coastal city could not by any stretch be described as a baptism of fire, but it was nonetheless a formative experience. It has later occurred to me that my recent and current work on the destructive consequences of overheated globalisation could be seen as a continuation of my early engagement in this conflict. It would take many detours to reach this point – for years, I did research on ethnicity in Mauritius and Trinidad, migration in Oslo and creolisation everywhere – but with hindsight, the continuity can easily be traced.

In spite of several years of resistance from the Movement and other elements of civil society, the state and its hydroelectric company NVE (*Norges Vassdrags- og Elektrisitetsverk*) finally had its way. The dam and the power station were built. It might seem, thus, that the battle was lost. However, the Alta conflict was, retrospectively, a victory in disguise, marking a watershed in Indigenous politics in Norway, with repercussions in the Arctic and beyond. Transnational alliances were strengthened during the conflict, not least with Indigenous peoples in Canada and Sámi in neighbouring Sweden and Finland, and there was considerable international media attention to the affair, largely sympathetic to the plight of the Sámi. During the 1980s and into the 1990s, questions concerning Sámi self-determination were raised with some success, and schoolchildren were eventually taught the history of oppression and internal imperialism, much as American pupils were taught about the transgressions of settler colonialists towards Native Americans. The old policy of Norwegianisation was critically interrogated and in some respects abandoned. North Sámi, the largest of the languages, was recognised in school and public administration. In 1989, a Sámi parliament – with admittedly restricted powers – was inaugurated by King Olav V, who took the opportunity to apologise to the Sámi people for past injustices. North Sámi is now an official administrative language in seven municipalities in Finnmark and Troms counties.

Looking back at the Alta conflict after more than four decades, one cannot help being struck by the fact that it raised issues which were marginal at the time, politically as well as academically, but which are now addressed with great urgency and engagement, not least

in anthropology.

The central issue concerned Indigenous rights to land and self-determination. Awareness of the consequences of stateless peoples' enforced integration into the state became more widespread beyond the academic and activist spheres. A study of Indigenous perspectives on the conflict, cleverly titled *Dam a River, Damn a People?* was written by the anthropologist Robert Paine (1982); a more comprehensive analysis of the political process was Trond Thuen's *Quest for Equity* (1994).

Scalar clashes between local communities and the nation-state were also at the forefront of the controversy. Decisions taken in distant Oslo had profound consequences for communities in Finnmark, raising issues regarding democratic participation and levels of political integration, but the affair was also a poignant reminder of the map/territory problem, later analysed in Scott's influential *Seeing Like A State* (Scott 1998).

A third family of issues, important not least to non-Sámi environmentalists, concerned technocratic rule versus ecological conservation as guiding values. In the present era of climate change and rampant environmental destruction, these questions are arguably more relevant than at the time of this conflict.

Finally, the concept of biocultural diversity was used by Sámi intellectuals to indicate the dangers of applying a clunky Cartesian dualism. Eventually, this concept slowly trickled into the vocabulary of the UN system in the 1990s and has later become a focal point for NGOs such as Terralingua (Maffi and Woodley 2012), although conventions on biodiversity continue to separate nature and culture. Sámi herders and others pointed out that their relationship to their surroundings were qualitatively different from the logic of domination typical of the modern state and capitalism. By invoking cultural values, they also hinted at the existence of a cosmological difference between Sámi and mainstream Norwegian society. These issues have stimulated much anthropological theorising and ethnographies in recent decades, while the political impact has been limited. At COP16 on biodiversity, one of the proposals consists in fencing off ten, 20 or 30 per cent of 'nature' in order to allow its recovery. This way of reasoning represents the exact opposite of a contextual, holistic approach shared by anthropologists and scholars in the humanities.

It may also be appropriate, before we proceed, to point out that several of those who engaged in civil disobedience in Alta were respected university academics. Nils Christie (1928–2015) was a well-known professor of criminology, and the philosopher Arne Naess (1912–2009), would later become internationally recognised as the founder of deep ecology. Both were excellent scholars, but also politically engaged citizens. Perhaps it can be said that all outstanding research has an existential dimension in that something important is at stake for the researcher on a personal level, which could be a moral or political engagement or just relentless curiosity. This may explain why so much of the most exciting anthropological research in the 21st century is framed within the context of environmental destruction and climate change, that is Anthropocene effects.

