

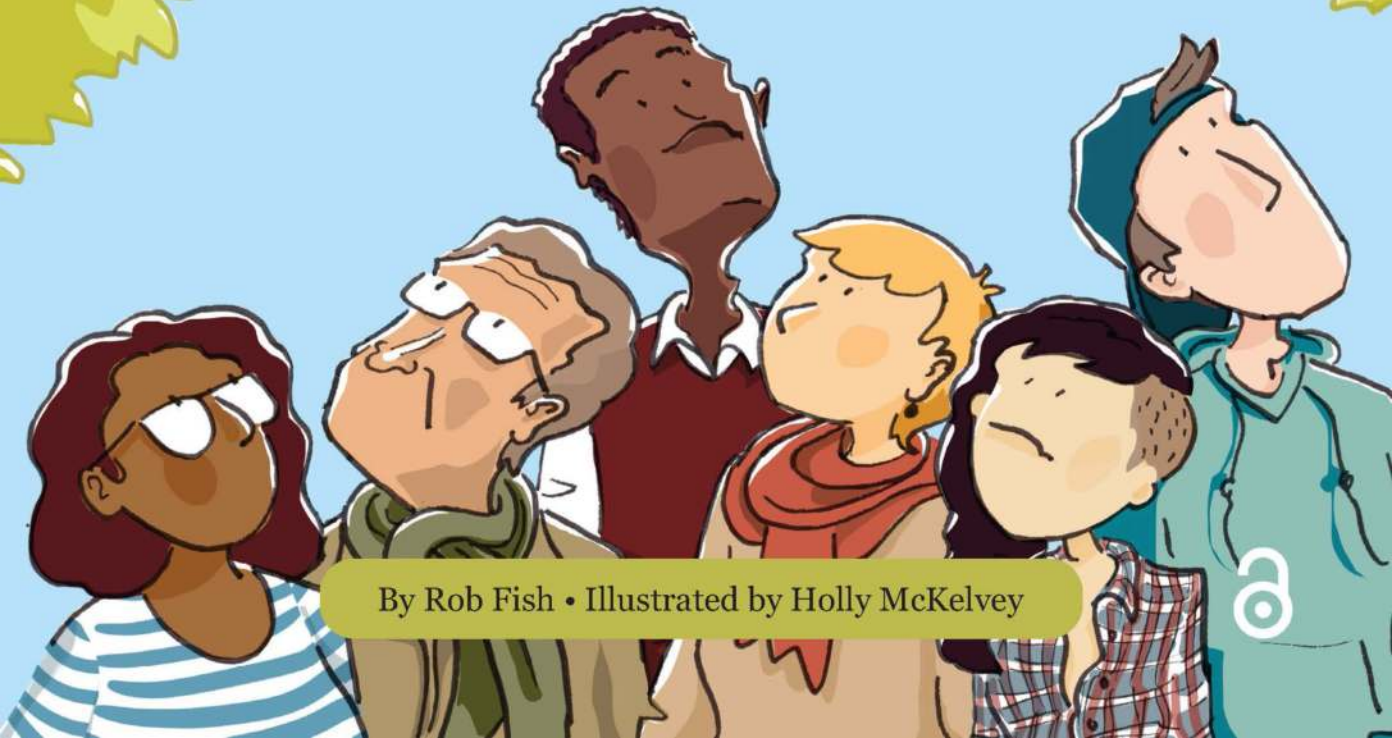


CRC Press
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Valuing

NATURE

The Roots of Transformation



By Rob Fish • Illustrated by Holly McKelvey





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Valuing NATURE

The Roots of Transformation

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Preface

Life-giving, life-saving, life-affirming and life-enhancing. These are some of the qualities conferred upon the natural world when we speak of the idea of valuing nature. By 'we' I am referring to that broad and diverse community of environmental scholars and practitioners who share the view that the collective ability of humans, or some humans at any rate, to fundamentally transform the Earth and its life-supporting capability is not matched by an ability to act collectively and concertedly in a way that supports those capacities over the foreseeable future. More specifically, I am referring to an increasingly vocal and well-organised epistemic community of sustainability scientists and policy makers who, labouring at the dawn of a new environmental epoch, interpret these inabilities to act as problems regarding the invisibility of nature within decision making.

Starting somewhat as a whisper, a discourse has steadily grown that problems of environmental sustainability and resilience are less the product of willful blindness on the part of political and economic elites, than a reflection of nature's hidden, and consequently unrevealed, value; a procedural problem begetting technocratic solutions. To this end, concepts and frameworks have been invented that have steadily shaped and harmonised models of evidence gathering about the natural world across whole fields of science and practice, enabling scientists not only to quantify, measure and monitor nature's many and diverse benefits for people, but crucially, to systematically value these benefits in the context of the decision-making processes of government, business and civil society. These practices define what is understood by many in environmental research as the 'valuation of nature' and are practices tethered strongly to both the concept of ecosystem services and to the elaboration and use of economics with respect to environmental concerns. It is thus helpful to read this book in conjunction with some basic appreciation of the history of this discourse, since it guides some of the background logic of the content.

As we shall see, ecosystem services is a concept used within sustainability discourse to describe ecological systems in terms of their many and varied contributions to human well-being. These contributions are understood to encompass the conditions and processes that sustain basic human needs, secure economic livelihoods and enrich life culturally. The concept distinguishes itself as an essentially instrumental characterisation of the values associated with non-human nature, and now harmonises increasingly diverse areas of natural resource management and planning. Proponents of the concept emphasise its potential to promote a holistic and transdisciplinary perspective on human dependencies on the natural world, although its characterisation of human-environment relationships, and the principles and tools guiding its application to policy and decision making, are contested.

The idea of services arising from natural systems has its provenance in formative debates regarding the conservation of biological diversity and in the related emergence of the crisis discipline of conservation biology. The premise that unprecedented rates of extinction in species and populations posed a threat to global humanity provided the context in which the term ‘ecosystem services’ was first promulgated by Ehrlich and Ehrlich (1981); however, earlier variants on the idea—among these ‘environmental services’, ‘nature’s services’ and the ‘public services of the global ecosystem’—exist in the published record.

From the outset, the tone of the discourse was pragmatic. Ecosystem services were contrived by natural scientists as a tactical effort to signify humanity’s common investment in the otherwise abstract fate of biological diversity, and more specifically, as a way of situating nature firmly within a technocratic frame of policy and scientific reference. Despite the promise of a diffusely emerging environmental ethic—including within this appeal to nature’s intrinsic value—as a basis for conservation action, it was in direct appeals to human self-interest, or “human chauvinism” as Ehrlich and Ehrlich put it, that attitudes and behaviour towards the preservation of species might shift. The construction of ecosystem services at the vanguard of efforts to persuade, edify and inculcate civil society and politicians into the idea of an ecological crisis for humanity remains a persistent refrain.

Initial elaborations of the ecosystem services concept were confined to a limited set of ‘indirect life support’ mechanisms encompassing, for instance, the maintenance of the quality of the atmosphere, the control and amelioration of climate, the regulation of freshwater supplies and the generation and maintenance of soil. Understanding the impact of biodiversity loss on the provision of these services provided an early empirical focus for natural scientists, as did speculating on the extent to which organisms supporting human life could be substituted for by way of technological innovation. The tone of the discourse was both pessimistic and emphatic in its characterisation of change, and unambiguous in its concern to ensure that ecosystems—and the species and populations they supported—were protected and preserved.

Momentum for the concept of ecosystem services grew through its placement within the discourse of sustainable development and, decisively, in its related alignment to economic interpretations of ecological value. The concept featured, for instance, in Agenda 21—the action plan of the UN Conference on Environment and Development—as part of supporting the implementation of the Convention on Biological Diversity. This included the Convention’s concern to develop ‘measures to foster understanding and appreciation of the value of biological diversity’. The fields of environmental and ecological economics provided important venues in which this value premise was explicitly treated, and through which the natural scientific framing of ecosystem services scholarship was gradually extended into the social scientific realm. A notable and provocative statement in this area, and one considered important in popularising interest in, as well as critical scrutiny of, the concept, was an attempt by ecologists and economists to quantify and monetise the aggregate value of global ecosystem services (Costanza *et al.*, 1997). The subsequent publication of the Millennium Ecosystem Assessment (MA) in 2005—a global assessment of the character, causes and consequences of ecosystem change and their implications for well-being—was a further decisive moment in the normalisation of ecosystem service discourse, as were wider international initiatives elaborating ecosystem services specifically from the vantage

point of economic valuation—notably *The Economics of Ecosystems and Biodiversity* (or TEEB) which ran from 2007–2011. Capturing something of the spirit of endeavour, Daily and Matson (2006: 9455) wrote at the time of:

“ a growing feeling of Renaissance in the conservation community. This flows from the promise in reaching, together with a much more diverse and powerful set of leaders than in the past, for new approaches that align economic forces with conservation, and that explicitly link human and environmental well-being. And this promise is flowering thanks to substantial recent advances in key areas of inquiry, such as ecology, economics, and institutions, and their integration.

The general alignment of ecology and economics remains central to how the perspective cultivates its interdisciplinary identity and sustains its authority as an applied discourse and has given rise and to a whole array of related concepts connecting ideas of nature to ideas of human well-being, not least that of ‘natural capital’. According to its proponents, economic accounting and valuation of nature can not only serve broad purposes of advocacy and awareness raising for the environment, but also provide data that can directly inform decision-making practice, for instance, as part of the process of cost-benefit analysis.

The blindspot and sensitivity of this discourse is perhaps not hard to fathom; the valuation of nature implies, of course, a serious concession to economic thinking and metaphors in understandings of nature, while the characterisation of people-nature relations it harbours is unambiguously instrumental. In a recent prominent publication on the economics of biodiversity, Dasgupta (2021: 35) reflects that:

“ We are all asset managers. Whether as farmers or fishermen, hunters or gatherers, foresters or miners, households or companies, governments or communities, we manage the assets we have access to in line with our motivations, as best as we can.

Despite its ascendancy as a discourse, many remain sceptical about advancing agendas and mandates for nature through the language of assets and services, suggesting that human responsibilities and duties of care towards nature are not only partially obscured by these economic discourses, but also actively suppressed if not transformed, not least in heralding a steady and discernible shift towards the marketisation and commoditisation of nature. Foreshadowing what have been efforts to temper the excesses of this economic and technocratic mindset, O’Neill (2007: 108) laments:

“ We do not live in capital or stocks or bundles of assets. We live in places that are significant in a variety of different ways for different communities and individuals. And the natural world in which humans have entered and will one day leave is that, a natural world with its own history: it is not ‘capital’ ... [] ... Environments, plural, are not merely bundles of resources. They are where human lives go on, places to which humans have a lived relation of work, struggle, wonder and dwelling.

Alternative and more critical versions of valuing nature have duly arrived in the Trojan horse of ‘interdisciplinary’ working. Although vast areas of social science and humanities expertise have been characterised, rather misleadingly, as sources of ‘non-monetary’, ‘non-market’ and ‘non-economic’ value, the cumulative impact of this disciplinary diversification process has served to fundamentally unsettle assumptions about how valuation evidence is created, what it is understood to signify and what it can reasonably be expected to do. Core concepts in valuation discourse have steadily been confronted with more interpretive constructions of people-nature relationships, entertaining more pluralistic constructions of valuation, often on the back of broader commitments to participatory and deliberative forms of nature-based decision making. Decisively too, the abiding focus on the *value of nature* has expanded back out into a larger treatment of *values about nature*. A distinguishing feature of this steady engagement with the social sciences and humanities is the emergence of a more relational view of nature (Chan *et al.* 2016), among other things attuning us to the particularity and constructedness of values in and around the idea of nature, and perhaps arguably presaging a new language of interdisciplinarity in environmental discourse based on relationality more generally. As the anthropologist Marilyn Strathern (2018: 8-9) writes, in the “vocabulary of relations”, we might be seen to:

“ [join] the few languages we have, from the life sciences and elsewhere, for dealing with the present ecological mess. A new sense of the fragility of the world, as a bio-physical-social entity, accompanies a new necessity to apprehend the interdependence of entities and beings of all kinds. An appeal to ‘relations’ is crisp and all-embracing. Indeed, it is relations all the way down.

As will become clear, the concerns of this short graphic book are not so much a primer in these ebbs and flows of values and valuation discourse, than an effort to chart some of the larger topics and issues this scholarship navigates: from the definitions of nature we accept, and the relations with nature we inherit and enact, to the transformations in the natural world we make. As a narrative device, what follows is a simulation of what might happen if a group of free-thinking and critical students were contrived to ruminate about the relationship between people and nature and how we might manage that in an affirmative and sustainable way. For the avoidance of doubt, the scenario is an entirely fabricated university initiative designed to enhance and grow the employability skills of its student body: a value-added experience, as I think they put it. I’ve convened a fictitious bunch of liberal arts students to act as companions in this rather awkward venture, partly to emphasise my interpretive orientation to the matter at hand, valuing nature, but also in honour of liberal arts students I once taught at the University of Kent, which gave this book its strapline: the roots of transformation. As it happens, I had long been reserving that strapline for a somewhat lengthier academic treatise on the topic of ‘valuing nature’, and which I had originally intended this graphic book to follow. So, consider this book a translation of an imaginary written form.

As far as the deeper veracity and authenticity of the story world is concerned, creative license has made my characters highly compliant with the university scenario they were mandated to participate in, and remarkably cognisant of the themes they were asked to care about. Let’s call them ‘model’ students living in a ‘model’ university. As for the specific

ideas and points addressed by this book, I combine academic scholarship on people-nature relationships with a representation of how students tend, in my experience at least, to talk about those relationships. In putting this book together, I wanted specifically to convey something of the way in-class conversations veer effortlessly between topics and arguments and the way that students speak, often humorously, when grappling with new literatures and reasoning from first principles. I envisage the reader as bearing witness to a lively academic discourse.

Ultimately, I envisage *Valuing Nature* as a resource for anyone wishing to think critically about the idea of ‘nature’ and how we might variously imagine, plan and manage relationships with it. Across the critical social sciences and the humanities, students learn quickly and early that Raymond Williams, the prominent academic, novelist and cultural critic, considered nature “perhaps the most complex word in the English language” (Williams, 1976), which is about as dignifying an academic association any concept can reasonably hope for. To my mind at least, the act of thinking critically is the act of standing back from familiar categories (as in the category of ‘nature’) and unpicking the assumptions that drive our understandings of them (as in, why I chose to label nature ‘it’, for starters) in order to better characterise the underlying intentions our choice word is serving (as in, what ‘nature’ I might presume is worth valuing and protecting). Of course, this process of standing back and challenging assumptions is difficult, not least because we are deeply socialised into particular ways of thinking about the world. The idea of nature is certainly not immune from the need for critical inquiry, whatever efficiencies it displays as a normal, commonplace and everyday word. In fact, the very ordinary nature of ‘nature’ arguably invests it with a power that demands scrutiny, if not vigilance. This is at least one of the reasons Raymond Williams assigns ‘nature’ the status of a keyword.

In any case, critical thinking is not about arriving at some special vantage point or resolution about the idea of nature and what it might mean to value it; we are trapped into positions that our language and thought processes can never fully escape (were we to ever want to). Rather, critical thinking is the process of finding these ordinary phenomena surprising again, if not a little strange, so that we can keep these assumptions about the world in check however commonplace, dare I say it, a little less than ‘natural’. My guiding hope in all this is that the matter of valuing nature is as much a matter for creative discussion and reflection as it is for procedurally rational decision making.

— Rob Fish



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“ We need, and are perhaps beginning to find, different ideas, different feelings, if we are to know nature as varied and variable nature, as the changing conditions of a human world.

Raymond Williams

Meet the Characters



Aisha Hassan (24) Sociable, funny and utterly down to earth, Aisha was born and bred within five miles of Ostrom University and was the first of her family to go to university. A good moderator and mediator of opinions and situations, Aisha has an unassuming question style that belies a fierce intelligence. Her biggest disappointment in life? Growing up and realising no one knows what the hell is going on.



Michael Hurst (47) Self-financing mature student. Last year, a disillusioned middle manager. This year, Renaissance Man! Bright and unassuming, Michael left school at 18 with three 'A' levels and worked his way up in the technology sector. A long career in the corporate world has left him looking for answers.



Sebastian Baker-Young (19) Our straight *A* student. Interned with a city law firm between school and university. Intelligent extrovert. Something of a contrarian. An academic gadfly. Every point seems designed to provoke and court controversy. Politics a bit to the right. Likeable once you see beyond that slightly high-handed, self-regarding tone. A future policy wonk.



Chloe Wai Chiu (19) The true *radical* of the group. Marxist-Feminist-Green. Everything is political. Everything is power. Bold, unyielding and direct, Chloe is a fearless young student with a breadth of critical vision that her peers could only dream of. Hyper-alert to the micro-aggressions of everyday life and the wider malaise they symptomise, Chloe is a walking manifesto for change. Go Chloe!!!



Simone Forrester (23) The original polymath and prevaricator. Simone started out in theoretical physics, but decided she really wanted to do politics, before finally settling on liberal arts. Simone just can't make her mind up! Life is simply too complicated and distracting to be truly certain about anything, including her degree choice.



Joseph Eaves (19) The beguiling party-goer of the group, Joe has somewhat accidentally found himself on the liberal arts programme and is very much starting out. Young, smart and laconic, but concentrating his time and energies in vastly the wrong directions to make the grade, Joe compensates for his lack of reading with a charismatic style, quick-thinking intellect and sense of humour.

How to Read this Book

This book is no love letter to Aristotle's *Poetics*, but it's clearly narrative in form, best read from beginning to end.

Yeah, but also flicking back and forth to the **GLOSSARY** to decode all the jargon, which is marked in **bold**.

I personally found the whole piece highly partial, even the lines I was fed. I would urge readers to read the **PREFACE**.

Yeah but to be fair, he has used **SECTION NOTES** at the end to help put all the points in context, too. It's like the story behind the story.

Then there's the **BIBLIOGRAPHY** to follow up.

Although frankly I never look that up.

Nicely rounded out with some **CRITICAL THINKING QUESTIONS** to deepen reflection. They're right at the back somewhere.





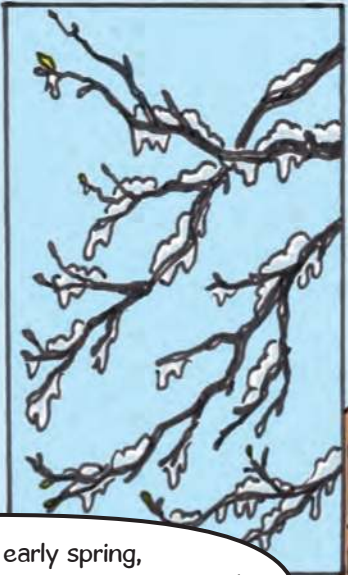
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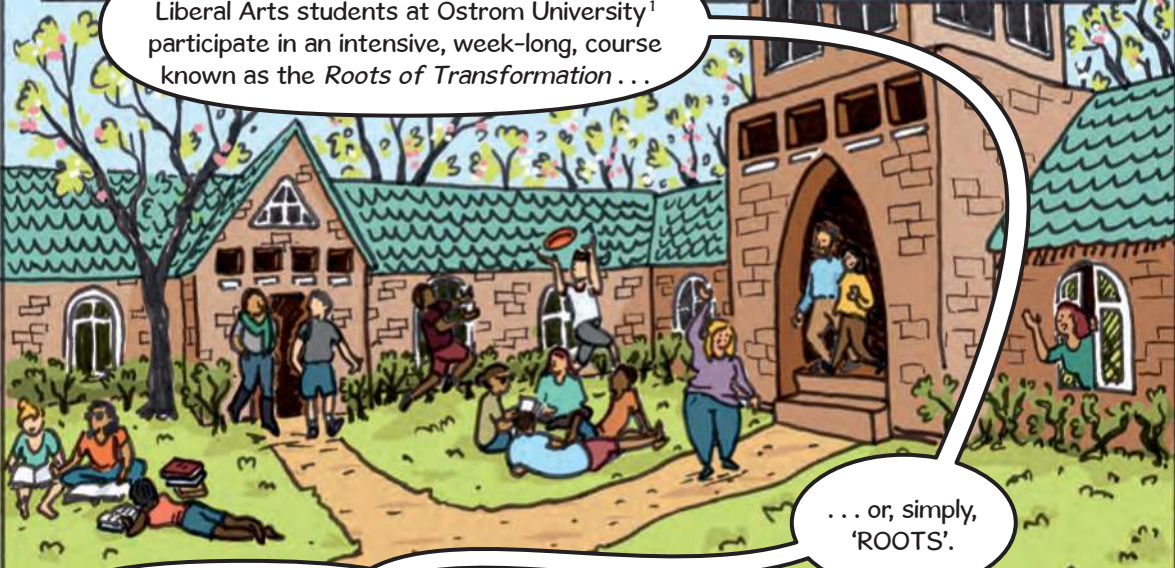
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ROOTS

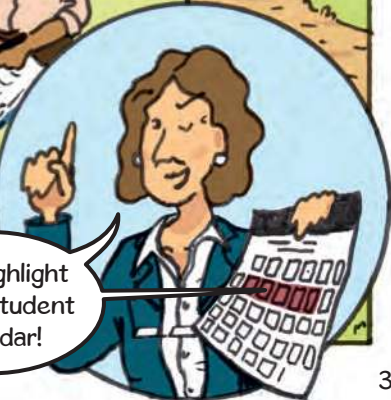


Every year, in early spring, Liberal Arts students at Ostrom University¹ participate in an intensive, week-long, course known as the *Roots of Transformation* . . .



. . . or, simply, 'ROOTS'.

The course is an independent student-led project conducted during the University's *Educational Enhancement Week* . . .

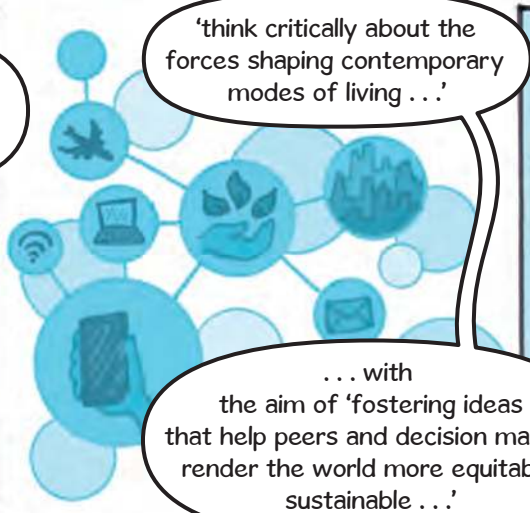


. . . a highlight of the student calendar!

For the last 10 years ROOTS has encouraged students to



— and I quote from the course description here —



'think critically about the forces shaping contemporary modes of living ...'