21st century: Anthropocene effects as a game-changer

It is far from obvious that social anthropologists should be engaged in research on Anthropocene effects. After all, the very term *anthropology* signals a focus on *anthropos*, the human being. It forms part of the *social sciences*, the study of human social life, social organisations, and institutions, and it also dips its feet ever so often into the warm waters

of *humanities*. It is therefore a matter of some interest that the growth in anthropological research dealing with the interface between humanity and the rest of nature has been massive since the turn of the millennium.

Throughout the 20th century, environmental anthropology existed, but it was never a central mainstream concern in the discipline. The human *Umwelt* – the ecological environment – usually entered anthropological research in the guise of material resources used in human society or as ritual or totemic symbols, not as a subject of study in its own right. This stands to reason, in so far as anthropologists are trained to study humans, not insects or lichen. At the same time, a major intellectual challenge in the discipline in the present century, reflected in the current explosion of ecologically informed anthropological research, consists of attempts to expand the discipline in order to reconceptualise humanity as an integral part of the biosphere.

The explanation of this shift is easy to discern. Anthropology has always been informed and inspired by events and current concerns – for recent examples, it can be mentioned that the Covid-19 pandemic (from 2020) and the Syrian refugee crisis (from 2015) rapidly led to research endeavours and a flurry of publications. The considerable interest in ethnicity and nationalism in the latter decades of the slightly slower 20th century was similarly a result of the very perceptible shift from class politics to identity politics across the world. A decade or two earlier, feminism produced a heightened and lasting awareness of gender, and historical processes such as the marginalisation of Indigenous groups and the aftermath of the Second World War, giving birth to decolonisation, the civil rights movement, and the Cold War, stimulated important work among anthropologists keen to understand not only what it entails to be human, but also how the individual life-world is shaped by large-scale events in the outside world, often ultimately motivated by a desire to use knowledge to make the world safe for difference, to paraphrase Ruth Benedict (speaking at Franz Boas's funeral) – less unequal and saner for humanity, now encompassing the biosphere.

In this century, the towering concerns are caused by the acceleration of acceleration, global neoliberalism, changes in climate, and threats to the environment. The concept of the Anthropocene is suddenly ubiquitous. The term was originally coined by the atmospheric chemist Paul Crutzen and, independently, the late biologist Eugene Stoermer. Crutzen is also the co-author of a much-cited article, co-written with his colleague Will Steffen and the historian John McNeill (Steffen, Crutzen and McNeill 2007) on social aspects of climate change. The current popularity of the concept does not merely signal an increased engagement with climate and the environment, but also a view of human life as being planetary in its entanglements and seamlessly integrated with that of other species. In this shift lies a radical potential for rethinking what anthropologists and other social scientists do, whether we mainly try to understand the world or the human condition. Many of us, whether or not we approve of the term Anthropocene, grapple with this shift, trying to reshape anthropology in order to come to terms with what some speak of as a more-than-human world inhabited mainly by non-humans, or what others would prefer to see as an ecosystem pounded and destabilised by greed, inequality, and capitalist growth. Perhaps post-humanism is an appropriate label.

Although the prophets of doom in the latter half of the 20th century were proven wrong, environmental challenges are now affecting human lives worldwide in such momentous ways that they can no longer be ignored. Changes now take place so fast that

researchers and even journalists find it difficult to keep up the pace. In my own work, I have proposed the term *overheating* to describe the increased rhythm of change since around 1991 (Eriksen 2016). In a simultaneously published book, McNeill and Engelke (2016) speak of 'the great acceleration' since the Second World War, but it would also make sense to talk about an *acceleration of acceleration* since the end of the Cold War around 1991. In the overheating years of the last three decades, world trade has tripled, tourism has quadrupled, and the amount of plastic in the ocean has grown by a factor of five. Scientific papers, gray papers and media tell us every day about the various ways in which environmental destruction has exploded, along with a massive growth in consumption, trade, and mobility, with anthropogenic climate change as the cumulative effect and paradoxical crowning achievement of the present era of overheated globalisation lacking a thermostat or governor, to use the language of cybernetics. The availability of abundant and powerful energy thanks to fossil fuels, a blessing for humanity since the early 19th century, has now become its damnation and our self-inflicted recipe for catastrophe.