... with the aim of 'fostering ideas that help peers and decision makers render the world more equitable, sustainable ...'



and fun!

At last year's International Teaching Innovation Awards, ROOTS came runner-up in the category of 'University Course Most likely to Challenge Prevailing Wisdoms in an Age of Roll-Out Neoliberalism'.



ROOTS asks students to explore a contemporary social and cultural 'challenge' from the vantage point of the local community.



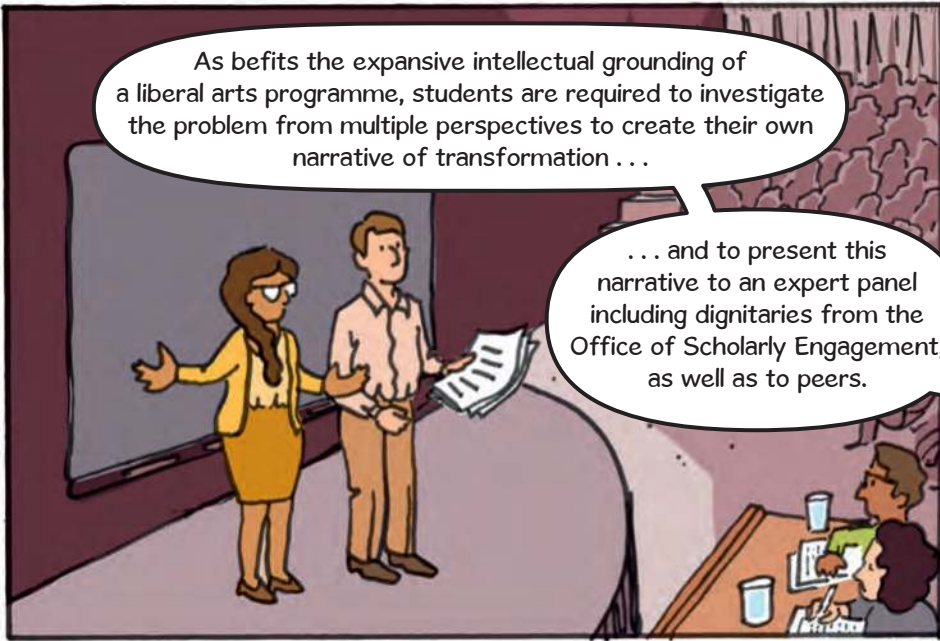
Tutors on the Liberal Arts Programme work with the University's Office of Scholarly Engagement in Civil Society to determine the focus of the challenge each year.



Themes in recent years include 'Realising the Four-Day Week'; 'Social Media and Social Inclusion' and 'The End of Shopping'.



Made up of representatives from the local community, business sector and government, the remit of the Office is to 'promote the benefits of research among local beneficiaries'.



As befits the expansive intellectual grounding of a liberal arts programme, students are required to investigate the problem from multiple perspectives to create their own narrative of transformation . . .

. . . and to present this narrative to an expert panel including dignitaries from the Office of Scholarly Engagement, as well as to peers.



click



Welcome, welcome!



Come in, come in, those of you who arrived late!



That's right, there's room along the front here.

Your comfort is our goal!

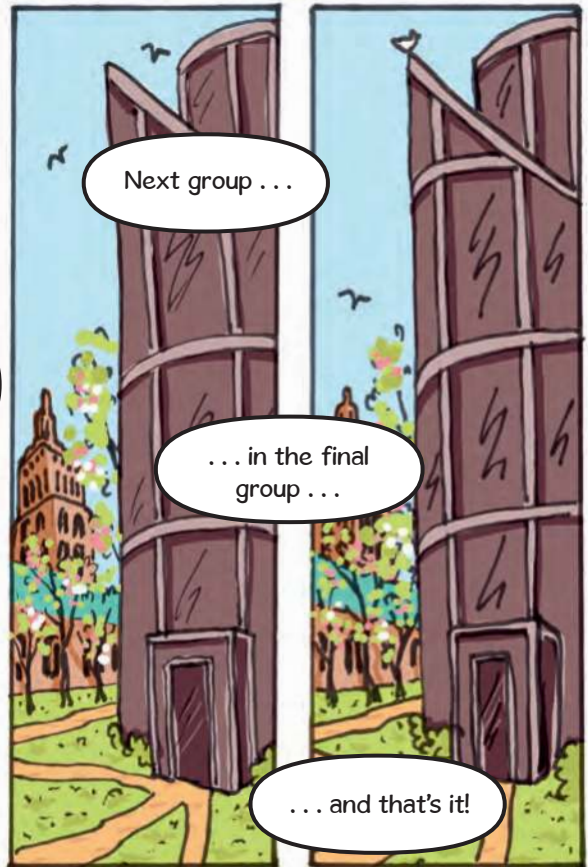
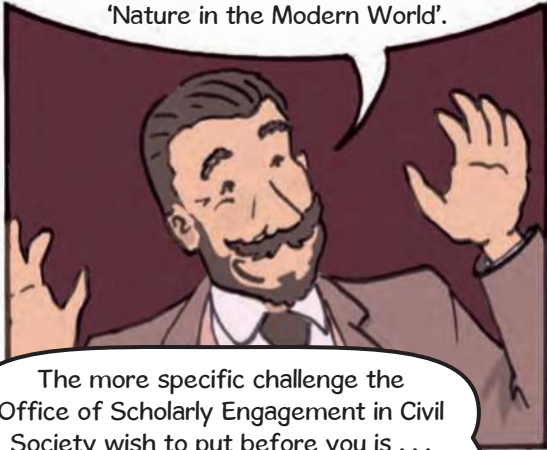


Don't forget to sign the register!



Welcome everyone to this year's ROOTS extravaganza!!!

This year's ROOTS topic is befitting of Ostrom University's recent declaration of a Climate and Ecological Emergency, and is entitled 'Nature in the Modern World'.





Okay, so listen up now, before you all start rushing out of class in excitement, can I ask you to spend a bit of time breaking down this year's ROOTS proposition?



Okay, so . . . reconnecting people and nature?



So try to think about any critical questions that lurk behind this invitation to reconnect people to nature, and where you might go to find out more.

As in, like, what's meant by this thing called 'nature' we're meant to be reconnecting with?



That seems to me the first step.

Yeah, I thought they'd declared the "End of Nature" back in 1989², hadn't they?



Along with the "End of History" and everything else.³

And doesn't the whole reconnection thing rather presuppose that people are separate from nature, anyway?



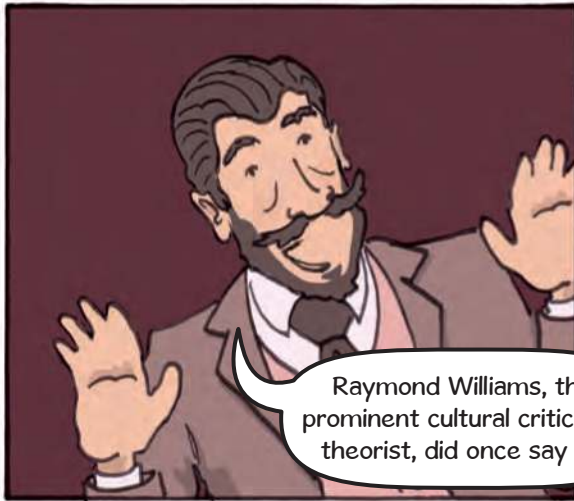
My housemates recently went on an Extinction Rebellion march holding up signs saying . . .



'we are nature defending itself'.

How does that figure?

Raymond Williams, the prominent cultural critic and theorist, did once say . . .



. . . "the idea of nature contains, though often unnoticed, an extraordinary amount of human history".⁴



Well, I think for starters, we need to find ourselves one of Ostrom University's finest cultural critics and theorists.



I know just the place to go.





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MEANINGS

the 1990s, the number of people with a university degree has increased in all countries, but the increase has been particularly rapid in the United Kingdom, where the number of university graduates has risen from 1.5 million in 1990 to 2.5 million in 2000 (Department for Education and Skills 2002).

There is a growing emphasis on the need to improve the quality of education, and to ensure that the education system is able to meet the needs of a global economy. This has led to a focus on the development of '21st century skills', such as critical thinking, problem solving, and communication. These skills are seen as essential for success in the workplace, and are being increasingly emphasized in the curriculum.

One of the key challenges facing the education system is how to ensure that all students have access to high-quality education. This is particularly true in developing countries, where there is often a large gap between the rich and the poor. The education system must be able to provide a high-quality education for all students, regardless of their socio-economic background.

Another challenge is how to ensure that the education system is able to keep pace with the rapid changes in technology. This is particularly true in the field of science and technology, where new discoveries are being made at an ever-increasing rate. The education system must be able to provide students with the skills and knowledge they need to succeed in a rapidly changing world.

Finally, there is a growing emphasis on the need to improve the quality of the teaching profession. This is particularly true in the United Kingdom, where there has been a focus on the development of 'teacher education'. This has led to a number of reforms, including the introduction of a new teacher training programme, and the establishment of a new body to regulate the profession.

These reforms are seen as essential for ensuring that the education system is able to meet the needs of a global economy. They are also seen as essential for ensuring that all students have access to high-quality education. The education system must be able to provide a high-quality education for all students, regardless of their socio-economic background.

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How may I be of assistance this fine spring morning?

Well the problem goes something like this, Professor . . .



In less than a week we have to make recommendations to the Office of Scholarly Engagement in Civil Society . . .

Whoever they are.



. . . on something to do with reconnecting people to nature.

Whatever that is.



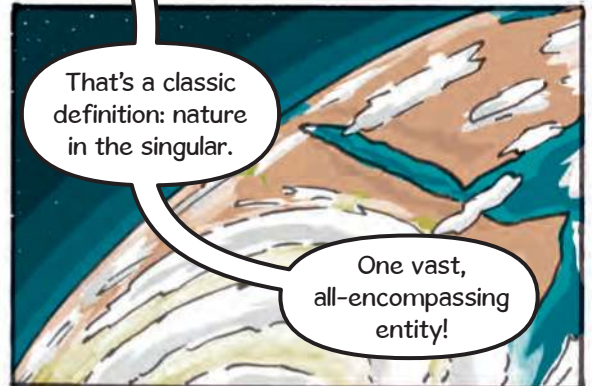
Well, what do you think IT is?

What?



Nature.⁵

Well, it's like everything, I suppose.





Very well. We hear the word nature and might think of the green planet. The living world.





Nature as this like almost pristine and untouched thing. Like the Sahara Desert



... or the Amazon.



Or the Great Barrier Reef.



I went to Yosemite once!

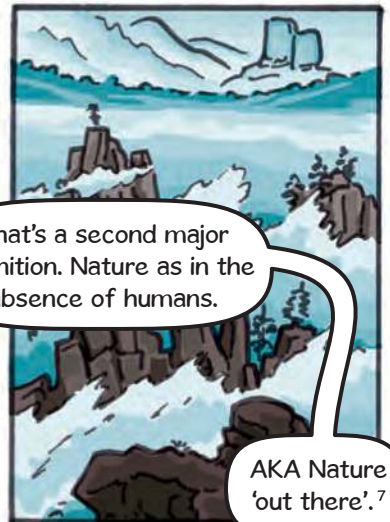
It was sublime.⁶



Nature as it should be! Fresh and pure. Real nature. The wild!!!



Okay, so what I think you are all chasing after here is the **NON-HUMAN WORLD**.



That's a second major definition. Nature as in the absence of humans.

AKA Nature 'out there'.⁷



I'm liking that. I'm liking that a lot.

This whole 'reconnecting to nature' thing is starting to make more sense to me.



Yeah, Chloe, but didn't you just say nature is this pristine and untouched thing?

That sounds like a bit of a contradiction.



Seb's got a point there. What has the absence of people got to do with the idea of reconnecting people with nature?

It's like nature is 'over there' and culture is 'over here'. They now seem completely separate.



We've gone from one extreme to another!⁸



Okay, can I interject here?



I think it's important to be clear that this pristine wilderness type of nature is, as the environmental historian William Cronon puts it ...⁹



"not quite what it seems".

Cronon argues that, "far from being the one place on earth that stands apart from humanity, wilderness is quite profoundly a human creation."

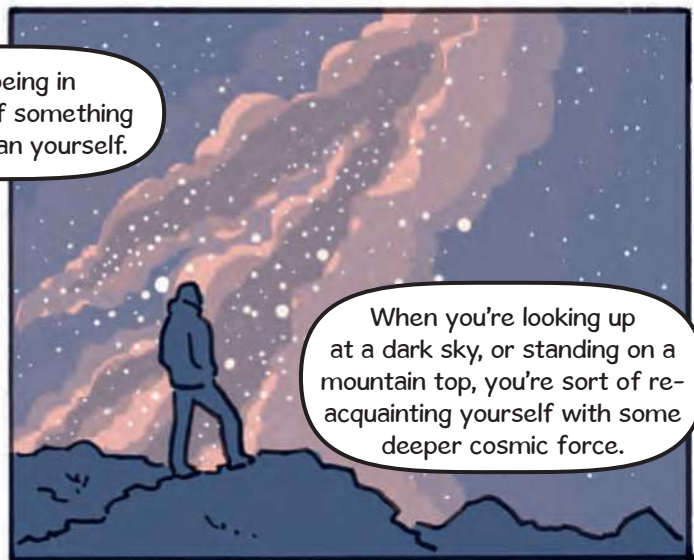
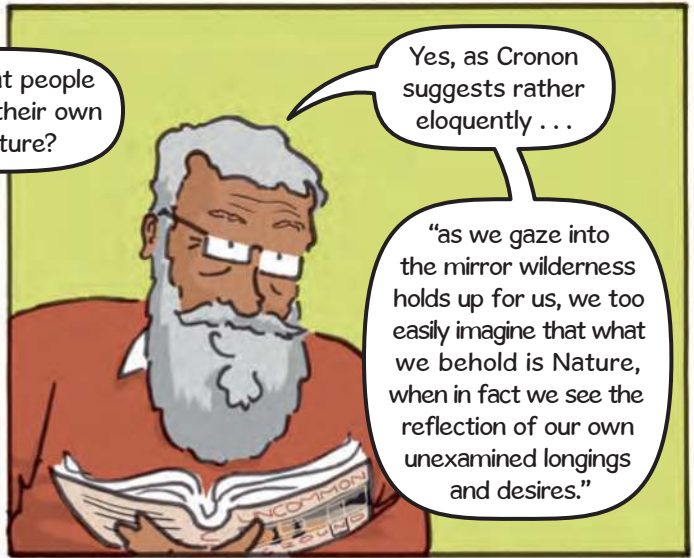


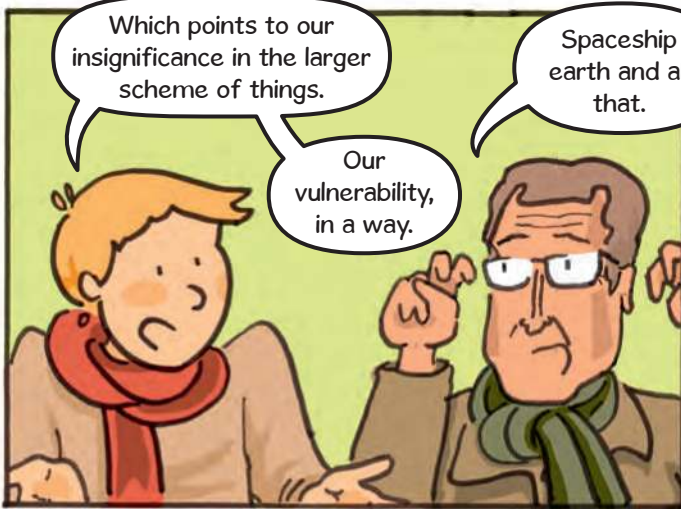
Meaning?

Well, drawing lines and circles around areas and calling them 'wilderness areas', for starters.



That's a social and cultural process, so to speak; the partitioning of space into these natural and non-natural realms.





Which points to our insignificance in the larger scheme of things.

Our vulnerability, in a way.

Spaceship earth and all that.

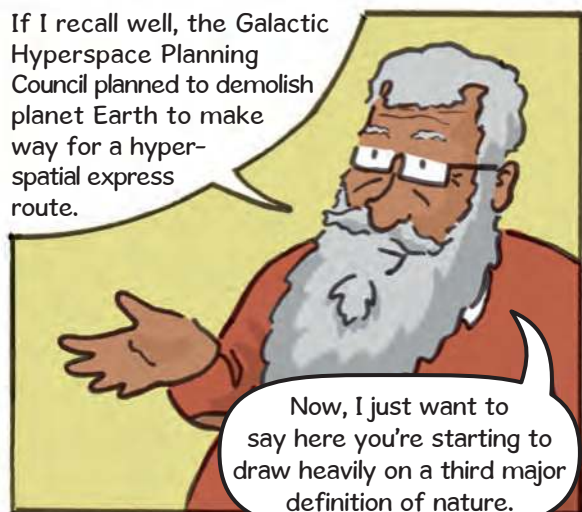


An insignificant little blue-green planet orbiting an unregarded yellow sun.



Hitchhiker's Guide to the Galaxy, anyone?¹⁰

We're like at the mercy of all these things of which we are a trivial part.



If I recall well, the Galactic Hyperspace Planning Council planned to demolish planet Earth to make way for a hyper-spatial express route.

Now, I just want to say here you're starting to draw heavily on a third major definition of nature.



Nature as a **SUPERORDINATE** force.

An inherent power or organising principle.

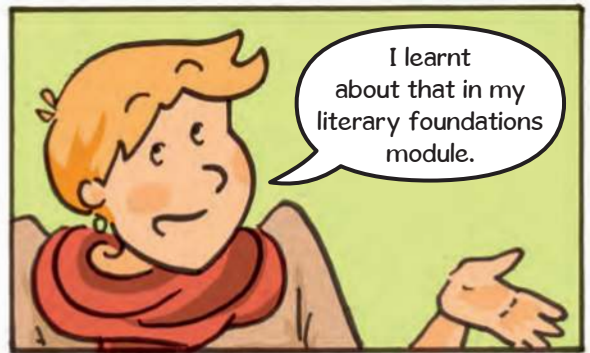


You mean like Gaia?¹¹

I learnt about that in my geo-science foundation year module.



I don't know what you are all talking about.





We started on *everything is nature*, then it was the *non-human world* that we visit at the weekend...

Which I rather liked.



And now it's some *superordinate* phenomenon we're all at the mercy of??

I would venture that one of things we can perhaps agree on here is that simple distinctions between the cultural and natural world are quite tricky to police, right?



Totally!

Right!

Absolutely

Perhaps it's better to then regard humans as enrolled in a web of relations, what some have called the **WEB OF LIFE**.¹³

Yeah!



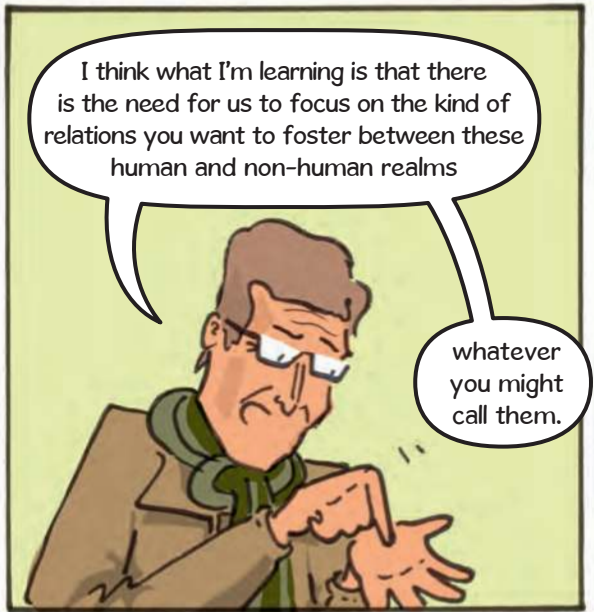
Cosmic. I like that.



So perhaps we might talk of both human and non-human nature, thus preserving this 'nature is everything' idea ...



... but making the whole 'connecting to nature' thing work, too.



Or that nature only means a certain thing, like wilderness, forgetting the "wildness that dwells everywhere within and around us". I am quoting our friend William again!



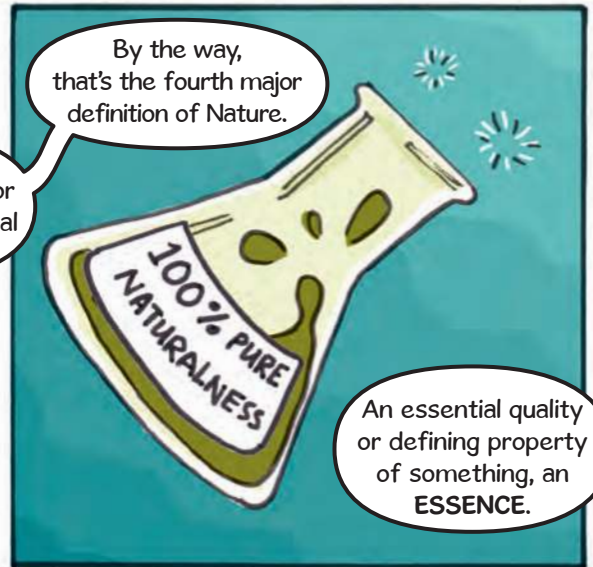
Well, it's been deep, Prof.

It's in my nature to be deep.



I am, after all, a professor of the environmental humanities.

By the way, that's the fourth major definition of Nature.



An essential quality or defining property of something, an ESSENCE.



As in, that professor is *naturally* very helpful!



Before we go, any useful references for some bedtime reading? That's quite a book collection you have there.

Why thank you! Feel free to browse.



NATURE AS UNIVERSAL

The entire physical world, of which humans are a part.

NATURE AS NON-HUMAN

The external world. A realm beyond human activity.

NATURE AS SUPERORDINATE

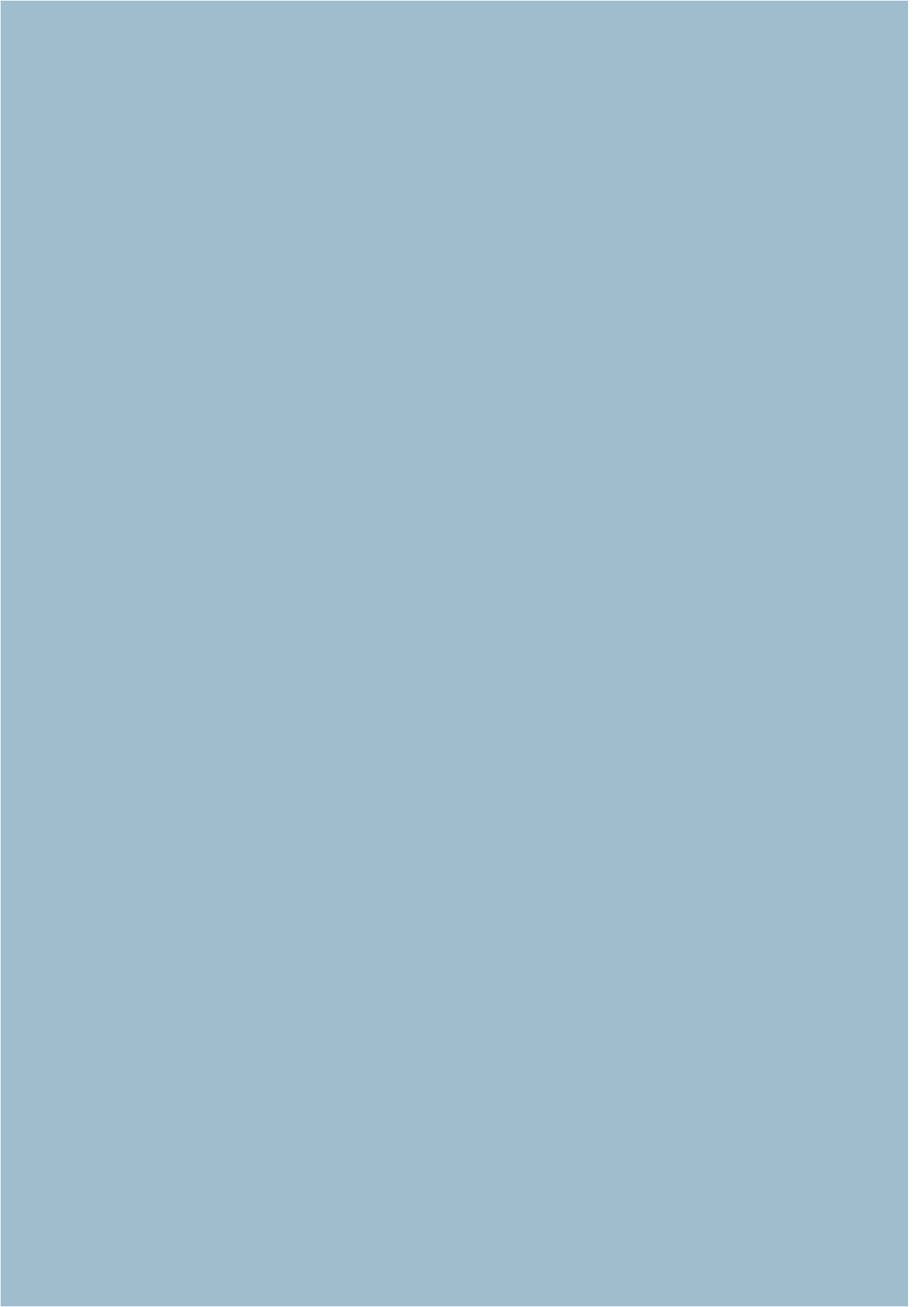
An inherent power, force or organising principle.

NATURE AS ESSENCE

An essential quality or defining property of something.

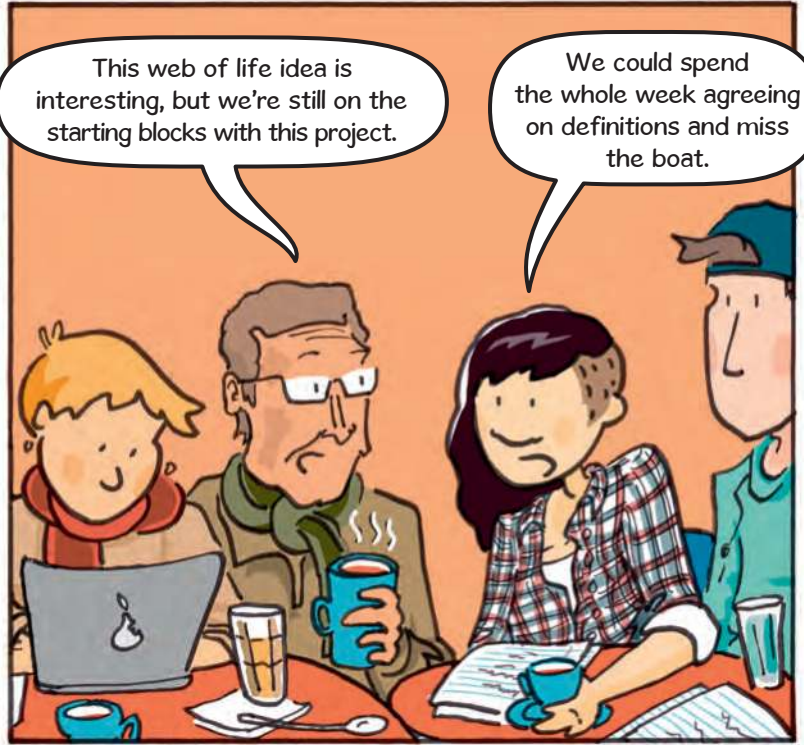


RELATIONS



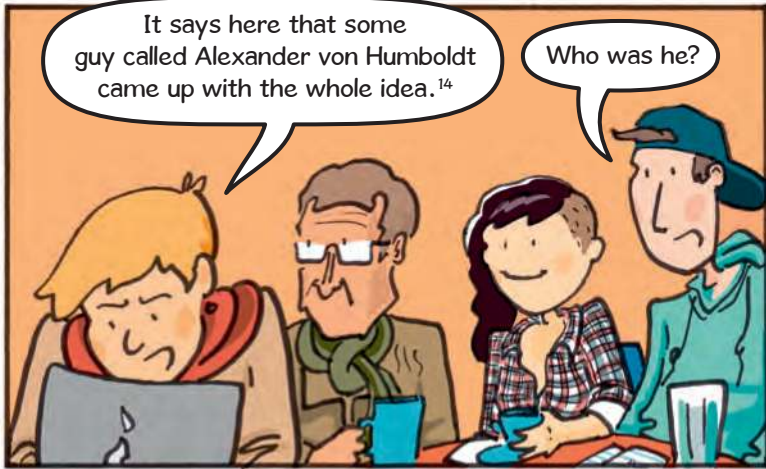


Engage brain.
Must engage brain.



This web of life idea is interesting, but we're still on the starting blocks with this project.

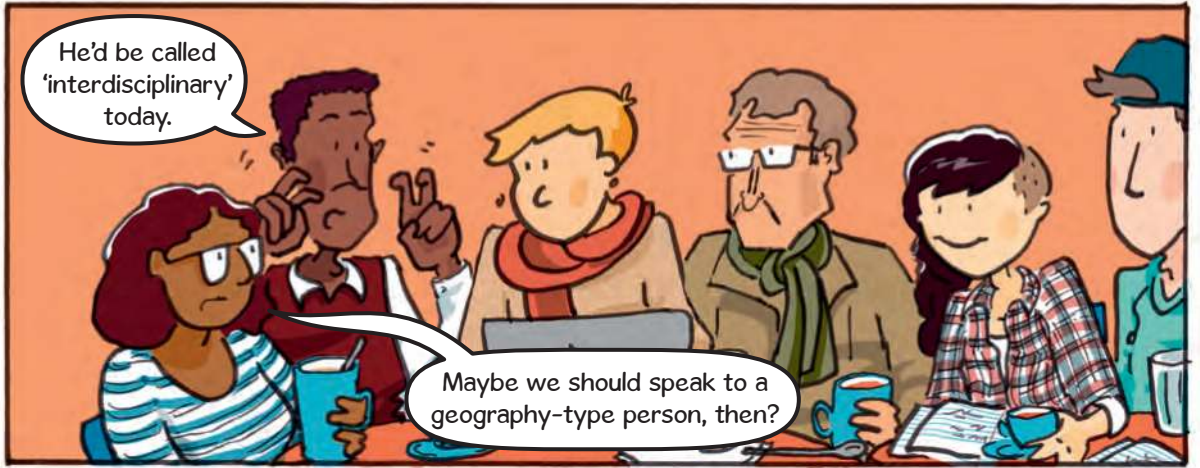
We could spend the whole week agreeing on definitions and miss the boat.



It says here that some guy called Alexander von Humboldt came up with the whole idea.¹⁴

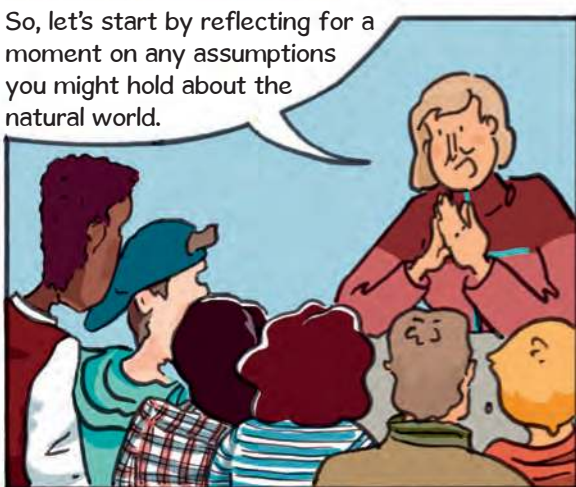
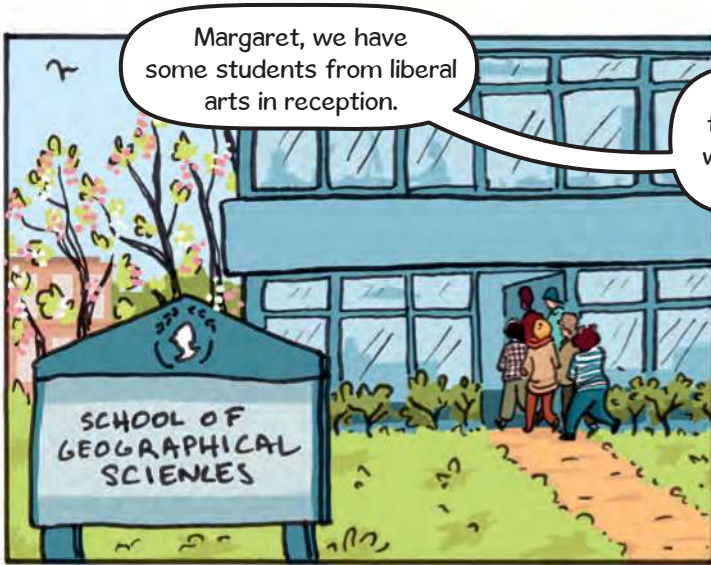
Who was he?

A Prussian geographer, apparently. Unified diverse branches of knowledge and culture. From the web of life to the web of knowledge, right?



He'd be called 'interdisciplinary' today.

Maybe we should speak to a geography-type person, then?

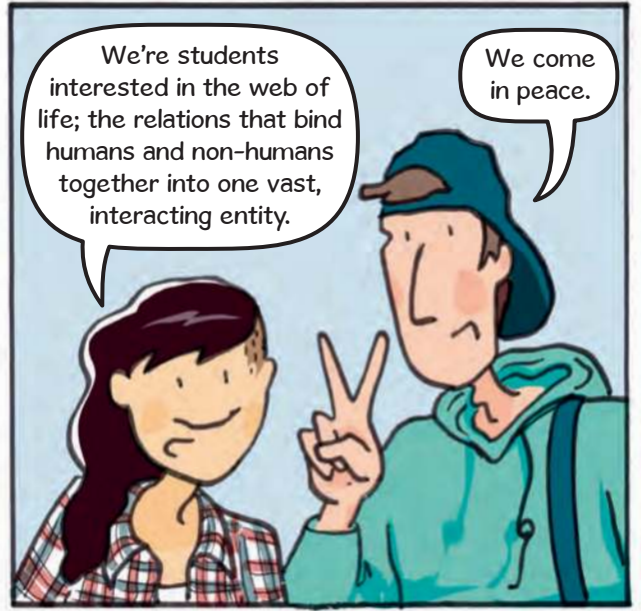




Sorry, with the greatest respect, Professor, can I stop you right there!!



We've already cogitated and deliberated enough.

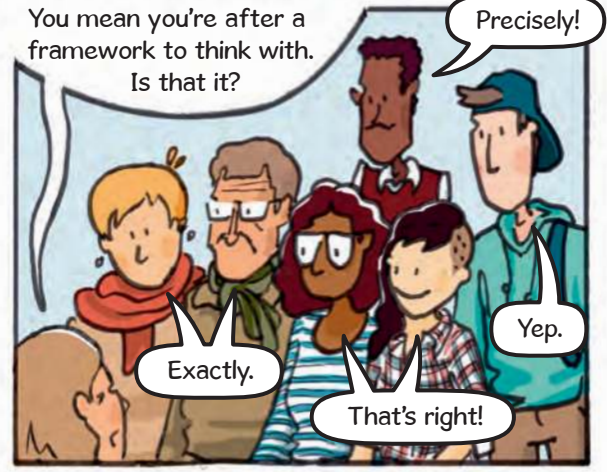


We're students interested in the web of life; the relations that bind humans and non-humans together into one vast, interacting entity.

We come in peace.



We have less than one week to understand what this means in practice.



You mean you're after a framework to think with. Is that it?

Precisely!

Exactly.

That's right!

Yep.



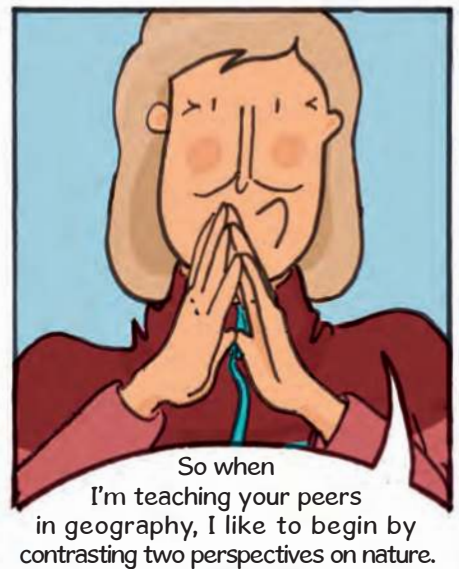
Okay, well then, I'm flattered you ask!



Now, let's see. Oh dear. Where to begin?



Gosh!





The argument goes that people have steadily cultivated a view of themselves as both separate from, and above, the natural world.



Nature is viewed as something to be tamed, controlled and exploited by humans for human benefit.¹⁷



This view arose from a ferment of scientific and technological advances over the last few hundred years.



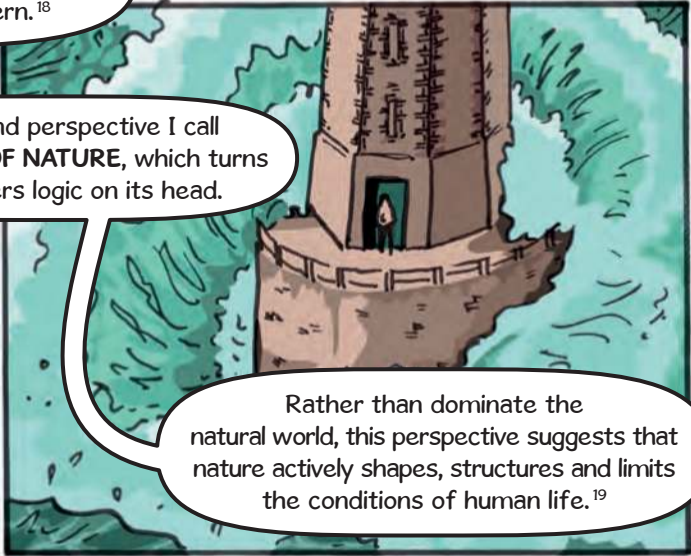
Not least those related to the process of industrialisation and the market exploitation of natural resources.



This wrongheaded view - which is essentially a Western Enlightenment view of nature - is at the root of much ecological concern.¹⁸

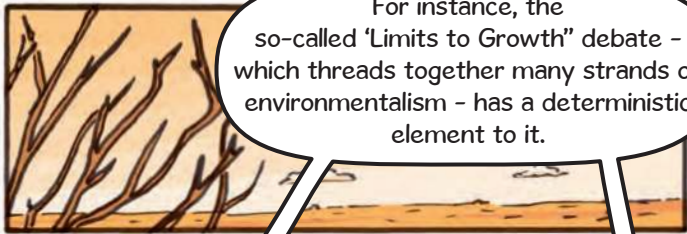


The second perspective I call **PRISONERS OF NATURE**, which turns this Masters logic on its head.

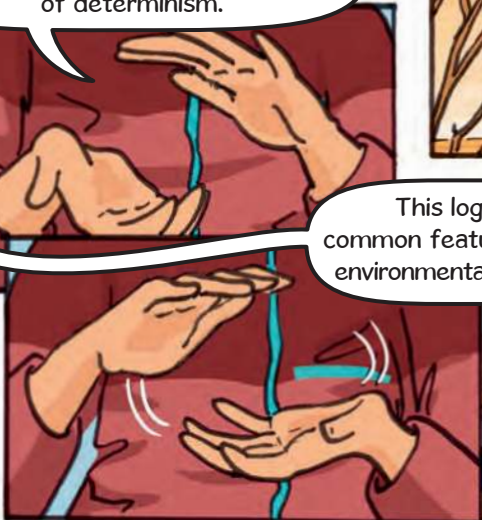


Rather than dominate the natural world, this perspective suggests that nature actively shapes, structures and limits the conditions of human life.¹⁹

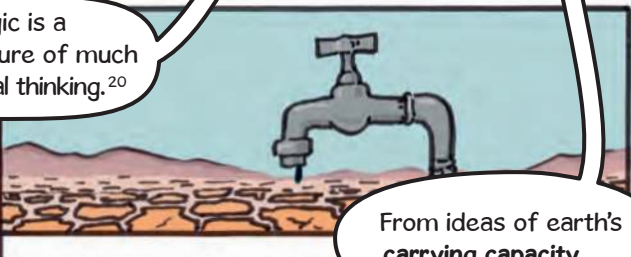
So the prisoner perspective swaps domination with the relations of determinism.



For instance, the so-called 'Limits to Growth' debate - which threads together many strands of environmentalism - has a deterministic element to it.

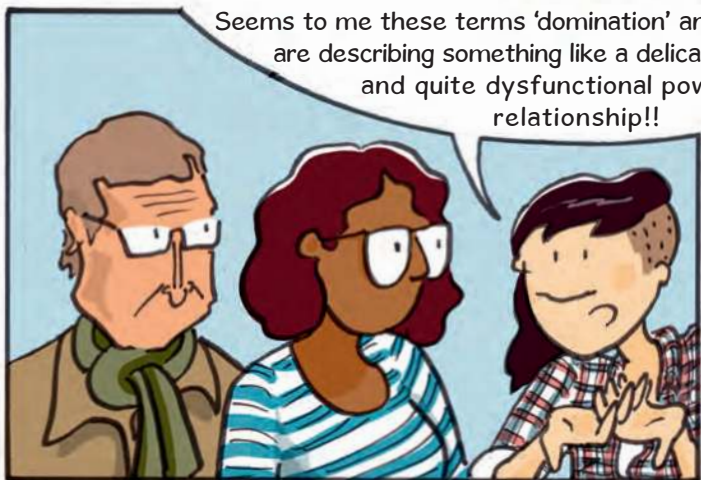


This logic is a common feature of much environmental thinking.²⁰



From ideas of earth's carrying capacity . . .

. . . through to recent debates about **planetary boundaries** for humanity.

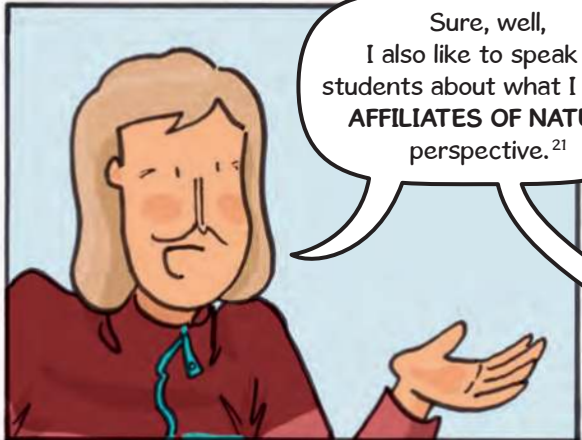


Seems to me these terms 'domination' and 'determinism' are describing something like a delicately poised and quite dysfunctional power relationship!!



So we were right from the start.

Which was sort of funny earlier, but sounds quite extreme and distressing now. Isn't there an upside?



Sure, well, I also like to speak to students about what I call an **AFFILIATES OF NATURE** perspective.²¹



This focuses our concerns on the way humans variously bond with, express affinity for, and associate with the natural world.

This is sometimes called the **Biophilia** perspective.



As in the critically acclaimed studio album by Bjork, which explores the links between nature, music and technology?!



An amazing, inventive and wholly unique album from an artist without peer!



I think we are drifting slightly off point, however.



So Bio as in life; philia, as in having a friendly feeling towards. The love of life!



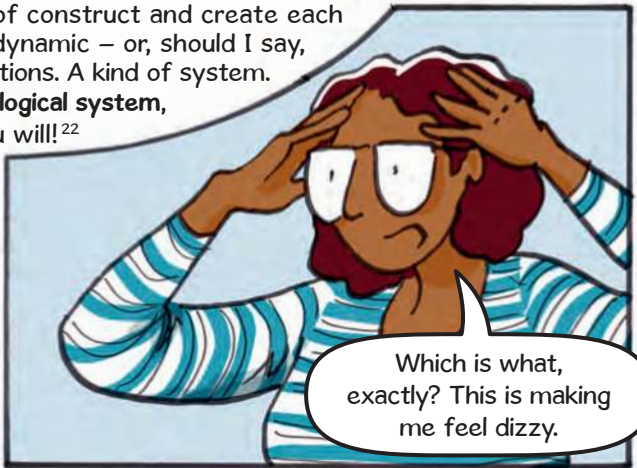
Masters, Prisoners, Affiliates. How do we bring all that together?



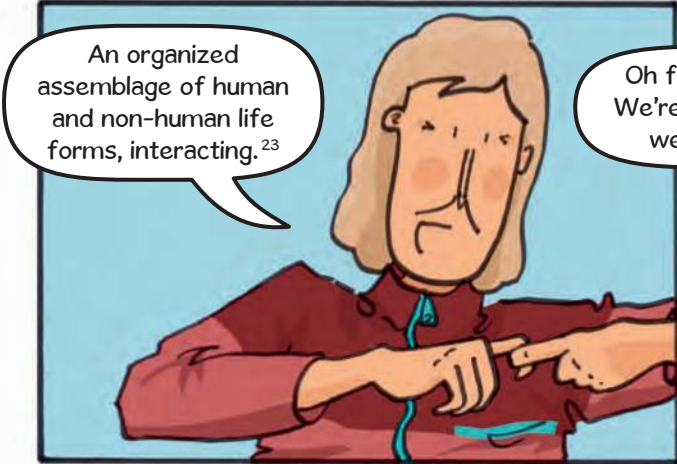
Well, if you strip it back, people and nature are in a kind of mutually constitutive, symbiotic relationship.