Since the early 19th century, humanity has been able to exploit enormous amounts of energy; at first just in the shape of abundant surface-near coal deposits, subsequently through the harnessing of oil and gas for the betterment of humanity. The fossil fuel revolution enabled humanity to support a very high and fast-growing global population with seemingly insatiable desires for consumption. Yet the cost of taking out fossil fuels grows as the low-hanging fruit has been used up. At the same time, production relying on fossil fuels is inherently destructive (Hornborg 2019), in a dual sense since we are simultaneously eating up capital which it has taken the planet millions of years to produce and are undermining the conditions for our own civilisation by altering the climate and ruining the environment on which we rely. The short and the long-term mirror each other, as do the large and the small scale. Coal and its close relatives, the salvation of humanity for two centuries, has become our damnation, and there is no easy way out. The lesson from cultural history may nevertheless be that lean societies, decentralised and flexible, with less bureaucracy than farming, fewer PR people than fishermen, are the most sustainable in the long term. As the archaeologist Joseph Tainter remarks towards the end of his important survey of civilisational collapse: "Complex societies […] are recent in human history. Collapse then is not a fall to some primordial chaos, but a return to the normal human condition of lower complexity" (Tainter 1988: 198). Contemporary human civilisation, with its reliance on growth in production and consumption, is anything but sustainable, no matter how one views it.

Diversity loss

Many of the effects of overheated globalisation can be described as homogenisation, simplification, standardisation, and diversity loss (Eriksen 2021). The parallels between the warnings from biologists about the loss of biodiversity and anthropological advocacy for cultural diversity are striking. In both cases, modernity – or globalisation if you wish – is the key cause of loss. This is a dual track worth pursuing because the main causes of loss in both cases are the same. Additionally, loss of diversity, whether cultural or biological, can be understood as a single phenomenon, resulting in a flatter world with less complexity and fewer options. It nevertheless needs to be kept in mind that it is far more difficult to study the loss of cultural diversity than the loss of biodiversity. The latter can be studied quantitatively, while culture is not easily counted and measured. Laments about the loss of

cultural diversity owing to what we now speak of as the forces of globalisation are older than anthropology itself. As early as 1839, the renowned medical scholar and psychologist James Cowles Prichard gave an address to the British Association for the Advancement of Science; during the address, Prichard spoke of the recent extension of 'the progress of colonisation' and its detrimental effects on local cultures, concluding that:

> A great number of curious problems in physiology, illustrative of the history of the species, and the laws of their propagation, remain as yet imperfectly solved. The psychology of these [native] races has been, but little studied in an enlightened manner; and yet this is wanting in order to complete the history of human nature, and the philosophy of the human mind. How can this be obtained when so many tribes shall have become extinct, and their thoughts shall have perished with them? (Prichard, quoted in Graber 1970: 1293)

Nearly two centuries later, cultural diversity still seems to be thriving. However, we should bear in mind that homogenisation has taken place in important areas even if diversity flourishes elsewhere, as described by Scott (1998) and spoken about somewhat tongue-in-cheek by Geertz (1986), who said, famously, that cultural differences 'will doubtless remain – the French will never eat salted butter. But the good old days of widow burning and cannibalism are gone forever.' (Geertz 1986: 105)

This kind of statement needs to be problematised since diversity cannot easily be measured, and the topic will need more space for a full exploration than afforded in this lecture. It may nevertheless be sobering to consider Ulf Hannerz's reminiscences from his fieldwork in Kafanchan, Nigeria in the 1980s, where he points out that more than 40 years ago:

> the tendency among academics and other intellectuals back in Europe and North America was fairly generally to assume that increasing global interconnectedness would necessarily involve homogenisation, greater uniformity – a loss of a large part of the world's cultural diversity. That had been an ingredient in much modernisation theory prevalent in the mid-twentieth-century social sciences, and it was still there but took on another form in radical critiques of "cultural imperialism" a couple of decades or so later.
>
> […]
>
> But that was not what I saw. Cultural diversity was alive and well, although taking on some new forms. (Hannerz 2022: 3)

As to biological diversity, the verdict in the professional community is more unequivocal. The fear of irretrievable loss, not entirely unlike Prichard's concern, inspired intellectuals and explorers to campaign for the establishment of national parks in the 19th century. Seeing nature not as an adversary to be overcome by civilisation, but rather as a treasure threatened by that very same civilisation, a broad palette of engaged citizens – in the US they included the artist George Catlin, the essayist Henry David Thoreau, the naturalist John Muir and Abraham Lincoln himself – were early conservationists seeing unspoilt nature as inherently valuable, now in need of active protection.

Since the incipient environmentalist movement and the parallel concern among early anthropologists to document 'vanishing cultures,' the visibility of human footprints and global cultural homogenisation have accelerated dramatically. The threats are by now massive and ominous, both with regard to biological and cultural diversity. The main causes are the expansion of state and market forces, and the outcome can be described, in both cases, as a *loss of flexibility*. Whenever an insect species vanishes, or a language loses its last native speaker, the biosphere loses options.