People and nature sort of construct and create each other through these dynamic – or, should I say, ambivalent – interactions. A kind of system. A **social-ecological system**, if you will!²²



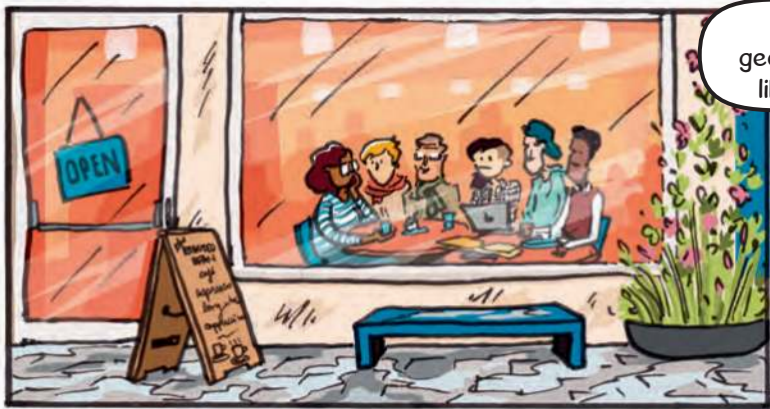
Which is what, exactly? This is making me feel dizzy.



An organized assemblage of human and non-human life forms, interacting.²³



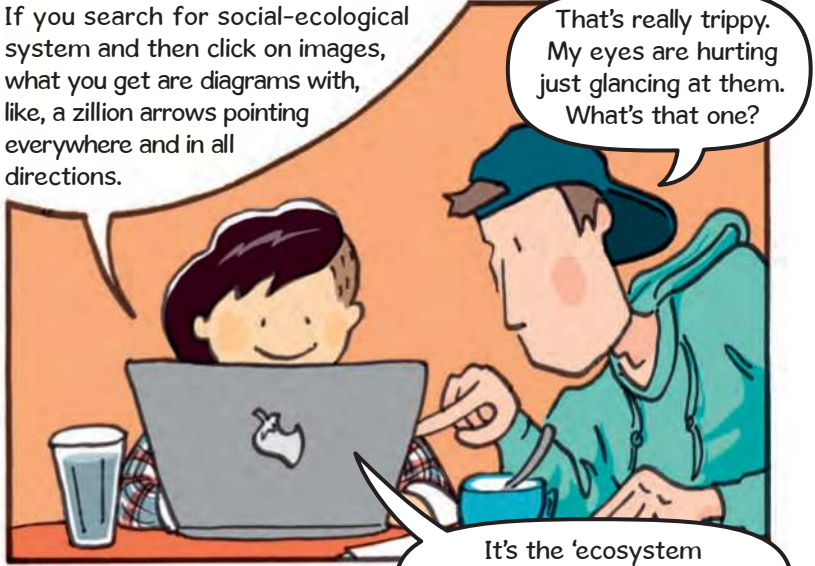
Oh for heaven's sake! We're right back to the web of life again.



Are all geographers like that?

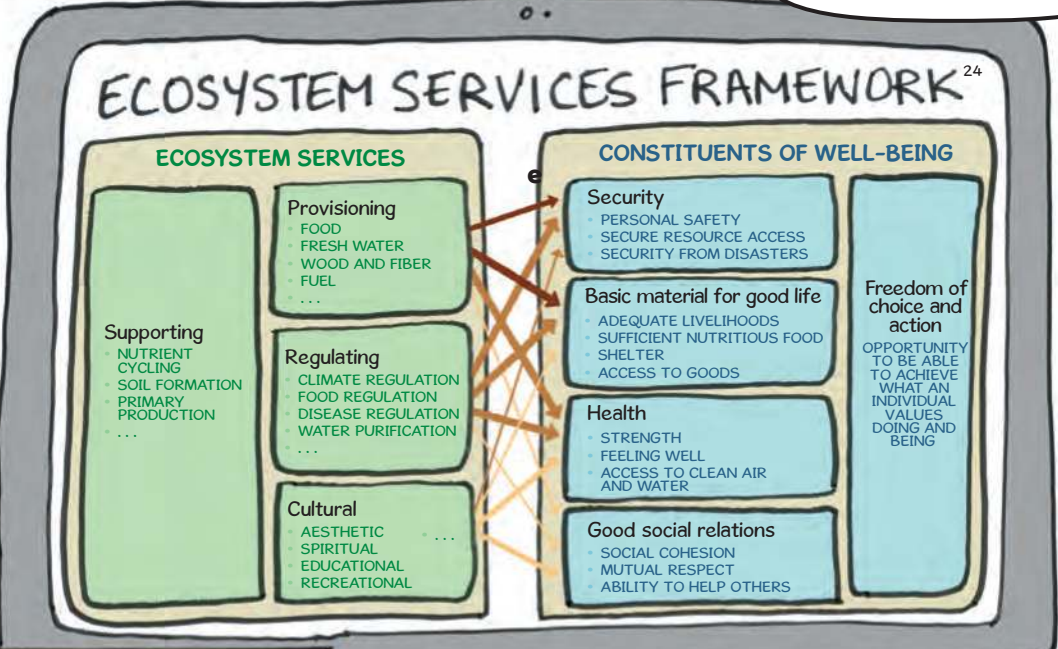


If you search for social-ecological system and then click on images, what you get are diagrams with, like, a zillion arrows pointing everywhere and in all directions.



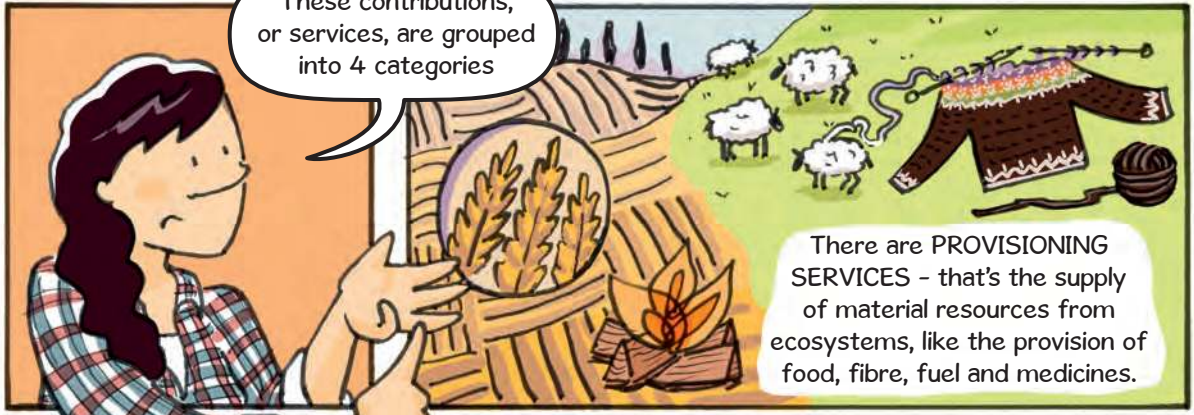
That's really trippy. My eyes are hurting just glancing at them. What's that one?

It's the 'ecosystem services framework', apparently. Which sounds a bit weird.



It says here that **Ecosystem Services** is a concept used within sustainability and resilience discourse to describe natural systems in terms of their many and varied contributions to human well-being.²⁵

These contributions, or services, are grouped into 4 categories



There are **PROVISIONING SERVICES** - that's the supply of material resources from ecosystems, like the provision of food, fibre, fuel and medicines.

Then there are **REGULATING SERVICES** - that's the way in which ecosystems can moderate natural processes in a way that benefits people, such as filtrating pollutants out of the air, or regulating water flow to prevent floods.



Next are **CULTURAL SERVICES** - that's the way in which ecosystems enrich our lives, such as providing settings for relaxation and recreation, or inspire us with the beauty we see in them.



And finally there are **SUPPORTING SERVICES** - those are the services that maintain ecosystems' integrity, resilience, and functioning, such as photosynthesis and nutrient cycling.

They allow ecosystems to keep giving us provisioning, regulating, and cultural services!

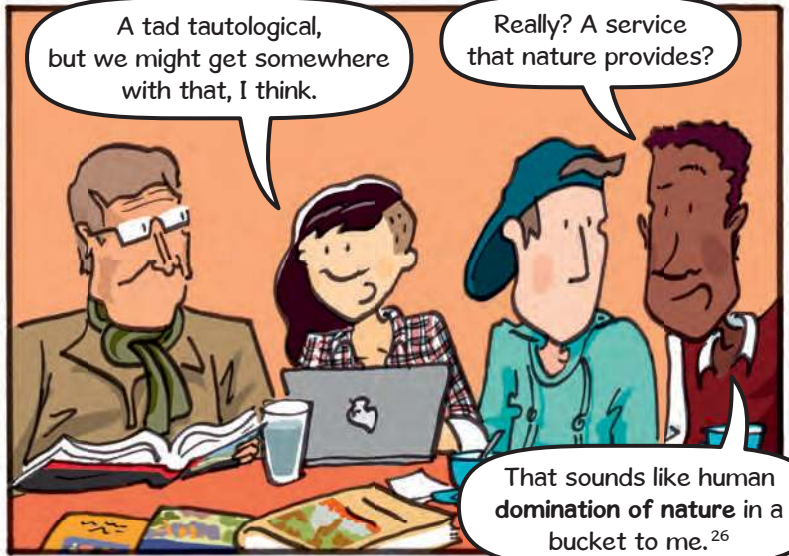


Sounds just the ticket. Re-connecting people to nature through the services it provides!



A tad tautological, but we might get somewhere with that, I think.

Really? A service that nature provides?



That sounds like human domination of nature in a bucket to me.²⁶

Nature constituting peoples' well-being doesn't sound like domination to me.

It sounds like utter dependency! The complete opposite!



It's like an optical illusion, this stuff. It's about perspective.



Personally, I find the whole idea of ecosystem services a bit cold and misleading at first glance.

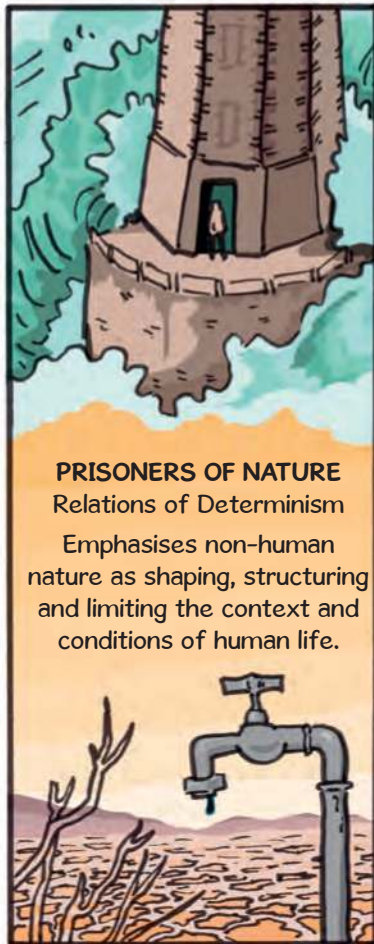
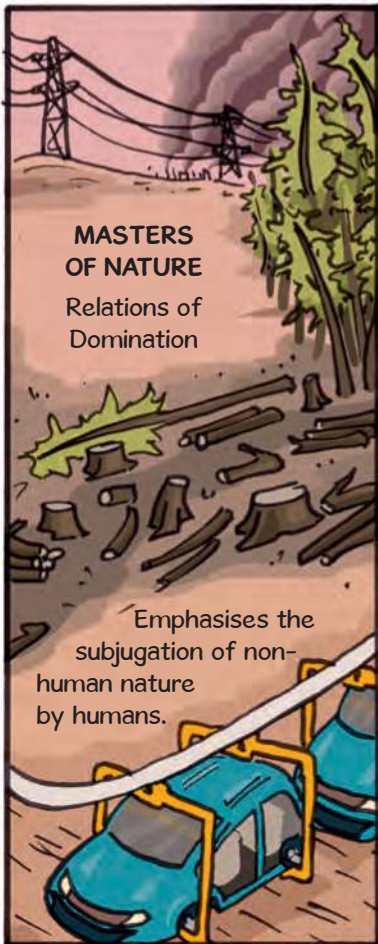
What about the way people care about nature? You know, the Biophilic thing the professor also spoke about.



That doesn't seem to even register.









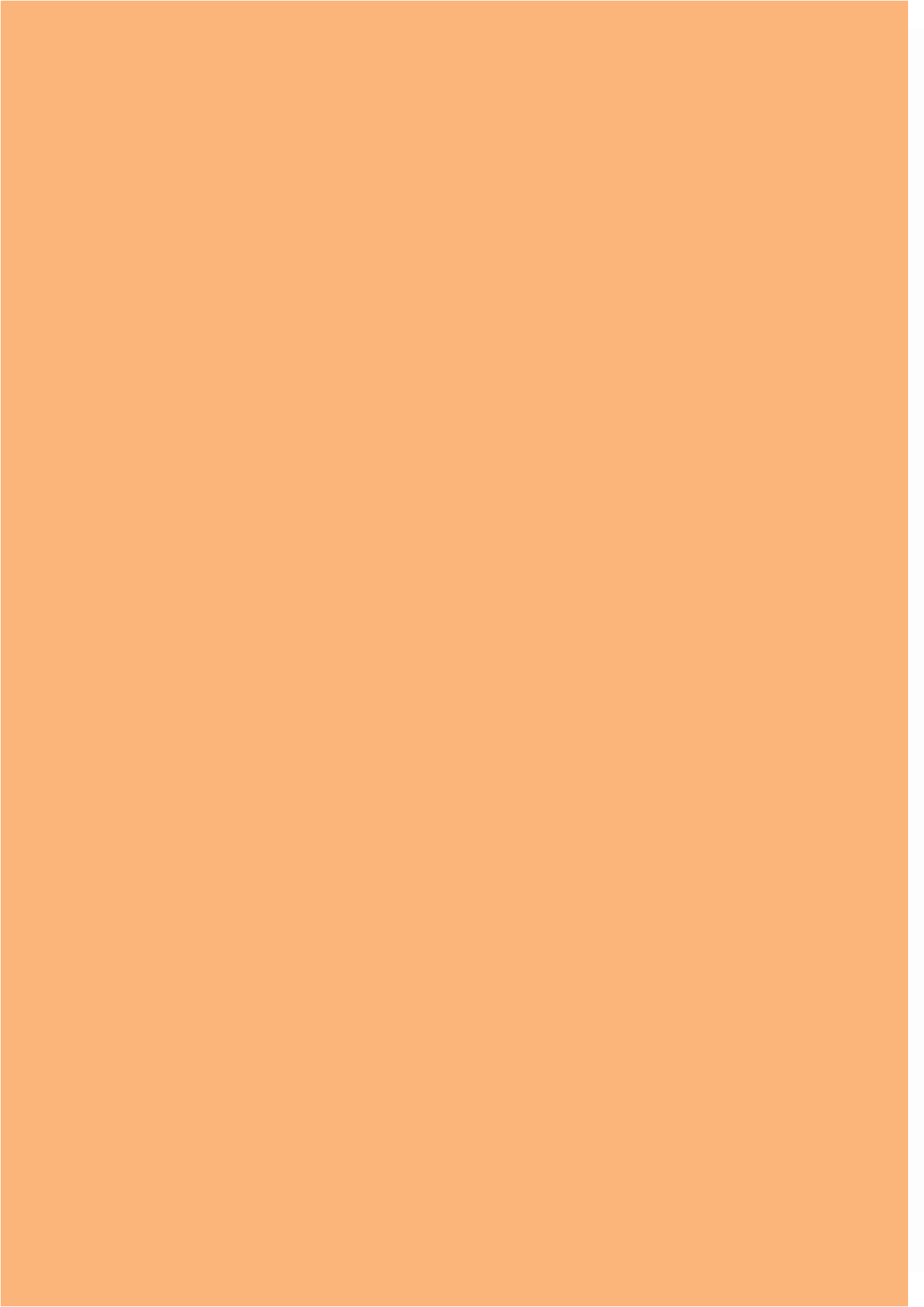
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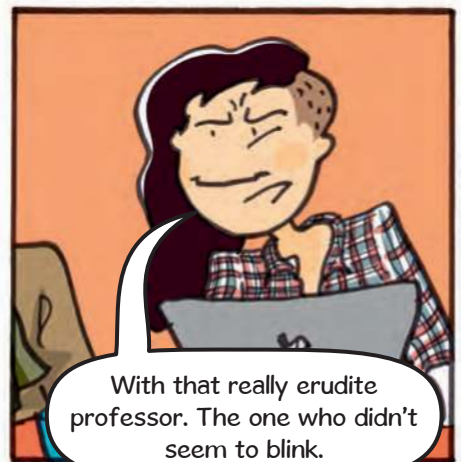
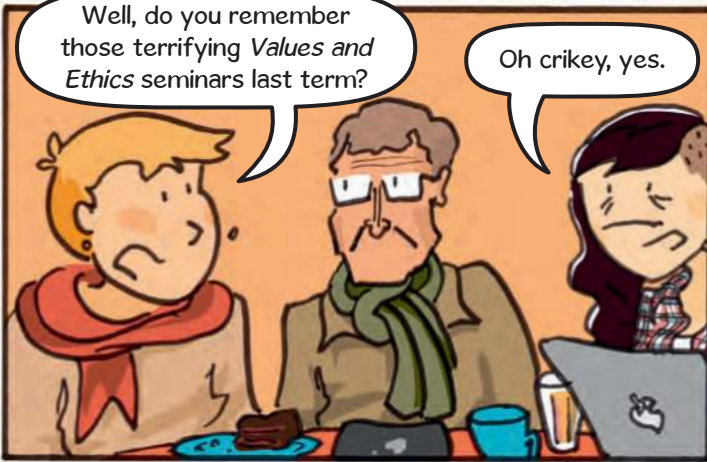
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<http://taylorandfrancis.com>



VALUES







So what has any of that got to do with nature?

Or with this handy little ecosystem services framework, which I continue to warm to!!



So values are like something that you hold, in a way . . .



. . . but they also translate into the way you behave and relate to things. That sort of thing.



As in, what kind of idiot would order a skinny white mocha with toffee nut syrup and caramel drizzle and then spill it over some library books?

That sort of thing?



No, as in values like, oh, I dunno: Liberté! Égalité! And . . . Um.

Fraternité!

Yeah! As in LIBERTÉ! ÉGALITÉ! FRATERNITÉ!



Hmm, I repeat, what has any of that got to do with nature?

Well, they're examples, Joe.



But since you ask, liberty is the freedom to do what I please -

As in dominate nature, right?

I didn't finish my sentence, Joe!

Liberty, as in doing what I want to do, but - and it's a BIG BUT - without doing harm to others.



Yeah, without sort of infringing on others' rights. I'm with Simone.

In this particular case, the harm and rights of non-human others.



Why thank you Seb! Precisely!

So values shape your moral compass.



Even yours, Joe.

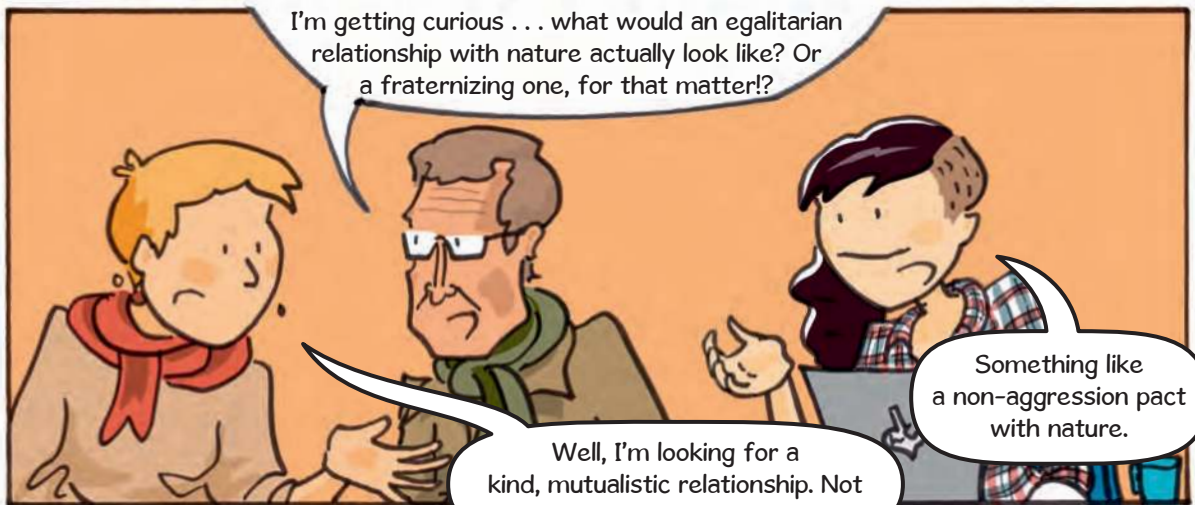


Like why I think it's a crime against coffee to order a skinny white mocha and you don't.



If really you want to continue in that vein. But there are probably better examples.

I'm getting curious . . . what would an egalitarian relationship with nature actually look like? Or a fraternizing one, for that matter!?



Something like a non-aggression pact with nature.

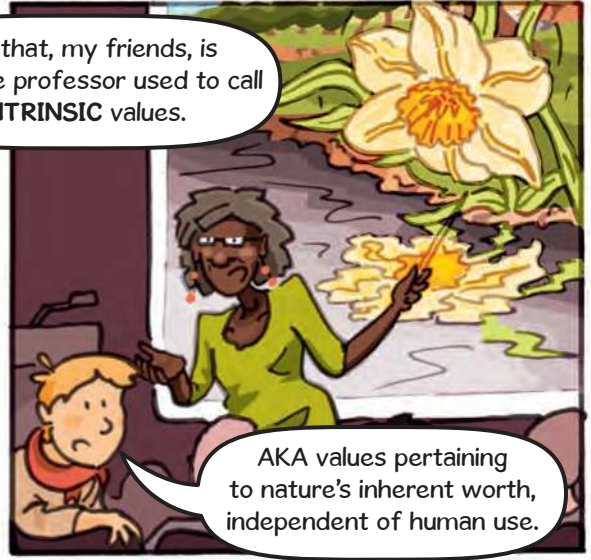
Well, I'm looking for a kind, mutualistic relationship. Not hugging a tree exactly, but . . .