Bateson and biosemiotics

A promising methodology for studying these dual, related, similar processes towards simplification and homogenisation is offered in the emerging field of biosemiotics, which views the biosphere – human as well as non-human – as a *semiosphere*, a system of communication defined by the ongoing, continuous exchange of signs. Biosemiotics offers a way of interpreting and studying nature, culture, and their mutual entanglements by reading the way organisms influence each other through a continuous process of communication, or semiosis.

One of the immediate ancestors of biosemiotics was Gregory Bateson (1904-80). Although he was trained as an anthropologist, Bateson's initial intention had been to become a biologist like his famous father William Bateson. He was converted to anthropology on a train to Cambridge in the company of Alfred Haddon, another natural scientist who had made the shift to anthropology (Lipset 1982). In his *Anthropology and Anthropologists*, Adam Kuper (1996 [1973]) remarks that Bateson did not quite fit into 1930s British anthropology, at the time dominated by the towering figures of Radcliffe-Brown and Malinowski, separated by their opposing views on structure and the individual, but united in their concern with the mechanisms of social integration and indifference to ecology.

Bateson was different, given his consistent interest in relationship, process, and the internal dynamics of living systems (Wardle 1999). He would soon contribute to founding, and also made influential contributed to psychiatry and general systems theory. Among his most powerful concepts are those of schismogenesis (self-reinforcing, usually destructive relationships), flexibility (uncommitted potential for change) and double bind (irresolvable dilemmas resulting from errors in communication). Developing Bertrand Russell's theory of logical types, which states that a class cannot be a member of itself since it is of a different logical type, he wrote about meta-communication among humans and animals. A dog playing with another dog, or with a human for that matter, may display the same kind of aggressive behaviour as a dog intent on attacking and inflicting injury, but by wagging its tail and only pretending to bite, it sends off the meta-message that it is just pretending. In later work on dolphin communication, Bateson similarly looked for logical types and different registers of communicating.

As a contributor to biosemiotics *avant la lettre*, Bateson is essential. In 'Cybernetics of the self' (in *Steps to an Ecology of Mind*, 1972), he shows that if an alcoholic takes recourse to willpower as a means to stop drinking, he is bound to fail, since the problem is relational and systemic. The alcoholic thus has to give up his erroneous epistemology according to which he is 'the captain of his soul,' accept that he is a part of something larger than himself, dependent and entangled.

Explaining the epistemological difference between individualism and a cybernetic view

of an action, Bateson goes on to write:

> Consider a man felling a tree with an axe. Each stroke of the axe is modified or corrected, according to the shape of the cut face of the tree left by the previous stroke. This self-corrective (i.e., mental) process is brought about by a total system, tree-eyes-brain-muscles-axe-stroke-tree; and it is this total system that has the characteristics of immanent mind.
>
> More correctly, we should spell the matter out as: (differences in tree)– (differences in retina)– (differences in brain)– (differences in muscles)– (differences in movement of axe)– (differences in tree), etc. What is transmitted around the circuit is transforms of differences. And, as noted above, a difference which makes a difference in an idea or unit of information.
>
> But this is not how the average Occidental sees the event-sequence of tree-felling. He says, "I cut down the tree" and he even believes that there is a delimited agent, the "self," which performed a delimited "purposive" action upon a delimited object. (Bateson 1972: 444–5)

Through his refusal to distinguish between the material and the immaterial (the tree and the axe belong to the same system of signification as the man's intentions), Bateson successfully transcended Cartesian dualism, and would later inspire Deleuze and Guattari to develop the concept of the assemblage. This radical move, familiar to Batesonians and biosemioticians, could have important implications for methodology in an anthropology determined to move beyond mere *anthropos* as its empirical focus.

The Batesonian concept of mind, expounded in *Mind and Nature* (1979), is a necessary condition for this endeavour to be possible: Mind does not end at the skin, but is a property of the living systems of which you and I form part. The fiction of the bounded individual with their exclusive, limited mind can be challenged from many directions, not all of them ecological. Medical scholars may point to our reliance on the human microbiota, the millions of bacteria existing in a symbiotic relationship with the human organism, while cognitive scientists have shown that most of what people think they know is in fact collective knowledge, most of which exists outside our individual minds (Sloman and Fernbach 2017). No individual has adequate knowledge of the 30,000 parts that make up a Toyota car, and yet these cars are assembled without a fault every day on the assembly lines in the vast factories of Toyota City. Pierce argued against Cartesian dualism and the atomistic *cogito* in the latter decades of the 19th century, showing that systems of signification were by definition shared and relational, with profound implications for ideas of personhood and mind.

Although it is rarely applied to contemporary issues, biosemiotics may illuminate some fundamental, and disconcerting, aspects of the high-speed contemporary world. Jesper Hoffmeyer (1942–2019) offers some useful concepts. Hoffmeyer was inspired by the philosopher Charles Sanders Pierce, the founder of semiotics, and by Bateson. He had a degree in biochemistry, worked as a biologist at the University of Copenhagen, and collaborated with philosophers, literary scholars, and social scientists. His first book in English, *Signs of Meaning in the Universe* (Hoffmeyer 1997; see Hoffmeyer 2009 for an academic study based on his doctoral dissertation), explains biosemiotics as a scientific approach to living

systems which interprets relations in nature as systems of signs. The method is the same as that employed by Umberto Eco in his essay about the blue jeans as a semiotic powerhouse brimming with signs, some directed at the surroundings, some communicating – in unpleasant ways – with his body parts. After reading Eco, it is impossible to see a pair of jeans as a mere item of clothing; and having read Hoffmeyer, you can no longer look at an ordinary shrub without being alert to the insects, the undergrowth and the structure of its twigs and leaves.

Biosemiotics does not reject Darwinian evolutionism, but studies communication and connections rather than competition and struggle. When a fox becomes aware of a hare in the vicinity, its reaction and eventual attack forms part of a semiotic chain which also includes the flight of the hare and cues given by the physical environment, such as hiding places. Hoffmeyer proposes the term *semiotic scaffolding* to indicate how the surroundings provide incentives and constraints to the communicating creature. In the same way as intellectual input from unexpected quarters give us the possibility to think differently, an organism – be it a slug or a chimpanzee – may flourish or wither depending on the options provided by its surroundings.

In one of his most authoritative statements, Hoffmeyer said: *Semiotic freedom may in fact be singled out as the only parameter that beyond any doubt has exhibited an increasing tendency throughout the evolutionary process.* What did he mean by that?

Semiotic freedom

Every organism has a certain degree of semiotic freedom, meaning the ability to do something differently. A plant could stretch toward the sunlight or direct its roots to the most nutritious and well-watered soil, or it could respond differently to signs in its surroundings. Non-vertebrates, Hoffmeyer assumes, act mainly on the basis of instinct, and therefore the term 'gift,' implying intentionality or at least consciousness, is misleading when used about insects and their mating practices. Vertebrates, and especially mammals, are forced to take decisions at the spur of a moment; whether to pounce or wait, fight or flee, go right or left. Their capabilities are shared throughout the species, but do not give detailed instructions as to how to act in a given situation. In this sense, antelopes and cats are like you and me, but of course, nothing is quite the same as anything else, and an interspecies comparison reveals an uneven distribution of semiotic freedom. The ability of metacommunication is more easily observed in apes and dogs than in sheep and crocodiles; and even the alleged 'chimpanzee genius' Nim Chimpsky developed a vocabulary of maximum 125 words, less than an average human one-year old. So, differences that make a difference exist, but mind, in Bateson's sense in *Mind and Nature*, is distributive. Organisms do not stop at the skin, but at the frontier of their *Umwelt*, to use a concept from another precursor to biosemiotics, namely the ethologist Jakob von Uexküll (see Schroer 2021).

A dog can play with its owner and pretend to bite her; in other words, it is capable of meta-communication by placing its actions in scare quotes, as it were, signalling that 'hey, look, this is play, I'm only joking.' The relationship between humans and dogs releases greater semiotic freedom – more alternatives, more flexibility, more depth or nuance in meaning – than the relationship between a pine tree and the blueberry bushes growing beneath it, although an exchange of signs takes place in the latter case as well. By drawing on this kind of relationships, Hoffmeyer describes an evolutionary process toward ever

greater complexity: more communication, more relationships, a denser forest of signs communicating ever more content at several logical levels. This development is an outcome of specialisation, which in turn is a result of the need to find vacant niches in ecosystems which are becoming increasingly crowded. In the realm of culture, the enormous variation in language, customs, technologies, cosmology, and kinship which can still be witnessed today is the outcome of a process of gradual cultural differentiation which began soon after the emergence of anatomically modern humans about two hundred thousand years ago.