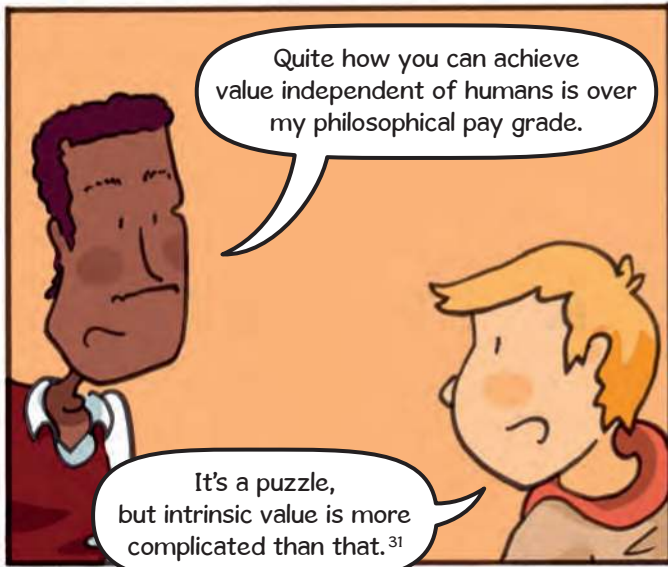
You know, just respecting nature for what it is, really.

Letting it do its thing.

And that, my friends, is what the professor used to call **INTRINSIC** values.



AKA values pertaining to nature's inherent worth, independent of human use.



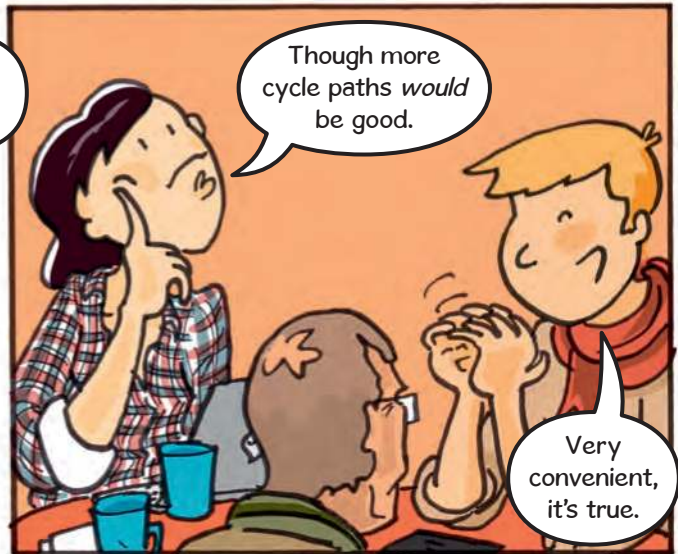
Quite how you can achieve value independent of humans is over my philosophical pay grade.

It's a puzzle, but intrinsic value is more complicated than that.³¹

Come on people, I think what you really want to say is that there aren't enough bicycle paths on campus.



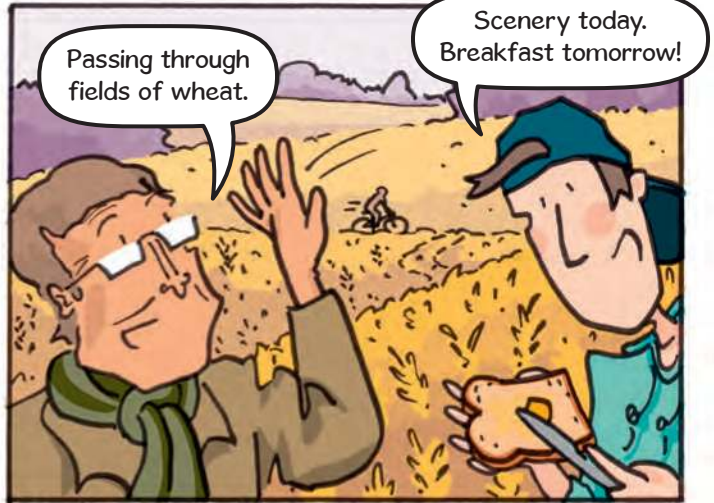
STOP IT. We're trying to say we are **OFFICIALLY** Biophilic!



Though more cycle paths *would* be good.

Very convenient, it's true.

You see that's the thing, isn't it? You want to let nature 'do its thing', but you still want your cycle paths, don't you?



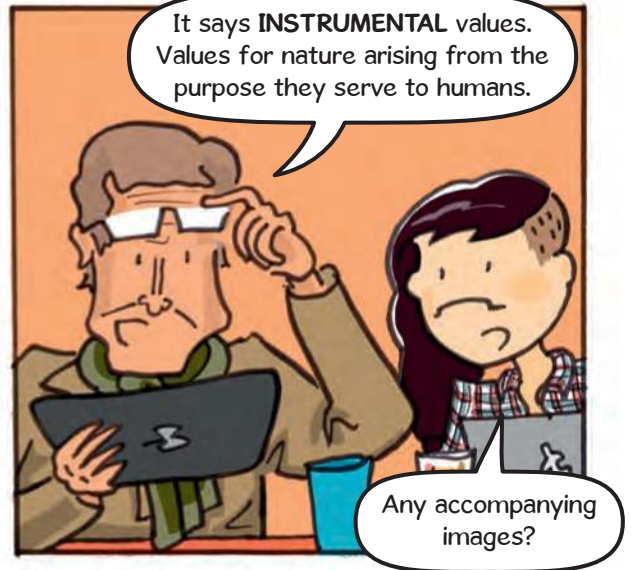
Passing through fields of wheat.

Scenery today. Breakfast tomorrow!



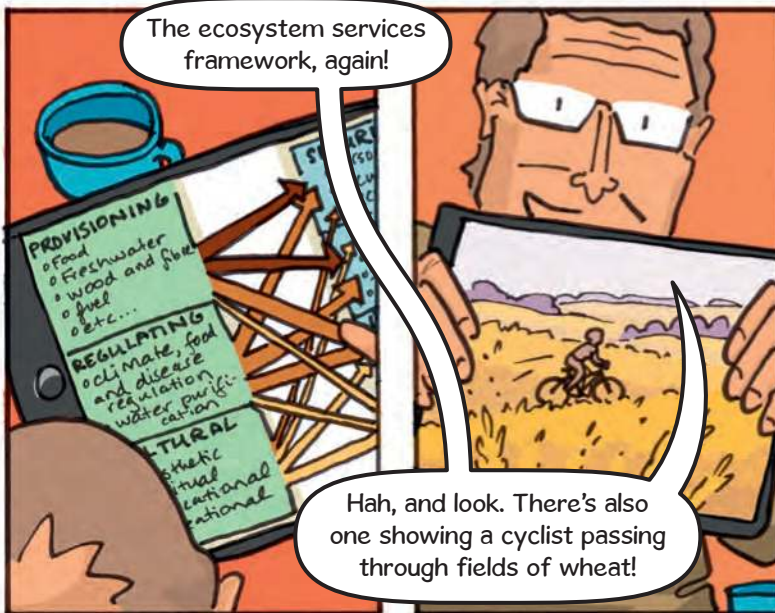
I've just searched for "the opposite of nature's intrinsic value"

What does it say?



It says **INSTRUMENTAL** values. Values for nature arising from the purpose they serve to humans.

Any accompanying images?



The ecosystem services framework, again!

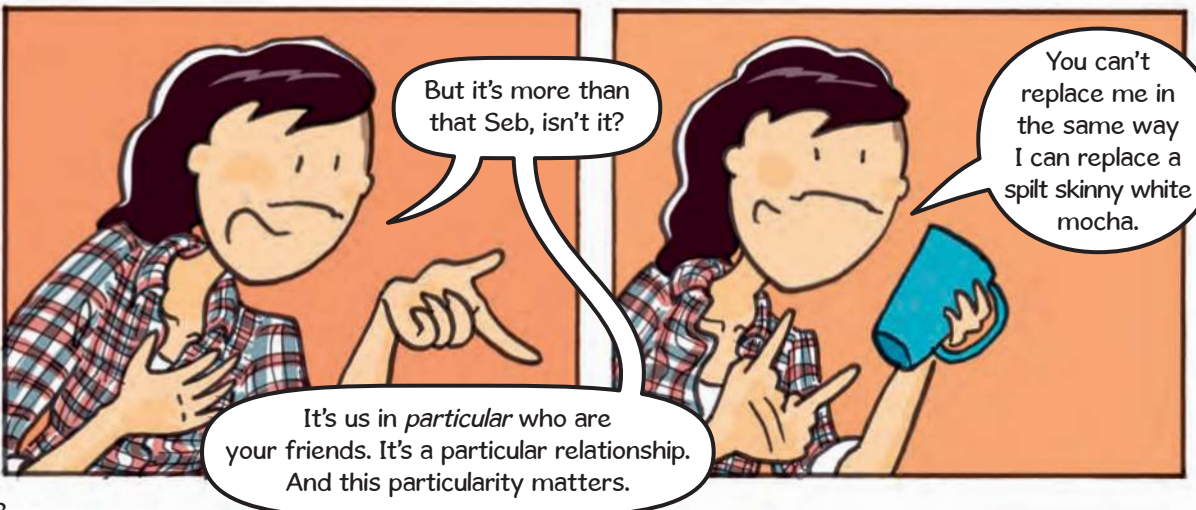
Hah, and look. There's also one showing a cyclist passing through fields of wheat!

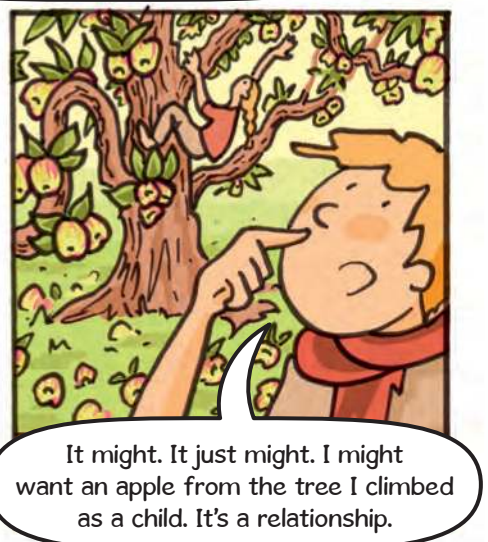
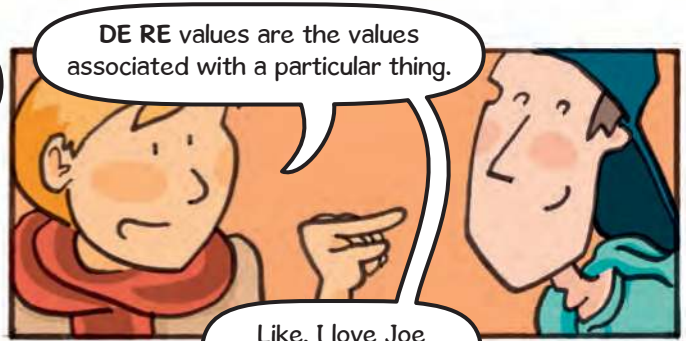


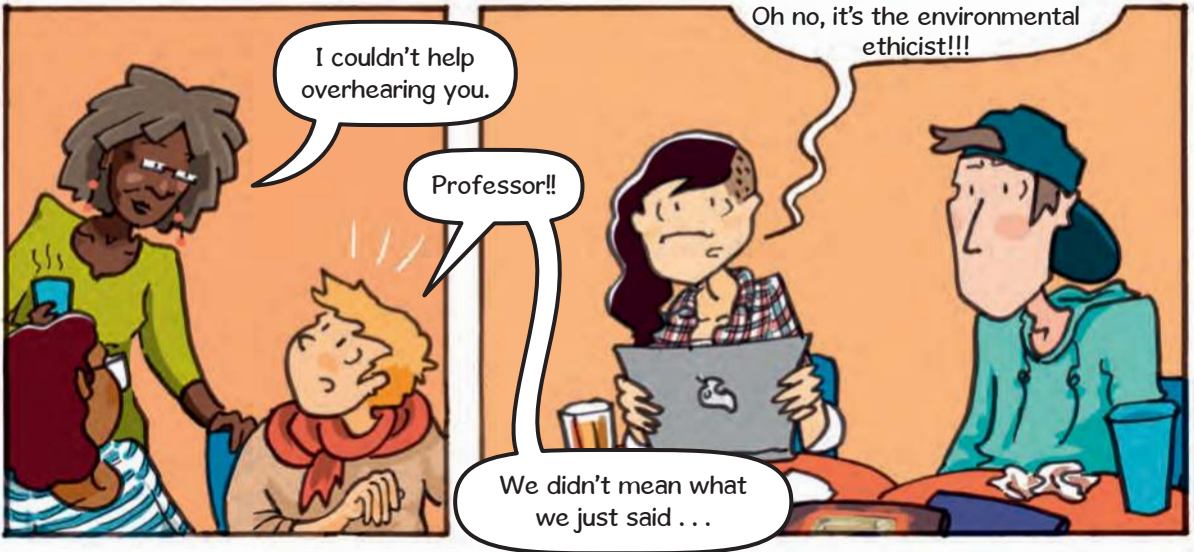
Oh puh-lease!



I certainly don't see myself in some kind of vague axiological bun fight between intrinsic and instrumental values.³²







Relational values describe the preferences, principles and virtues accruing around our interactions with nature. The idea helps us go beyond the intrinsic-instrumental value debate, which feels bit artificial and narrow.³⁴



Can we offer you something in return?

Well, I am partial to a skinny white mocha with toffee nut syrup and caramel drizzle ...



INTRINSIC VALUES

Values concerning nature's inherent worth, in and of itself.

INSTRUMENTAL VALUES

Values reflecting the particular ends that nature serves.

RELATIONAL VALUES

Values that cultivate desirable (sought-after) relationships with nature.

DE DICTO VALUES

Values arising from the general properties that aspects of nature exhibit.

DE RE VALUES

Values arising from uniqueness and particularity in nature.



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DECISIONS





From what I can gather, it's all about planning with a more ecological mindset, designing with nature.³⁶



Oooh, that's a nice way of putting it.

Alas, not my phrase.



So is it basically like creating more opportunities for interactions with nature?



Parks and gardens? That sort of thing?



This softly verdant vegetation is certainly good for my stress levels!³⁷



As far as I can see, it's a bit more than that.



There's a picture of a natural flood defence system on the inside page.



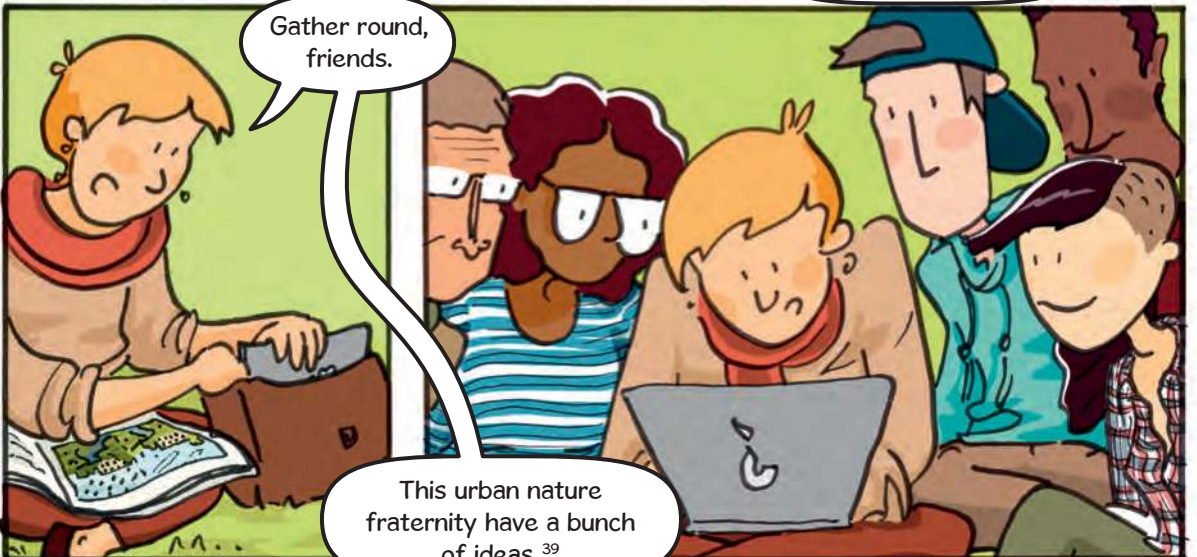
A 'nature-based solution',³⁸ apparently.



So they're wanting us to make some suggestions in that direction? We're still very abstract in our thinking.



Do we actually know what we might do?



Gather round, friends.

This urban nature fraternity have a bunch of ideas.³⁹

So...

And in Singapore, the old canal of Bishan-Ang Mo Kio Park has been de-concretised and naturalised to better meet the needs of city water supply and flood management.

And look at the 'Bosco Verticale' development in Milan, Italy where high-rise buildings have been re-conceived as a vertical forest.

... in Milwaukee, Wisconsin vacant lots in deprived areas have been turned into pocket parks, fruit orchards, and community gardens.

Then there's the 'Wild Mile' in Chicago, Illinois, a post-industrial canal reimagined as a floating eco-park for recreation and education.

Or the 'Innerbelt National Forest' of Akron, Ohio, a disused urban freeway transformed into a community gathering place.





And the 'Sweet City' initiative in Curridabat, Costa Rica, where pollinators, plants and trees are recognised as citizens and placed at the heart of city design.



In Fremantle in Australia, a tree planting programme is being used to provide shade to reduce heat, as well as improve air quality.



Then in the city of Vitoria-Gasteiz, Spain, the recovery of old wetlands form part of the city's recreational green belt, as well as help regulate water.



And in Edmonton, Canada, there's a Green Network Strategy called 'breathe', ensuring that, as the city grows, each neighbourhood is supported by a network of open space.

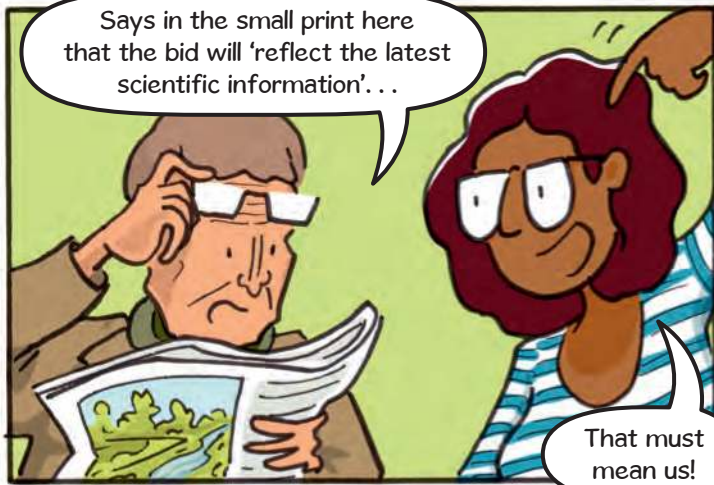


And they're busy turning London, England into a National Park City, committed to protecting the natural capital of the urban landscape as the basis for a better quality of life.

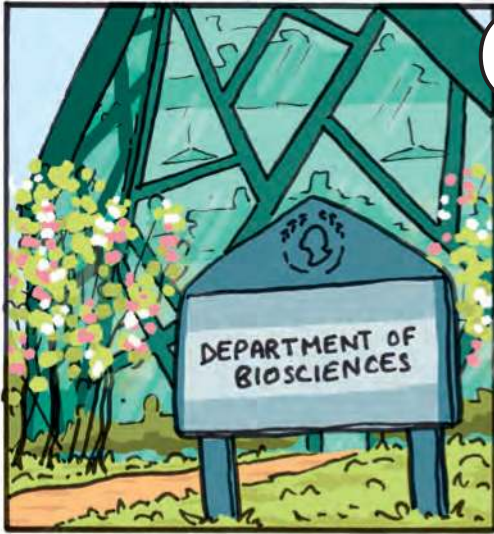


All very inspiring, and easy to say, but how do we know what to propose?

Yeah, we can't just say anything! It has to reflect our particular needs.







So what you're going to need is a baseline assessment of the situation.



You mean like where we are now with things, that sort of thing?



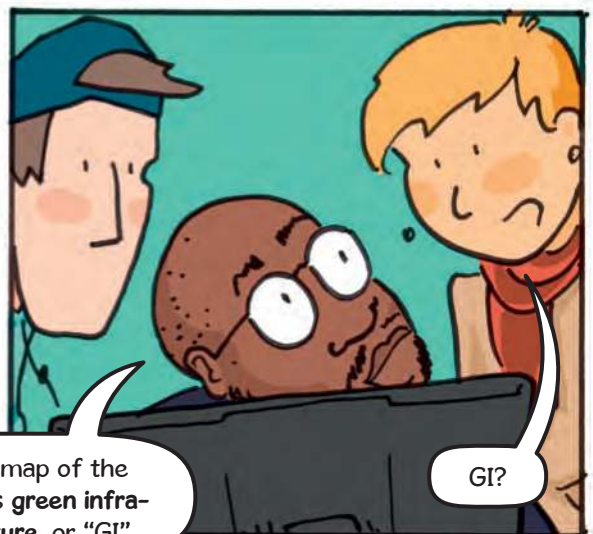
Yeah, what decision-makers call the 'business as usual' option. We typically use spatial analysis for this.⁴⁰



Take a look.

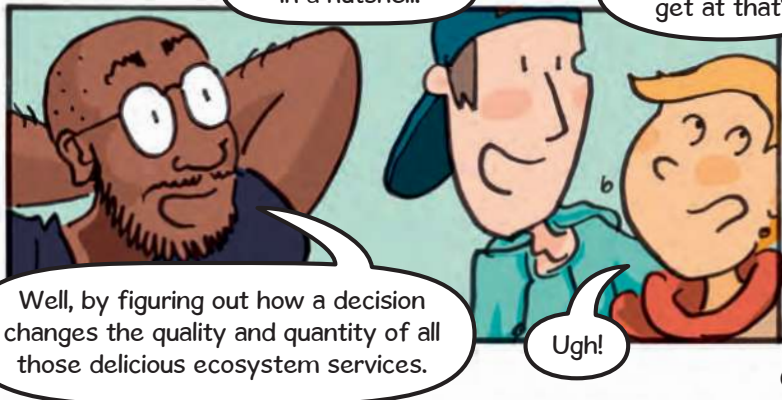
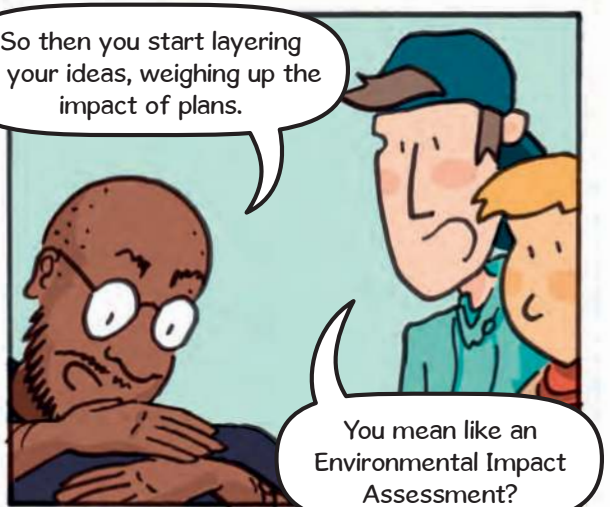


What is this?