Biosemiotics makes it possible to erase the conventional distinctions between mind and matter, humans and animals, and the conscious and the non-conscious, dualisms which have characterised Western thought for centuries. What matters is that which takes place *between* entities, not *within* them. It is possible to study any form of life, from the mycorrhiza networks connecting fungi and plants to a philosophical treatise, using the same toolbox. This is not an option to be ignored at this historical juncture, when Anthropocene effects are transforming life on the planet, human and non-human alike, at an astonishing speed.

When Hoffmeyer claimed that there had been an increase in semiotic freedom throughout the evolutionary process, he meant that there is more semiosis, more communication, more complexity in the natural world than ever, notwithstanding its temporary reduction owing to intermittent mass extinctions in the distant past.

The urgent question concerns whether the process towards greater overall semiotic freedom continues, or if the homogenising forces of globalisation currently, lead to its reduction.

Until the present, there has been an overall increase in complexity, flexibility, and semiotic freedom both in the ecological and the cultural domains. This process is currently being reversed owing to the homogenising forces of globalisation in both domains and their permutations. A relevant empirical field in this regard is arguably the growth, change and homogenisation of food systems. Food is perhaps especially relevant in this context, in so far as it contains elements of both culture and nature; eating can be seen as the transformation of something natural into something cultural.

Food systems and flexibility

Recall Bateson's (1972) definition of flexibility as uncommitted potential for change. Of 350,000 globally identified plant species, 7,000 have been used by humans as food, and people have eaten (or tried to eat) parts of many thousand more. In the Anthropocene today, 75 per cent of the food eaten by human beings is composed of just 12 crops and five animal species. Should one or two of them fail, the outcome may well be crisis or famine. Had we instead distributed investment more broadly and evenly, the risk would be less. A peasant who grows a bit of maize, some legumes and some tubers has more options in the long term than one who has shifted to dependence on a single crop for cash, subsistence or both.

There are more than 4,000 kinds of potato in the Andes, but only a minuscule proportion of the total number of varieties is grown on a large scale. The 1845–49 Irish famine, the result of a devastating potato blight, reduced the Irish population by 25 per cent through starvation and migration, and in the following decades, another million left the island. At this time, the Irish, who had shifted recently to monocrop cultivation of that New World tuber, grew just one kind of potato, the Irish Lumper. Had there been a greater diversity of types, some would likely have been resistant to the fungus; and had the Irish

been less dependent on the potato as a staple, their food system would also have been more flexible. Through an ironic twist of fate, the highest mortality rates occurred in areas where Gaelic was widely spoken. In other words, a lack of diversity in one domain led to reduced diversity in another.

The banana crises of the last century are structurally comparable to the Irish potato blight, although people deprived of bananas naturally do not usually starve to death, and the banana crises also differ in being global in compass and consequences (Lakhani et al. 2022). The most popular banana variety in the early 20th century was called Gros Michel. Developed through many years of trial and error, refinement, and experimentation, it was well suitable as an export article. Its taste was mild and sweet, it could be ripened on board ship, and came with its own robust wrapping. Thanks to Gros Michel and the new refrigeration technology, the banana republic became a possibility since exports from Central America to the United States grew exponentially. United Fruit Company could for decades control Central American countries such as Guatemala through indirect rule.

Eventually, Gros Michel was confronted by the same problem as the Irish potato fields. When one plant (technically an herb) was attacked by the lethal fungal infection known as Panama 1 (*fusarium oxysporum*), the fungus could easily spread to other plants, which were genetically identical. Panama 1 began to wreak havoc on banana plantations worldwide in the early 20th century, and by 1960, Gros Michel had practically gone extinct.

Rather than opting for greater diversity, the global banana industry made the same mistake again, by replacing the dying Gros Michel cultivar by the Cavendish banana, also an attractive and easily marketable variety. However, in recent years, the fungal infection known as Panama 4 has begun to kill off Cavendish plants. Monoculture creates vulnerability by reducing flexibility.

This kind of standardisation characterises the global food industry and is not chiefly the domain of bananas or potatoes. There exist many varieties of avocado, but the one you buy in the shop is likely to be of the Hass kind, developed through creative crossbreeding by the mailman and part-time gardener Rudolf Hass in the 1920s. Nearly all vanilla – 80 per cent of it grown in Madagascar – originates from a single Mexican variety.

In general, people eat more grains and less legumes than we did a couple of centuries ago. There are exceptions, the most significant being the soybean, which was confined to its native East Asian habitat for centuries. In our time, the soybean is widely perceived as an environmental ruffian on a par with the oil palm. A great deal of forest in Brazil and elsewhere has been cleared to grow soy, usually to feed cattle, salmon, and other domesticated animals later to be eaten by humans. Soy products are also popular among humans, ranging from the ubiquitous Kikkoman sauce (as common in Hatfield as it is in Hartford) to tofu, miso, margarine, and ice cream.

The expansion of soy is a key to understanding the conditions for the phenomenal growth in meat production in the contemporary world. The bean is rich in protein and easy to produce on an industrial scale. After the soybean expansion, which began in the 1960s but has taken off exponentially in the present century (Song et al. 2021), the porcine population of the world has doubled (to a billion), while the poultry population has increased sixfold (to more than 22 billion).

As is the case with the banana, the avocado, and the potato, the genetic variety of the soybean is limited, and its main consumers also display a dramatically reduced variation. At

the time when Cincinnati was the pork capital of the USA in the mid 19th century, a great diversity of pigs could be observed in its streets, farms, and slaughterhouses (Blanchette 2020). By now, the vast majority of pigs worldwide belong to the Large White race, whether they are produced in a Danish factory or a Chinese one. The very large, and growing, number of chickens now mostly belong to one of three varieties (Saladino 2021). More than 95 per cent of the cattle in the USA, moreover, belong to the Holstein race, a highly productive and docile breed which can be traced back to a handful of bulls.

Diversity creates resilience, and as every stockbroker knows, it is very risky to place all your eggs in one basket. The simplification and standardisation affects both nature and culture. The message from biosemiotics and ecology is that this standardisation is impoverishing and dangerous in removing diversity and reducing flexibility.

Genetic diversity in food crops has been reduced deliberately for the sake of increased productivity. Millions of lives have been saved in this way, and the Green Revolution, begun in earnest in the 1960s, enabled a fast global population growth with no accompanying mass famines. The unintentional side-effect is, nevertheless, a severe reduction in diversity. The homogenised, factory-like efficiency of the plantation is economically profitable and can be a blessing for the poor, at least in the short term, but it has ecological side-effects, known and unknown, as well as reducing the range of options for the future. Regarding culture and language, one may well claim that if everybody learns English, we can all communicate with each other, but there will also be a number of things that will forever remain unsaid. Language is being platformised like the ecosystem of the monocrop plantation. The linguistic equivalents of the rainforest ecosystem are forced into oblivion when language evolves along the same lines as the plantation.

* * *

As I noted at the beginning of this lecture, laments about the loss of cultural diversity have long been common among Europeans, often under the influence of Romantic yearnings for pre-modern authenticity. Sometimes, Indigenous and other 'exotic' peoples have been paraded, literally or in writing, as precious specimens from a human zoo or a reservation, effectively being denied the possibility to engage with modernity, to soil their authenticity with creolising influences and foreign languages, to get a haircut, an education and an office job. They have often been taken hostage to the self-contempt of uprooted, urban, alienated dreamers. Yet this valid objection should not detract from the lived realities of autonomy loss and reduced flexibility, both for people affected – which, ultimately, are most people on the planet – and for the global semiosphere. The loss is indisputable, both as regards biodiversity and cultural diversity.

Biosemioticians often see themselves as a countercultural force by rejecting Cartesian dualism, liberal individualism and the ethos of competition which permeates Darwinism in most of its interpretations. Yet, support for a systemic, holistic, relational, processual view defending complexity and diversity may sometimes come from unexpected quarters. *The Origin of Species* (Darwin 1859) is frequently seen as a celebration of competitive individualism or, somewhat uncharitably, an admittedly unconscious ideological defence of libertarian capitalism. However, another reading of the book is possible. To me, the main message from *Origin* is not that competition overrules cooperation, or that the unit of

selection is by necessity the individual, but rather an ecological, holistic view of life. In the final paragraph of *Origin*, the great Victorian biologist emphasises that the most important implication of his theory is that all life is interconnected:

> There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved. (Darwin 1859: 490)

Earlier in the book, Darwin has devoted many pages and a great deal of enthusiasm to the wonders of the geometrically perfect beehive and the conundrum of the sterile working-ant. Although he framed his findings in the language of mid 19th century English liberalism, emphasising competition rather than complementarity, the first edition of *Origin* is not a story about progress, but about shared origins and the way in which all life is ultimately one.