It's a map of the region's **green infrastructure**, or "GI".

GI?





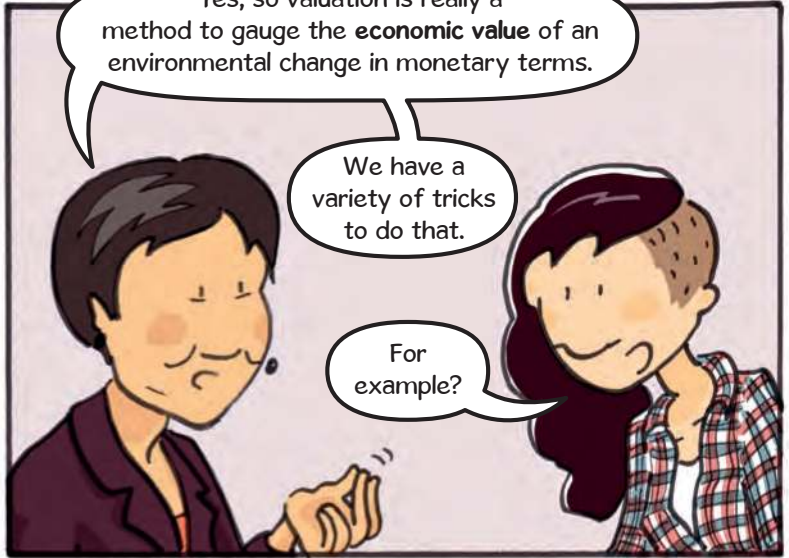
Is that what people mean when they talk about the **economic valuation** of nature?



Yes, so valuation is really a method to gauge the **economic value** of an environmental change in monetary terms.

We have a variety of tricks to do that.

For example?



So, for example, imagine a proposal for new green space on a brownfield site in the city centre.



How would you go about weighing that one up?⁴⁸

I think I'd just go ahead and do it. I mean, it's a no brainer.



A place to relax and exercise? Nice views? What's not to like?!

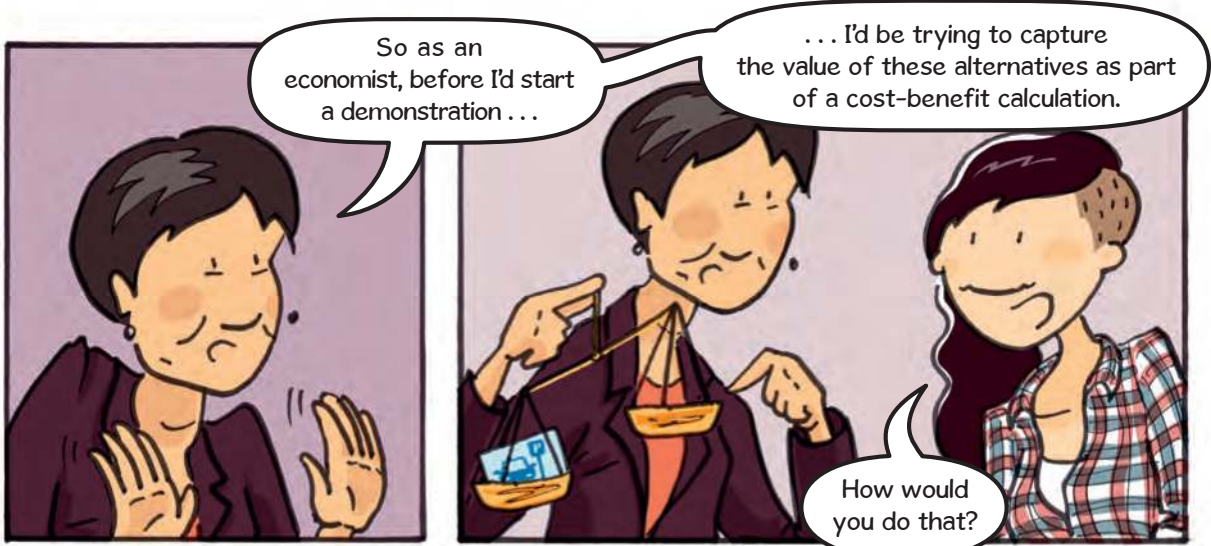
Totally agree.

Bu - u - u - ut maybe there's pressure to turn that land into a car park.

What then?

I'd start a local demonstration!





So as an economist, before I'd start a demonstration ...

... I'd be trying to capture the value of these alternatives as part of a cost-benefit calculation.

How would you do that?

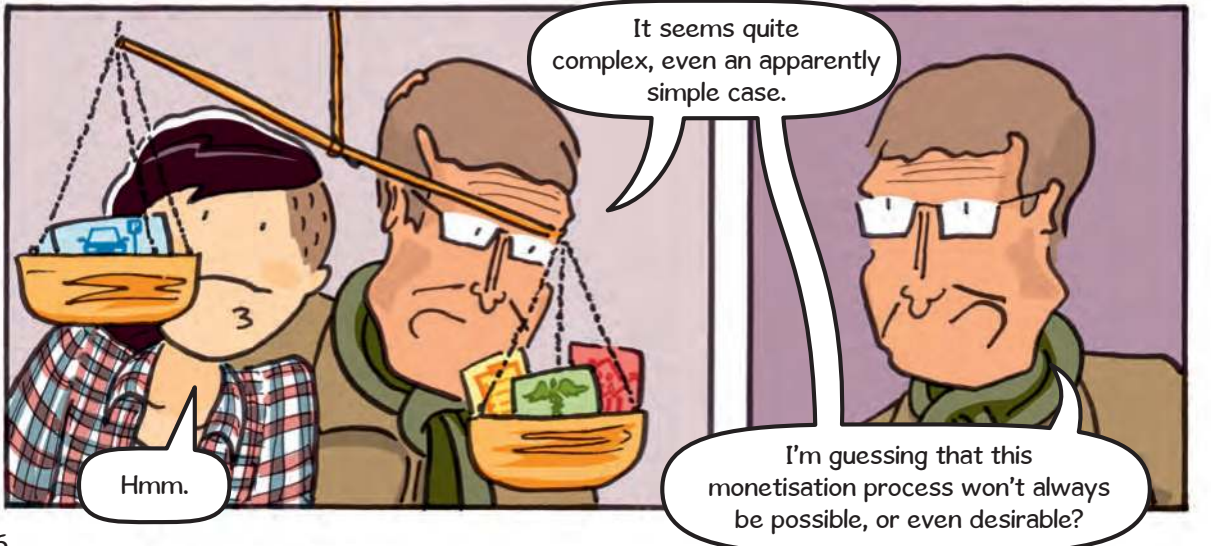


Or I might gauge how house prices will change in the vicinity of the new park, to get a handle on the value of a green view!

Well, I might calculate all the long-term savings to the local health service arising from people leaping around the new park.

I might also ask local residents how much they'd be willing to pay for the upkeep of the park.

That sort of thing.



It seems quite complex, even an apparently simple case.

Hmm.

I'm guessing that this monetisation process won't always be possible, or even desirable?

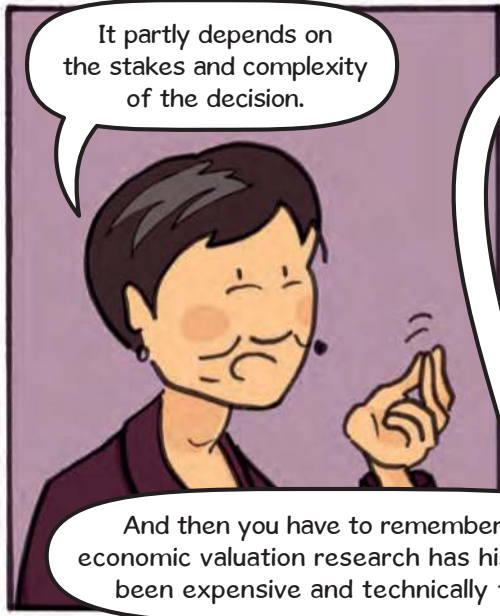


Yeah, economic analysis can't replace good, old-fashioned debate about the relative merits of a green space over a car park.

I agree, it's surely not something cost-benefit analysis can resolve by itself.



Yes, economic valuation is more like an ingredient in decision making, not an end in itself.



It partly depends on the stakes and complexity of the decision.

And then you have to remember that economic valuation research has historically been expensive and technically fiddly.



That's before you even get to social and political debate!



So what do you do in those instances? Just leave it to politicians to talk it through?

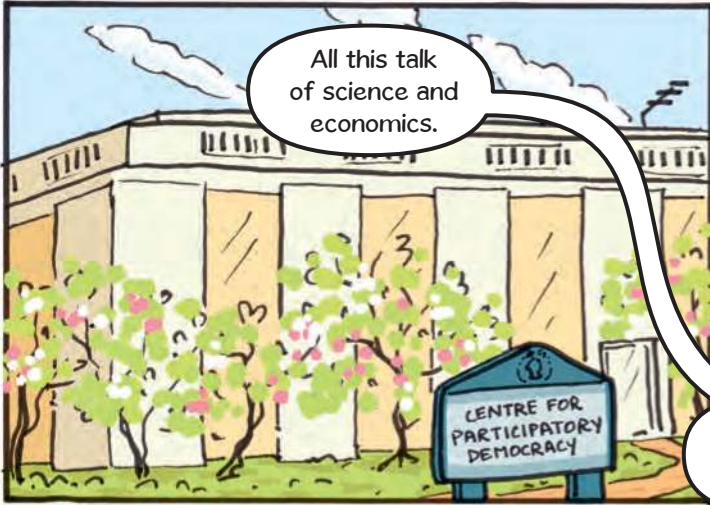


Well, sometimes we actually use valuation evidence from other studies and adjust it to the considerations in hand.

It's called 'value transfer'.⁴⁹



Is that like wiring money?



All this talk of science and economics.



I can't help feeling this whole decision-making world is being run by technocrats.



Have the biophilic bid team asked what people want from their environment?

Apparently they did a "consultation".



A telephone survey revealed that 8 out of 10 people 'tended to agree' the environment was 'cause for concern'.



I think we need something a bit more inspiring than a telephone survey.

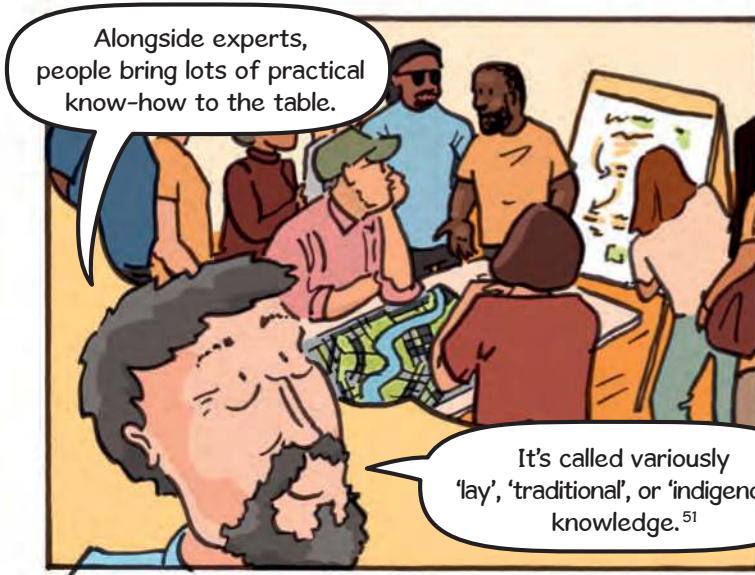
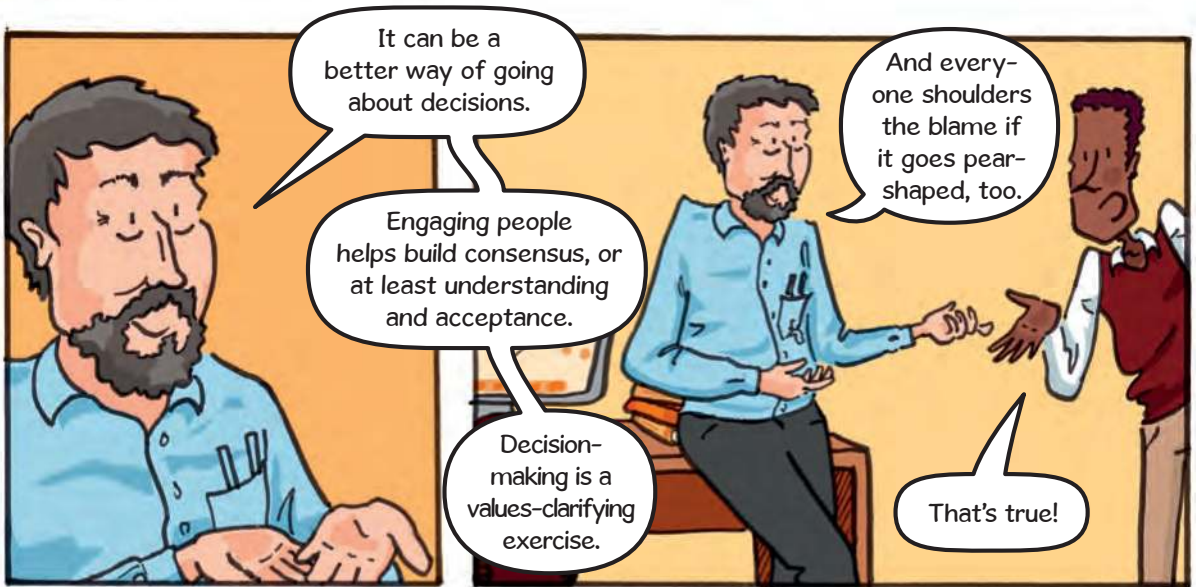


Yeah, like proper engagement.

People should have the right to have their say about decisions that will affect them.

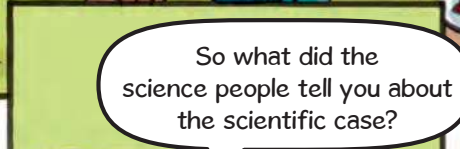
Well that's one good reason to speak to people, but there are others.⁵⁰

Such as?





Gather round, people. Let's debrief!



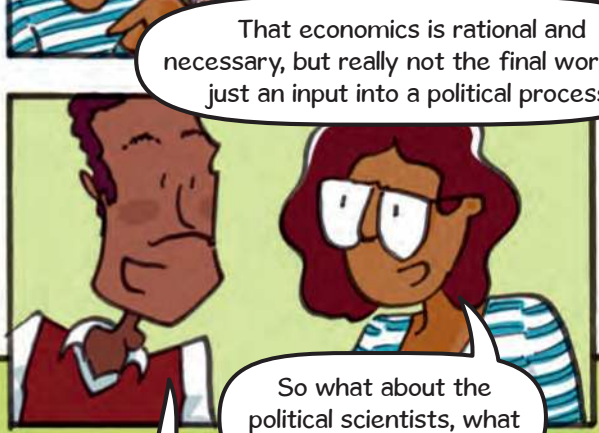
So what did the science people tell you about the scientific case?



And the economists about the economic case?



Go speak to the economists, as far as I can tell!



That economics is rational and necessary, but really not the final word. It's just an input into a political process.



So what about the political scientists, what did they say to us?

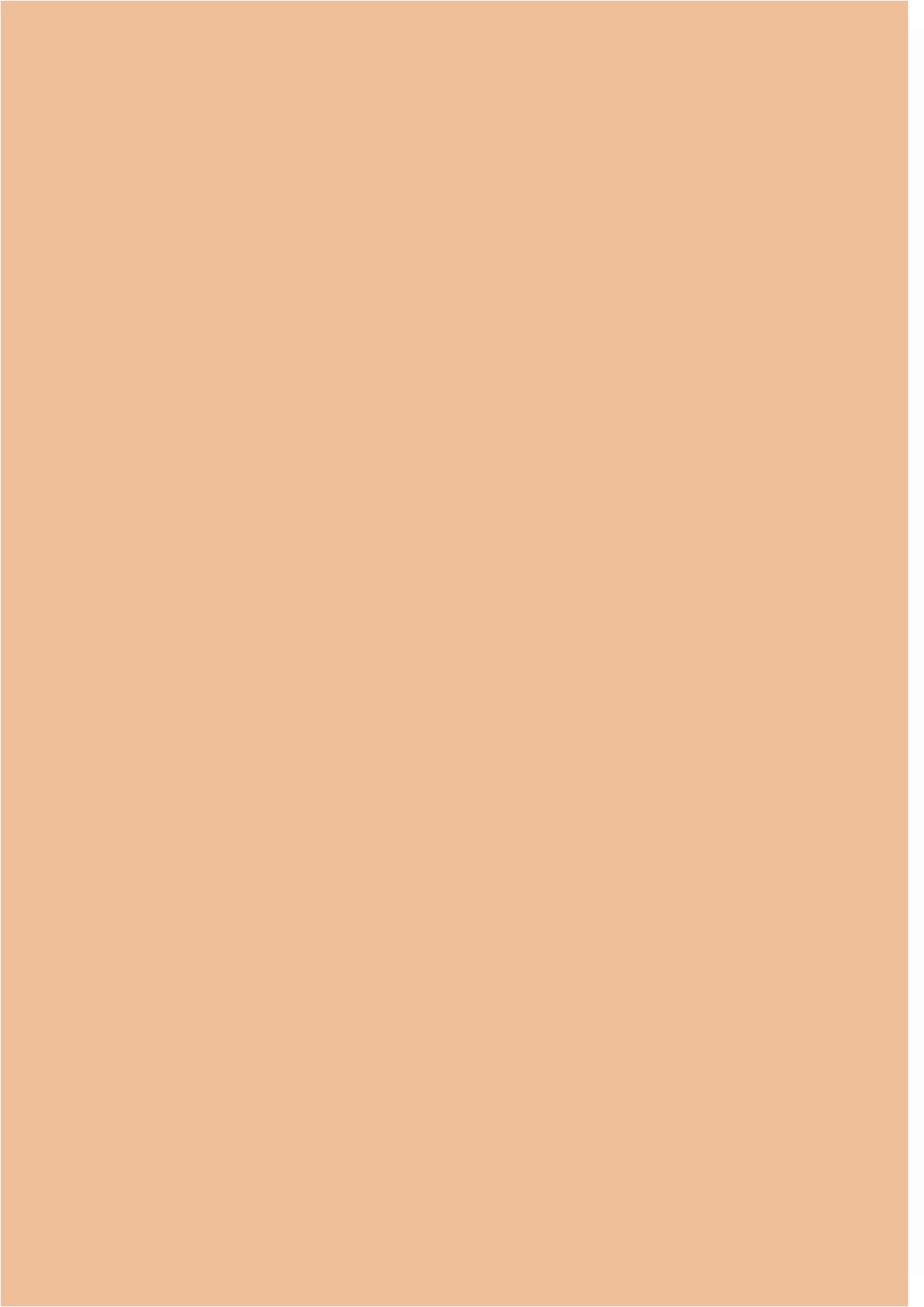
Speak to the people!

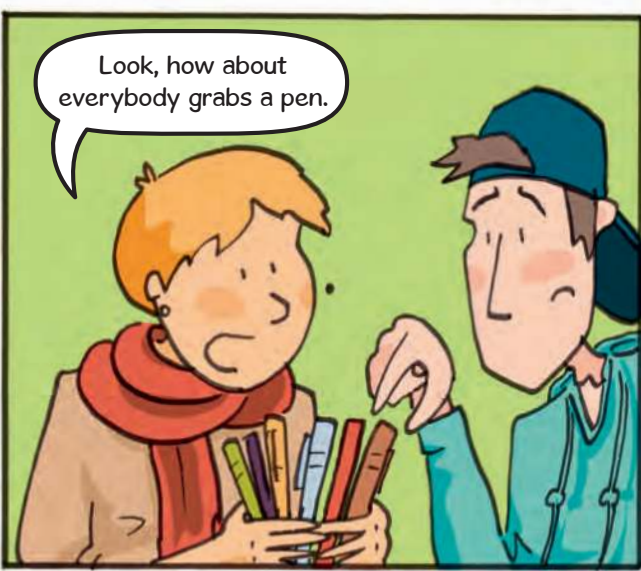
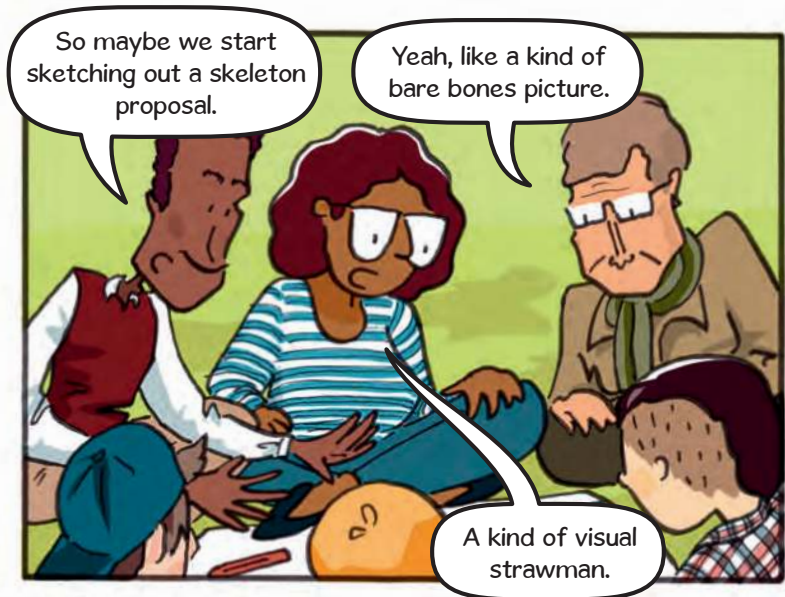


2007	Environmental Decision-making: Exploring Complexity and Context	Harding, R. Hendriks, C.M. Mehreen, F.
2018	Cost-Benefit Analysis and the Environment: Further Developments and Policy Use	OECD
2015	REMAKING PARTICIPATION: Science, Environment, and Emergent Publics	Ed: Chilvers, J. Kearnes, M.