If the default outcome of accelerated, overheated globalisation is an impoverished, inflexible, upscaled, and ultimately dangerous monocultural world, Darwin's vision may in fact be enlisted in support of the opposition. Like the biosemioticians, his view was relational and processual, and appreciated not only the 'grandeur' of the outcomes of the evolutionary process, but also the fact that survival will require diverse solutions. It is necessary to take into consideration the entire *Umwelt* – environment – rather than single species or 'cultures.' It is necessary to look for fundamental causes underlying immediately visible symptoms. In our day and age, this is a lesson from ecology, biosemiotics, and anthropology of increasing urgency – and perhaps it is also, retrospectively, a lesson from the Alta conflict. If the TINA (There Is No Alternative) doctrine is to be countered by the realisation that survival requires diverse solutions, anthropologists have to think outside of the box and work outside of their cosy seminar rooms in order to promote, in an efficient way, the superior TAMA doctrine: There Are Many Alternatives.

References

Bateson, G. 1972. *Steps to an Ecology of Mind*. New York: Bantam.

------. 1979. *Mind and Nature: A Necessary Unity*. Glasgow: Fontana.

Blanchette, A. 2020. *Porkopolis: American Animality, Standardized Life, and the Factory Farm*. Durham: Duke University Press.

Darwin, C. 1859. *On the origin of species by means of natural selection, or the preservation of favoured races in the struggle for life.* London: John Murray.

Eriksen, T. H. 2016. *Overheating: An Anthropology of Accelerated Change*. London: Pluto.

------. 2021. The Loss of Diversity in the Anthropocene Biological and Cultural Dimensions. *Front. Polit. Sci.* 06 September 2021. https://doi.org/10.3389/fpos.2021.743610

Geertz, C. 1986. The uses of diversity. *Michigan Quarterly Review* 25(1): 105-123.

Graber, J. W. 1970. Ethnographic Salvage and the Shaping of Anthropology. *American Anthropologist* 72(6): 1289-1299.

Hannerz, U. 2022. *Afropolitan Horizons: Essays toward a Literary Anthropology of Nigeria*. Oxford: Berghahn.

Hoffmeyer, J. 1997. *Signs of Meaning in the Universe*. Bloomington: Indiana University Press.

------. 2010. *Biosemiotics: An Examination into the Signs of Life and the Life of Signs*. Scranton, PA: University of Scranton Press.

Hornborg, A. 2019. *Nature, Society, and Justice in the Anthropocene: Unraveling the Money–Technology–Energy Complex*. Cambridge: Cambridge University Press.

Kuper, A. 1996. *Anthropology and Anthropologists: The Modern British School,* 2nd edition. London: Routledge.

Lakhani, N., A. Chang, R. Liu and A. Witherspoon. 2022. Our food system isn't ready for the climate crisis. *The Guardian* 14 April.

Lipset, D. 1982. Gregory Bateson: The Legacy of a Scientist. Boston, MA: Beacon. In *Biocultural diversity conservation: A sourcebook* (eds) L.Maffi and E. Woodle. Oxford: Earthscan.

McNeill, J. and P. Engelke. 2016. *The Great Acceleration*. Cambridge, MA: Harvard University Press.

Paine, R. 1982. *Dam a River, Damn a People? Saami, Lapp, livelihood and the Alta-Kautokeino hydro-electric project and the Norwegian Parliament*. Copenhagen: IWGIA.

Saladino, D. 2021. *Eating to Extinction*. London: Jonathan Cape.

Schroer, S. A. 2021. Jakob von Uexküll: The Concept of *Umwelt* and its Potentials for an Anthropology Beyond the Human. *Ethnos* 86(1): 132-152.

Scott, J. 1998. *Seeing Like A State: How Certain Schemes to Improve the Human Condition have Failed*. New Haven: Yale University Press.

Sloman, S. and P. Fernbach. 2017. *The Knowledge Illusion: The myth of individual thought and the power of collective wisdom*. New York: Riverhead.

Song, X.-P., M.C. Hansen, P. Potapov et al. 2021. Massive soybean expansion in South America since 2000 and implications for conservation. *Nat Sustain* 4: 784–792. https://doi.org/10.1038/s41893-021-00729-z

Steffen, W., P. J. Crutzen and J. R. McNeill 2007. The Anthropocene: Are Human Beings Now Overwhelming the Forces of Nature? *AMBIO* 36(8): 614–21.

Tainter, J. A. 1988. *The collapse of complex societies*. Cambridge: Cambridge University Press.

Thuen, T. 1995. *Quest for Equity. Norway and the Saami Challenge*. St. John's: Institute of Social and Economic Research.

Wardle, H. 1999. Gregory Bateson's Lost World: The Anthropology of Haddon and Rivers Continued and Deflected. *Journal of the History of the Behavioural Sciences* 35(4): 379–389.