ACTIONS





Ostrum University's "Biophilic Wonderland"

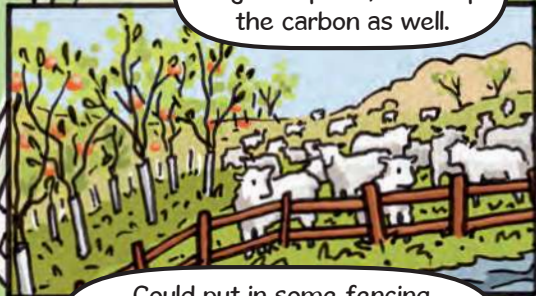
by Chloe Wai Chiu, Joseph Eaves, Simone Forrester, Aisha Hassan,
Michael Hurst & Sebastian Baker-Young

Catchment
level

Well for starters we should do some flood alleviation work, high up in the catchment.



Planting some trees might help too, soaks up the carbon as well.



Could put in some fencing along the river, stop livestock contaminating water quality.

Like creating a whole load of wetlands to store and slowly release water.



Let's restore this whole winding river with a pathway too, for recreation.



Every neighbourhood's going to have an accessible public open space for the community.

Neighbourhood Level

Perhaps some of that could be reserved for growing fruit and vegetables.

Yeah, community gardens!

What about demanding that every new home has a garden?

I fancy a Wildlife Overpass to allow animals to cross the road safely.

Street Level

We want a green wall at the end of every row of houses.

And skyscrapers with green terraces or solar panels!

How about one of those vertical farms?

With roadside verges and bioswales to soak up water, like sponges.

And trees lining every street to reduce ambient temperature.

Wow, it's amazing what you can do with some good marker pens!





So we have this vision for nature.



A local green revolution.



But it's looking a bit pricey, so we're hoping you might help.



I see, so where's your thinking?

Well, one thing we are sure of is that people benefitting from this should pay.



It's a kind of principle.

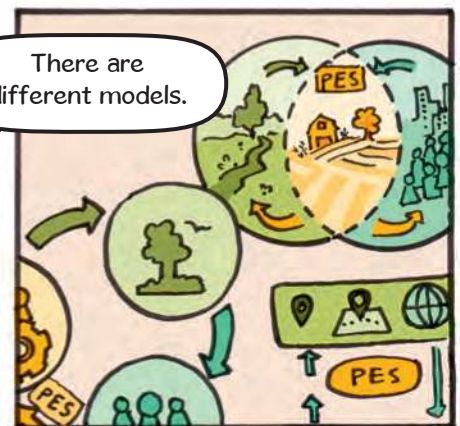
As opposed to all the people who wrecked the joint in the first place, right!!⁵³

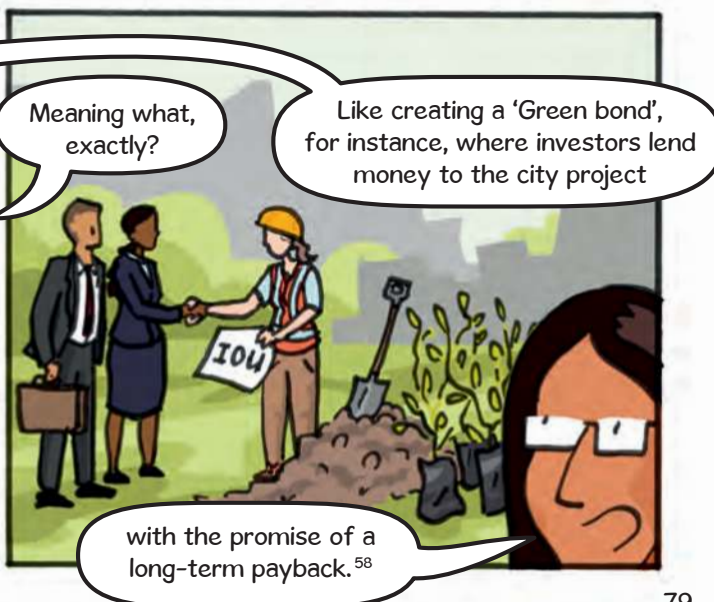
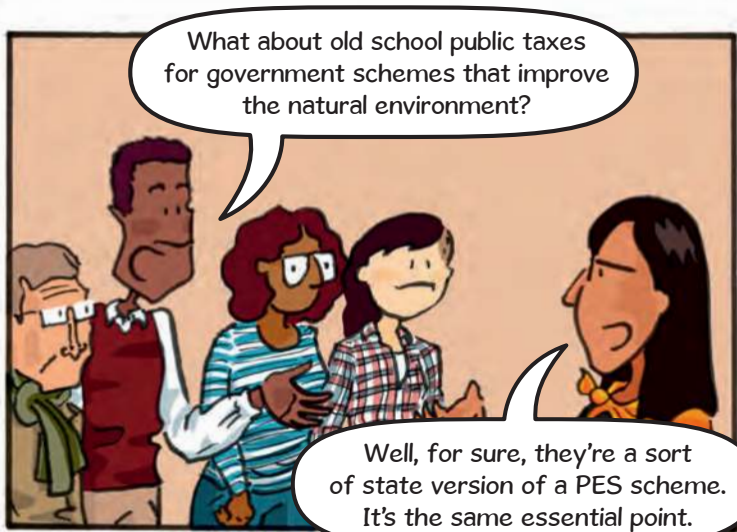


Sounds like you're beginning to create the outline of a 'payment for ecosystem service', or a 'PES' scheme.



Well, it's an economic arrangement between those who provide an ecosystem service and those who benefit from it.









PES ↓

PAYMENT FOR ECOSYSTEM SERVICE SCHEME

An economic arrangement whereby the beneficiaries, or users, of ecosystem services provide payment to the stewards, or providers, of those services.

GREEN FINANCE

The use of financial instruments to enable investment directed towards the quality and functioning of the natural environment and natural systems.



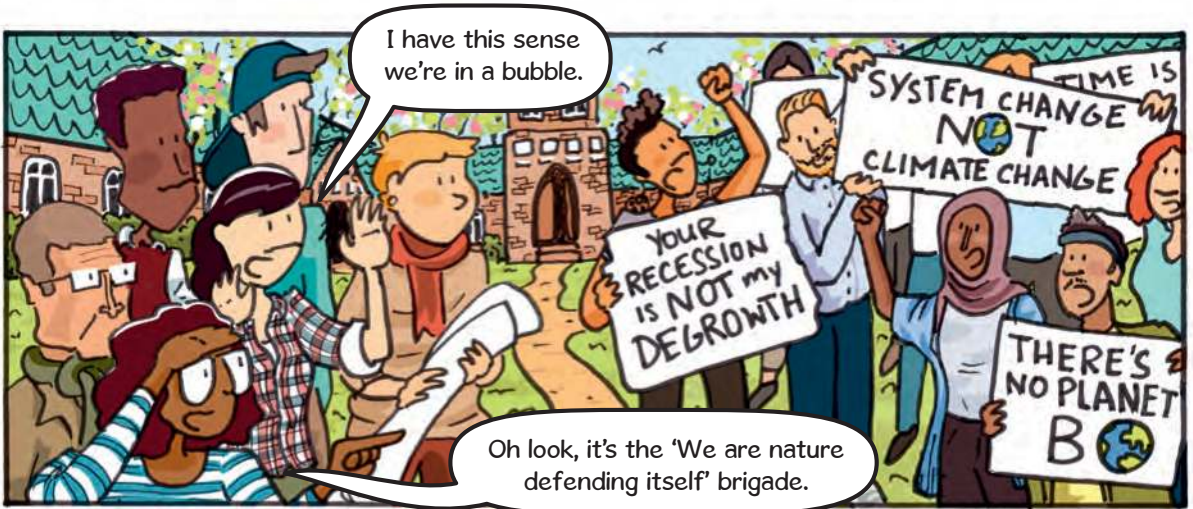
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TRANSFORMATION



I have this sense we're in a bubble.

Oh look, it's the 'We are nature defending itself' brigade.



Excuse me, may I ask you people a cheeky question?

Sure!

What's up?

What exactly are you protesting about?



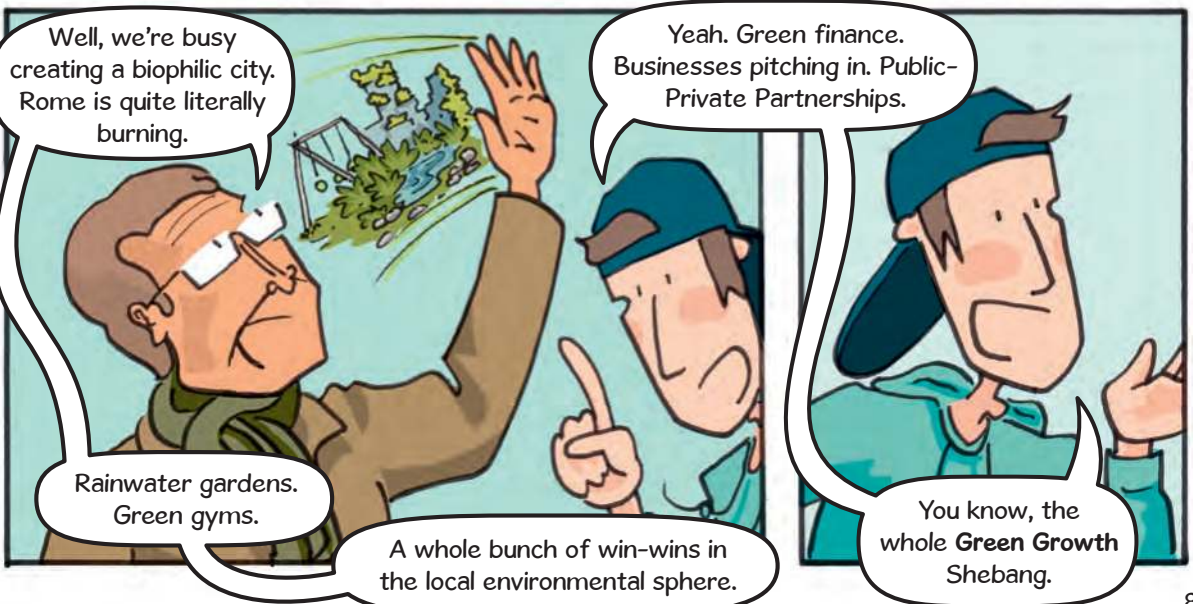
Hmm. Well. Let's see.

Human selfishness, greed and apathy ...



... as embodied in the reckless pursuit of growth in a deeply neo-liberalised world.

Et tu?



Well, we're busy creating a biophilic city. Rome is quite literally burning.

Rainwater gardens. Green gyms.

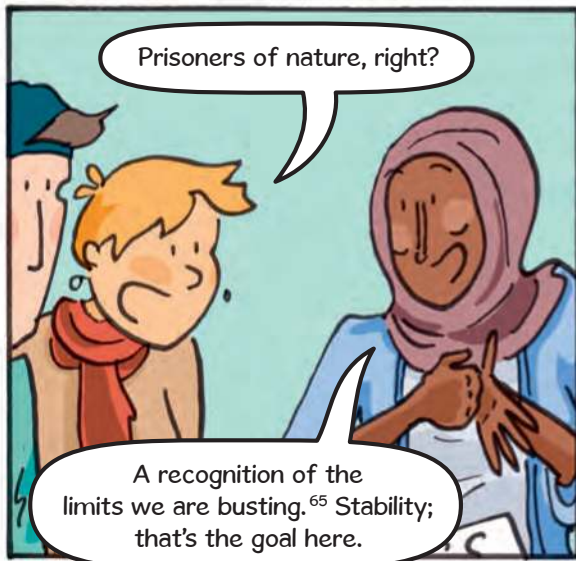
A whole bunch of win-wins in the local environmental sphere.

Yeah. Green finance. Businesses pitching in. Public-Private Partnerships.



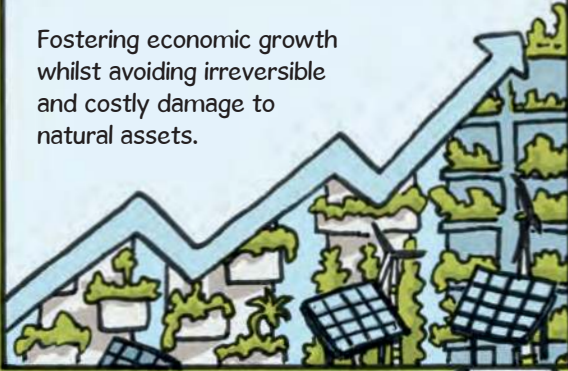
You know, the whole Green Growth Shebang.





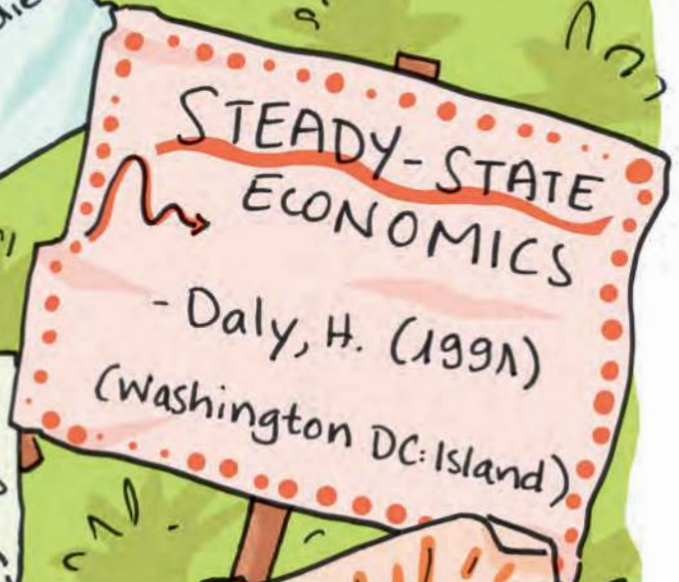
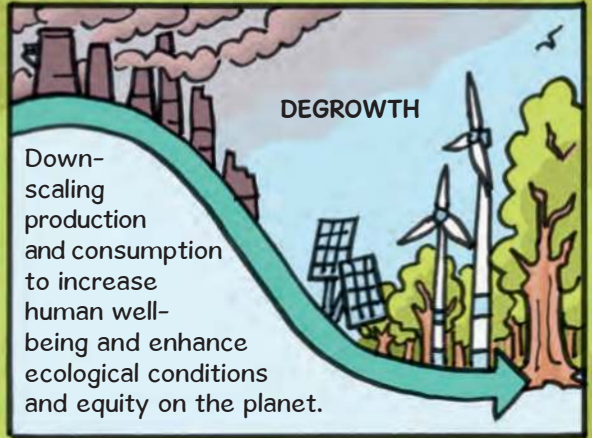
GREEN GROWTH

Fostering economic growth whilst avoiding irreversible and costly damage to natural assets.



DEGROWTH

Down-scaling production and consumption to increase human well-being and enhance ecological conditions and equity on the planet.





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CODA



Showtime in five minutes.



Try to gather yourselves, people.



D'ya know what? We've spent the last week running around this campus, and I've been thinking.

What's that then?



We've hardly spoken to anyone resembling a natural scientist.



An environmental historian, yes.



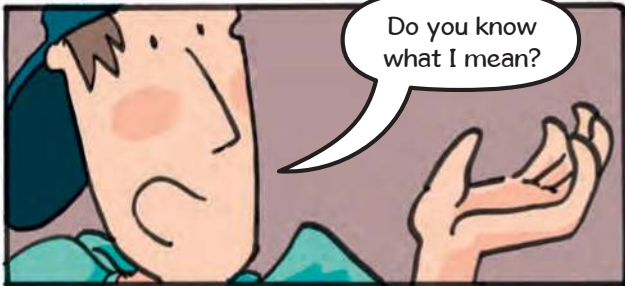
A philosopher, yes.

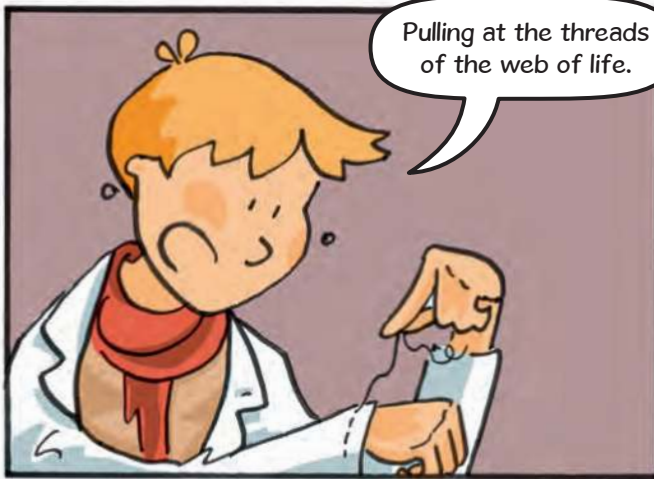


An economist, yes.



Even a geographer, for crying out loud!







fin



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Section Notes



ROOTS



- 1 A fictitious university created in honour of Elinor Ostrom, Nobel Prize winning political scientist, and a figure of wider relevance to the concerns of this book. See Ostrom (1990).
- 2 The title of McKibben's (1989) classic book within modern environmentalism. By the 'end of nature' the author means the end of nature as a force independent of human action.
- 3 The idea of the 'end of history' is used by Fukuyama (1992) to proclaim the ascendancy of western liberal democracies in the advent of the (then anticipated) fall of the Soviet Union.
- 4 This sentiment is drawn from an influential essay on the idea of nature by Williams (1980). This essay is of wider relevance to the concerns of section 2.

MEANINGS



- 5 The general definitions used in this section draw directly on the framework provided in Castree (2014). Other accessible overviews of the idea of nature include Soper (1995), Philips and Mighall (2000) and Hinchliffe (2007).
- 6 The sublime concerns feelings of awe, wonder and greatness in nature. The idea is associated particularly with Romanticism, an 18th and 19th Century movement in the arts and literature emphasising emotional sensitivity, individual subjectivity and imagination. For a detailed treatment of the sublime's historical and contemporary significance, see Brady (2013). For an interesting modern spin on the idea, see Bell and Lyall's (2002) account of thrill-seeking in nature.
- 7 The inspiration for this backdrop is provided by Casper David Friedrich's 1818 *Wanderer above the Sea of Fog*, a recurrent image of modern environmentalism that can be interpreted from multiple vantage points. See note 17.
- 8 On the idea and persistence of nature-culture dichotomies, see Braun (2004).
- 9 All William Cronon quotes in this section are drawn from Cronon (1995).

- 10 Adams (1979).
- 11 See, for example, Lovelock (1982).
- 12 Environmental discourse often interprets Frankenstein as a parable on the unintended consequences of scientific efforts to harness the uncontrollable powers of nature. See Hammond (2004) for an elaboration of, and counterpoint to, this idea.
- 13 See, for instance, Capra (1996) and Moore (2015). The idea of the ‘web of life’ resonates with a variety of ‘system’ and ‘networked’ views of nature; from the technocratic resource management scholarship of ‘Social-Ecological Systems’ (see section 3 and note 19), to the relational ontologies of ‘Actor-Network Theory’ (see Murdoch, 1997).

RELATIONS



- 14 See Wulf (2015).
- 15 For a systematic overview of different ways of characterising relations between society and nature, see Philips and Mighall (2000), especially chapter 1.
- 16 Overviews of the ‘domination’ perspective are provided in Harvey (1995), chapter 6 ‘*The Domination of Nature and its Discontents*’ and Merchant (1992), chapter 2 ‘*Science and Worldviews*’.
- 17 The use of Casper David Friedrich’s *Wanderer above the Sea of Fog* in the context of domination is provocative here. According to Gaddis (2004: 1) the figure’s position in the painting is “contradictory, suggesting at once mastery over a landscape and the insignificance of the individual within it”.
- 18 This domination story could equally be read more affirmatively, as a story of human emancipation and self-realisation through nature; enlightenment ‘ideals’ supported by developments in science, technology and markets. See Harvey (1995) *Op. Cit.*
- 19 The idea of environmental limits and constraints emerges in Malthus’ famous essay on Population (Malthus, 2008 [1798]). In the development of modern environmentalism significant formative research includes Ehrlich’s (1968) notion of population ‘bombs’ and Meadows *et al.*’s (1972) work on the ‘limits to growth’. Recent research includes the idea of ‘planetary boundaries’ and the identification of ‘safe operating limits’ for humanity (Rockström *et al.*, 2009).
- 20 In its most controversial form, this logic takes the form of environmental determinism, the idea that environmental factors, especially climate and

landscape, control and dictate patterns of human culture and development, a theory widely manifesting itself as racist.

- 21 Gateways into more affirmative understandings of peoples' relationship with the natural world include the idea of Biophilia, popularised by Wilson (1984). The scientific (evolutionary) basis of Biophilia is contested - hence its status as a 'hypothesis' - though the term has appeal as a broad slogan for an environmentally 'friendly' world-view, which is the intended meaning here. See, for example, Simaika and Samways (2010).
- 22 For an introduction to the social-ecological systems (SES) perspective, see the seminal work of Berkes *et al.* (2003). A useful contextualising paper on this perspective is also provided by Schoon and Leeuw (2015). An important venue for much SES scholarship is the journal *Ecology and Society*.
- 23 See Halliday and Glaser (2011).
- 24 The illustration is derived from the widely circulated ecosystem services framework of the 2005 Millennium Ecosystem Assessment (MA, 2005). The MA assessed globally the consequences of ecosystem change for human well-being and popularised the idea of ecosystem services as a harmonising framework for natural resource management.
- 25 For a general overview of the ecosystem services perspective and its various applications, see Potschin *et al.* (2016) as well as its namesake journal, especially Braat and de Groot, (2012) and Costanza *et al.* (2017).
- 26 The ecosystem services perspective is highly contested within academic discourse. Although the framework is holistic in its ambitions, Norgaard (2010) suggests the concept overreaches itself in terms of its capacity to grasp the sheer complexity of social-ecological systems. More specifically, there are a variety of ethical and practical critiques of the ecosystem services concept arising from its technocratic representation of people-nature relationships, as well as its close association with the practice of the economic valuation of nature and the use of market-based instruments to protect nature (Sullivan, 2009; Robertson, 2012).
- 27 The idea of reconnecting people and nature has produced a significant body of literature which, despite some variants in terminology (e.g., nature relatedness, nature connectedness, and connectivity with nature), shares an emphasis on the human/individual scale of people-nature interactions and, as such, has found significant and productive expression in the work of environmental psychology. For reviews, see Restall and Conrad (2015) and Ives *et al.* (2017). However, the idea of reconnection is itself shadowed by a much broader and recurring narrative of loss and alienation from nature, one typically aligned to trajectories of human development under modernity, i.e., urbanisation and industrialisation.

- 28 See, for example, Mayer and Frantz (2004).
- 29 Although see Yeo *et al.* (2020) for nuance on the relationship between mediated natures and well-being.

VALUES



- 30 An accessible introduction to the idea of values from an environmental starting point is provided by Tadaki *et al.* (2017). See also Dietz *et al.* (2005) and O'Neill *et al.* (2008). The elaboration provided here should be seen as a starting point. An equally important values concept—shared values—is interrogated by Kenter *et al.* (2015) where the focus is on values created at the collective and cultural level.
- 31 See O'Neill (1992) and Batavia and Nelson (2017).
- 32 Many aspects of the instrumental/intrinsic values debate are revealed in the exchange between Justus *et al.* (2009a/b) and Sagoff (2009). See also Loreau (2014).
- 33 The distinction between *de dicto* and *de re* values is interesting in the way it invites consideration of the issue of substitutability in nature; i.e., the extent to which different components of nature can be effectively swapped for each other. For a detailed overview, see O'Neill (2017).
- 34 The turn towards relational values can be viewed as an attempt to transcend, rather than reconcile, debates about intrinsic and instrumental value. For an initial elaboration of relational values, see Chan *et al.* (2016). A deeper treatment is provided in Pascual *et al.* (2018).

DECISIONS



- 35 See the work of the Biophilic Cities Network at www.biophiliccities.org. The Network describes itself as a “global community of partner cities, organizations and individuals committed to planning and designing cities with abundant nature, where citizens have rich contact with the flourishing natural world as an element of daily life”. For an academic vision, see Beatley (2010).
- 36 For formative academic works, see McHarg (1995 [1969]) and Fairbrother (1972).
- 37 Environmental psychology has provided fertile ground for exploring the restorative benefits of human exposure to nature. Research has, for instance, explored the role of natural settings—and features of nature—in generating psycho-physiological recovery from stressful experience, as well as restoring attentional capacity arising from mental fatigue. For a formative academic text in this area, see Kaplan and Kaplan (1989).

- 38 Nature-Based Solutions overlaps strongly with concepts such as ‘Natural Capital’, ‘Green Infrastructure’ and ‘Ecosystem Services’. The essential concern is to harness natural processes to adapt to social-ecological risks and challenges. See Dorsta *et al.* (2019).
- 39 The examples here are drawn from, and inspired by, cases documented in the practitioner journal *Biophilic Cities: A Global Journal of Innovation in Urban Nature*. See www.biophiliccities.org.
- 40 McHarg (1995 [1969]) *Op. Cit.* was a landmark influence on the development and application of Geographic Information Systems (GIS) in environmental planning, whereby land use is planned and optimised through the layering of information. For a relevant recent example, see McPhearson *et al.* (2013).
- 41 For wider inspiration on urban marginalia, see Mabey (2010 [1973]) and, more recently, Farley & Symmons (2012) and Gandy (2013; 2016).
- 42 See Gómez-Baggethun and Barton (2013).
- 43 See Burgess (2015).
- 44 The concept of ecosystem services has been developed to essentially make this link between ecosystems and human welfare. Economic valuation of ecosystem services provides one prominent way of measuring the human welfare derived from the use or consumption of ecosystem services. See Fisher *et al.* (2008). The integration of spatial analysis into this process of valuation is a key analytical practice. See Schägner *et al.* (2013).
- 45 Quantifying marginal changes in ecosystem service delivery is one key and prominent step in the process of the economic valuation of nature for policy and decision making, but economists are also interested in the cumulative effects of change. Indeed, decisions ‘at the margin’ can be made repeatedly and independently of one another, but if these decisions are made in an uncoordinated way, the total value of the resource may be lost because of the cumulative effect of the individual decisions (see Defra, 2007). More generally, economic decision making is often concerned with evaluating trade-offs: in broad terms, situations where the provisioning of one ecosystem service increases as another decreases. See Fisher *et al.* (2015) for a sophisticated non-specialist introduction to economics and valuation.
- 46 For a general introduction to the idea of revealing nature’s ‘hidden’ value through an economic—specifically monetary—mindset, see Juniper (2013). This idea is a central thread of science-policy discourses on the environment. See, for instance, the work of the UK National Ecosystem Assessment (UKNEA 2011; 2014).
- 47 Useful introductions to cost-benefit analysis are provided by Hanley and Barbier (2011) and OECD (2018).

- 48 Some of the methods of economic valuation highlighted here are reviewed by Ozdemiroglu and Hails (2016). A more detailed summary guide is provided by Fisher *et al.* (2015).
- 49 For a practical and theoretical overview of this idea, see Wilson and Hoehn (2006).
- 50 An elaboration of the different grounds on which participation occurs in relation to ecosystem service-based decision making is provided by Fish *et al.* (2011). For a wider treatment on the politics of participation, see Chilvers and Kearnes (2015).
- 51 See, for example, Berkes *et al.* (2000) and Bohensky and Maru (2011).

ACTIONS



- 52 See Bell *et al.* (2019).
- 53 In general, there has been a transition from a ‘polluter-pays’ approach, where those producing pollution should bear the costs of managing it, to a ‘beneficiary-pays’ approach emphasising resource managers as economic agents supplying services for people. See Mauerhofer *et al.* (2013).
- 54 For an overview of PES schemes, see Jack *et al.* (2008), Engel *et al.* (2008) and Smith *et al.* (2013). A larger contextualisation of PES in relation to economic theory is provided by Gómez-Baggethun *et al.* (2010).
- 55 Payments for Ecosystem Services are arguably most strongly developed in a water cycle/catchment context. For a developed example, see Perrot-Maître (2006).
- 56 For a general evaluation of PES, see Chan *et al.* (2017). For a wider critique of the neoliberal framing of PES schemes, see Kosoy and Corbera (2010) and Kolinjivadi *et al.* (2019). An interesting critical review of a lauded PES example, in the Catskill Mountains of New York state, is provided by Sagoff (2002).
- 57 For an introduction to ‘Green Finance’, see Ozdemiroglu and Duke (2019). The authors explain that the term covers a variety of phenomena, with an important distinction between the acceleration of finance to support environmental goals (Financing Green), and the integration of environmental considerations into financial decision making (Greening Finance).
- 58 A green bond is a debt. An investor lends money to a company (or government) to finance an environmental project, and expects it to be paid back with some interest. See Ozdemiroglu and Duke *Op. Cit.*
- 59 Green equity is where an investor buys shares (and hence part ownership) in a company pursuing environmental projects. See Ozdemiroglu and Duke *Op. Cit.*



- 60 According to the OECD (2011:9), green growth means “fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. To do this, it must catalyse investment and innovation which will underpin sustained growth and give rise to new economic opportunities”. Note that work in the field of ‘environmental economics’ is consistent with the logic of green growth. Here, the challenge of environmentalism is to correct failings in markets, which are understood as powerful mechanisms to safeguard the environment, whilst growing economies.
- 61 See Boulding (1966). Kenneth Boulding was an influential economist who placed economics in the context of a closed earth system, so called ‘Spaceship Earth’. A critique of the premise of infinite economic growth is a fundamental point of departure for what would be termed an ‘ecological economics’ perspective, and is thus quite different from ‘environmental economics’.
- 62 A ‘steady-state’ economy emphasises stability and balance; the size of the economy should not expand beyond the limits the planet can sustain. The steady-state perspective was developed by the ecological economist, Herman Daly (Daly, 1991:17), who describes it as “an economy with constant stocks of people and artifacts, maintained at some desired, sufficient levels by low rates of maintenance throughput, that is, by the lowest feasible flows of matter and energy from the first stage of production to the last stage of consumption”.
- 63 The term ‘Green Economy’ is an umbrella term generally associated with the development of economic mechanisms to reveal and incorporate nature’s values into policy and decision making. For a critique of the idea, see Spash (2012).
- 64 See Daly, 1991. *Op. Cit.*
- 65 See section 3, and note 19, on the idea of busting limits.
- 66 Degrowth is the product of many critical traditions. It essentially challenges prevailing assumptions about the idea of economic growth: what is growth and who is it for? A central premise of degrowth is that the model of human welfare implied by the narrative of economic growth is flawed (See Kallis, 2017, and relatedly, Jackson, 2009).
- 67 According to Schneider *et al.* (2010:512), the perspective emphasises, “an equitable downscaling of production and consumption that increases human wellbeing and enhances ecological conditions at the local and global level, in the short and long term.”

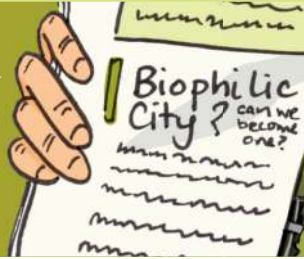
- 68 For an overview of the way urban greening can translate into a process of green gentrification, one in which marginal groups are excluded and displaced through capital accumulation, see Anguelovski *et al.* (2018).

CODA



- 69 See Swyngedouw (2011).

Glossary



- Beneficiary-Pays** The principle that those who benefit from an ecosystem service should pay to receive it. *77–78, 101, 102, 104*
- Biophilia** Various defined as the need and propensity to affiliate with nature; the love of life or living systems; and most emphatically, the passionate love of life and of all that is alive and vital. *33, 37, 46, 55, 68, 73, 74–75, 80, 85, 88*
- Carrying Capacity** The maximum number of a species an environment can support given the resources available. *32*
- Cost-Benefit Analysis** Analysis that quantifies in monetary terms as many of the costs and benefits of a proposal as is feasible, including items for which the market does not provide a satisfactory measure of economic value. *66–67, 103*
- Degrowth** A downscaling of production and consumption that increases human well-being and enhances ecological conditions and equity on the planet. *87, 89*
- Ecological Economics** A transdisciplinary field of research addressing the interactions between ecosystems and economic systems in all their diversity. *105*
- Economic Valuation** The assignment of monetary values to non-market goods and services. *65–67, 101, 103, 104*
- Economic Value** The monetary measure of the well-being associated with the change in the provision of some good. *65*
- Ecosystem Services** A concept used within sustainability science to describe natural systems in terms of their many and varied contributions to human well-being. These contributions are understood to encompass the biophysical structures and processes that support basic human needs, secure livelihoods and enrich life culturally. *35–37, 44, 47, 63, 101, 103, 104*
- Environmental Economics** A sub-discipline of economics that applies standard (neo-classical) economic thinking to the environment. *105*

Gaia	Earth as a self-regulating organism, one in which the conditions conducive for life are defined and maintained collectively by all living things. 19–20
Green Economy	Umbrella term generally associated with the development of economic mechanisms to reveal and incorporate nature's values into policy and decision making. 86–87, 105
Green Finance	The use of financial instruments to enable investment directed towards the quality and functioning of the natural environment and natural systems. 79–80, 81, 85, 104
Green Gentrification	Processes of capital accumulation in and around green spaces that lead to the exclusion and displacement of politically disenfranchised residents. 106
Green Growth	The idea of fostering economic growth whilst avoiding irreversible and costly damage to natural assets. 85–87, 89, 105
Green Infrastructure	The network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect villages, towns and cities. 103
Nature	
<i>(Universal)</i>	The entire physical world, of which humans are a part. 14, 24
<i>(Non-human)</i>	The external world. A realm beyond human activity. 16, 21–22, 24, 29, 30, 34, 39, 45
<i>(Superordinate)</i>	An inherent power, force or organising principle. 19–21, 24
<i>(Essence)</i>	An essential quality or defining property of something. 23, 24
Nature-Based Solutions	Actions that manage and harness components of nature to help address societal challenges such as urban flood risk. 57, 103
Neoliberalism	A deregulated economic system in which the market is extended to all facets of public and personal life. 4, 85, 104

Payment for Ecosystem Services An economic arrangement whereby the beneficiaries, or users, of ecosystem services provide payment to the stewards, or providers, of those services. 77–79, 81, 104

People-Nature Relationships

(Masters) Emphasising relations of domination. 30–31, 33, 39

(Prisoners) Emphasising relations of determinism. 31–32, 33, 39, 87

(Affiliates) Emphasising relations of care. 32–33, 39

Planetary Boundaries The idea that the Earth-system has processes and associated thresholds which, if crossed, could generate unacceptable environmental change. Working within these boundaries is understood to define ‘safe operating limits’ for humanity. 32, 100

Polluter-Pays The principle that those producing pollution should bear the costs of managing it to prevent damage to human health or the environment. 104

Social-Ecological System A concept encapsulating human and environmental processes as deeply intertwined; organized assemblages of humans and non-human life forms. 34, 100, 101

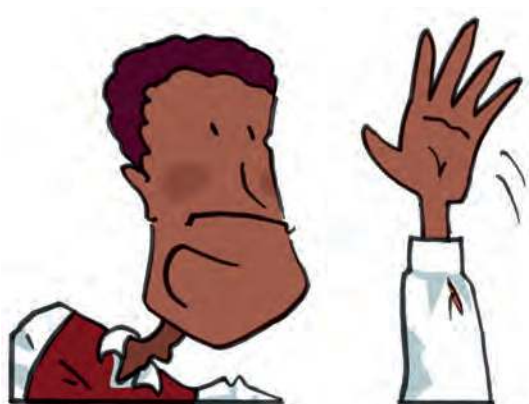
Steady-State Economy An economy of stable or mildly fluctuating size; one with constant stocks of people and artifacts, maintained at some desired, sufficient levels by low rates of maintenance throughput. 87, 105

Sublime Feelings of awe, terror and danger inspired by interactions with nature. 16, 99

Substitutability Concerning the extent to which components of nature—natural capital—are substitutable for each other (e.g., one tree for the other) and by other forms of human capital (e.g., a tree with a plastic tree). 102

Valuation The process of expressing and estimating the worth of something. Formal approaches to valuation in policy and decision making involve understanding the relationship between costs and benefits of a proposed change. This may have monetary and non-monetary dimensions. 65–67, 101, 103, 104

Values	Preferences, principles and virtues guiding conduct towards the world and the regard in which we hold things. 38, 41–51, 69, 102, 105
<i>(Intrinsic)</i>	Values pertaining to nature’s inherent worth, independent of human use. 46–48, 50, 51, 102
<i>(Instrumental)</i>	Values reflecting the particular ends that nature serves. 47–48, 50, 51, 102
<i>(Relational)</i>	Values that cultivate desirable (sought-after) relationships with nature. 50, 51, 102
<i>(De Re)</i>	Values arising from uniqueness and particularity in nature. 49, 51, 102
<i>(De Dicto)</i>	Values arising from the general properties that aspects of nature exhibit. 49, 51, 102
Value Transfer	The practice of estimating economic values for an ecosystem service by taking evidence on the value of benefits from one context and transferring it to another. 67
Watershed/Catchment	An area of land through which water from any form of precipitation (such as rain, melting snow or ice) drains into a body of water (such as a river, lake or reservoir). 74, 104
Web of Life	The interrelationships and interdependence of all living things. 21, 27, 29, 34, 95



Critical Thinking Questions



Set out below are a series of questions designed to deepen critical learning and engagement with the matter of valuing nature. I envisage them being used as part of an undergraduate seminar process, either as a prelude for discussion, and/or to guide in-class discussion. The questions reflect provocations I've put to students on many occasions, and they've sustained some memorable debates and conversations. Whichever way you choose to assemble around these materials, they should help you go further in your thoughts. As will become clear, the questions somewhat presume and encourage readership of the sections, following at times the words and deeds of the characters; so let's begin where our story begins.



ROOTS

According to a prominent environmental psychologist:

“ Over the millennia the gulf between humanity and the natural environment has steadily widened. Now, however, there is growing concern that this gulf has become too great, that we have strayed too far for our own good. This shift is due, at least in part, to a change in circumstances. Increasingly, people are confronted by pressures that are inexorably changing their lives. Although these pressures are by no means new, their steady increase and their cumulative impact are leading to increasingly unfortunate consequences.

Kaplan (1992: 134)

An important strand of environmental discourse is the idea of a growing distance between people and the natural world, as Kaplan's passage testifies. Take a moment to reflect on the spirit of this passage and ask—as our moustached professor does in the introductory section—what lurks behind the invitation to 'reconnect people to nature'? Specifically:

- What might lead people to think that human interaction with nature is a positive thing? Are there specific attributes to the natural world or types of natural environment that might be considered particularly relevant to human health and well-being? What benefits to health and

well-being do you think might arise from interaction with the natural world? And, what types of interaction might the idea of reconnection presume?

- What arguments could be made to justify the claim that people are increasingly detached from nature? What, for instance, would characterise this process of disconnection? Are there particular dimensions of human identity and experience—for example, our attitudes, behaviours, values and feelings—that alert us to this disconnection?
- What factors might be considered important influences on this process of disconnection and how have those factors borne influence over time? Is Kaplan justified to suggest that “this gulf has become too great” and that “we have strayed too far for our own good”? Is it conceivable to think that we have strayed even further since 1992?
- To what extent could we query and qualify this discourse of reconnecting people and nature? For example, is there any argument to suggest that people have become more, not less, connected to nature through time? And, to what extent is disconnection from nature an unequivocally ‘bad’ thing and reconnection unequivocally ‘good’?

As you reason about these questions, reflect on the types of disciplinary knowledge—from the arts to the social and natural sciences—that you believe would help you to interrogate further this idea of disconnection/reconnection between people and nature. For example, which academic departments would you visit were you extended the same invitation as the students in this story? And which community, business and governmental representatives do you think would most benefit from an invitation from the *Office of Scholarly Engagement in Civil Society* to witness the results of the ROOTs project?



MEANINGS

What is this thing we call ‘nature’? Take a moment and try to picture your very own image of nature. Think carefully about the detail of that image:

- What features and qualities does your image exhibit? Is there a particular landscape, place or environment that presents itself readily to you? Where would we find this nature? Can you locate your image in space and time?

One prominent interpretation of nature is that of the ‘non-human’ or ‘external’ world; a world separate, above and beyond human activity.

- How closely does your chosen image conform to this idea of ‘non-human’ nature? For example, does your image include people in it, or the marks of human influence?

The cultural theorist Raymond Williams claims that “a considerable part of what we call the natural landscape . . . is the product of human design and human labour” (Williams, 1980:78).

- Is it possible to conceive of degrees of naturalness when gauging the influence of humans on the external natural world, such as distinguishing between ‘natural’, ‘semi-natural’ and ‘human-dominated’ landscapes and environments? What attributes would these landscapes and environments possess to reflect distinctions in naturalness?

In his influential book *The End of Nature*, the environmentalist Bill McKibben suggests the idea of an external and autonomous nature has been rendered “extinct” by pervasive human action: “we have ended the thing that has, at least in modern times, defined nature for us—its separation from human society” (McKibben, 1989: 60). Follow this thought further:

- To what extent is ‘nature’ a product of ‘culture’? For instance, are pristine natural environments, such as wilderness, the product of deeply cultural ways of viewing nature? What “unexamined longings and desires”, as Cronon puts it (1995: 69), might retain a view of the natural world as separate, above and beyond human activity? If nature has ‘ended,’ are all ‘natural’ landscapes actually ‘cultural’ landscapes?

At this point, we might usefully recall our characters questioning the extent to which humans exist outside the natural realm. Their reference point was a key slogan of the extinction rebellion: ‘we are not defending nature; we are nature defending itself. They later muse that maybe nature is simply ‘everything’, the entire physical world of which humans are a part. Consider these competing frames of reference and ask:

- Are we *a part of or apart from* nature?

What repercussions—positive and negative—arise from answering this question in different ways? For example, if humans are *a part of* nature, would that mean that all products and expressions of human action, however objectionable, are natural phenomena? Equally, what attitudes and values might follow from a view of humans as being *apart from* nature? Would this tend to encourage in us a will or tendency to dominate nature and thus lack empathy in our relations to it? In contrast, would considering ourselves *a part of* nature foster in us the idea of being part of an interconnected system and thus more receptive to relationships of maintenance and care?



RELATIONS

Relationships between people and nature have been characterised in varied ways. One of the characters remarks, ‘we are describing something like a delicately poised and quite dysfunctional power relationship’. Let’s reflect on that sentiment by considering the two following statements. The first is made by an influential thinker on Marxist thought, Friedrich Engels, the second by the Head of the United Nations, António Guterres:

“ Let us not, however, flatter ourselves over-much on account of our human victories over nature. For each such victory nature takes its revenge on us.

Engels (1883)

“ Humanity is waging war on nature. This is suicidal. Nature always strikes back – and it is already doing so with growing force and fury.

Guterres (2020)

Engels and Guterres make their pronouncements from quite different historical vantage points and contexts, but arrive at a similar conclusion. So ask yourself:

- To what extent do human relationships with nature resemble warfare? How does this characterisation square with the idea of biophilia, “the passionate love of life and of all that is alive and vital” (Fromm, 1973: 366)?
- What might Engels be referring to in writing of ‘human victories over nature’? And, what forces or processes might be said to enable those ‘victories’?
- In what ways can nature be understood to take ‘revenge on us’, as Engels puts it, and grow with ‘force’ and ‘fury’, as Guterres suggests?

- Taking the claim of ‘war’ at face value, are all parts of humanity culpable for ‘waging war’, as Guterres implies?
- What useful purpose could warring analogies about human-nature relationships serve?

Now consider how the authors expand on their warring sentiments:

“ At every step we are reminded that we by no means rule over nature like a conqueror over a foreign people, like someone standing outside nature - but that we, with flesh, blood, and brain, belong to nature, and exist in its midst, and that all our mastery of it consists in the fact that we have the advantage over all other beings of being able to know and correctly apply its laws.

Engels (1883)

“ Let’s be clear: human activities are at the root of our descent toward chaos. But that means human action can help solve it. Making peace with nature is the defining task of the 21st century. It must be the top, top priority for everyone, everywhere. [There are] a wealth of opportunities to stop the plunder and start the healing. One of our best allies is nature itself.

Guterres (2020)

Now ask:

- What do these authors claim about the capacities of people to resolve crises of their own making? For example, what does it mean to ‘know and correctly apply’ laws of nature, as Engels suggests? And, what might characterise the process of ‘making peace’ with nature, as Guterres demands? For example, do these sentiments resonate from the idea of biophilia; the human need and propensity to affiliate with nature?



VALUES

When we use the word ‘values’ in relation to nature, we are concerned with what people find meaningful and significant in the natural world. We can speak of values *about* the natural world, as in the elaboration of broad

ideals (Liberté! Égalité! Fraternité!, as our characters put it) and values *of* the natural world, as in judgements of worth and importance, notably:

- Intrinsic values—where nature is regarded as valuable for its own sake.
- Instrumental values—where nature is regarded as valuable for the ends it serves.

Values *about* and *of* the natural world run together and reinforce one another, and inform assumptions about behaviour and conduct. As our characters put it: ‘I’m looking for a kind, mutualistic relationship. Not hugging a tree exactly, but . . . something like a non-aggression pact with nature. You know, just respecting nature for what it is, really’.

Reflect on this distinction between intrinsic and instrumental value:

- To what extent is it possible for nature to have value in and of itself?
- If nature has intrinsic value, does this apply to all components of nature or to particular aspects only?
- How might consideration of instrumental and intrinsic values for nature strengthen or weaken decision making about the natural world, respectively?
- Is it possible to conceive of *both* instrumental *and* intrinsic value in a non-human entity?

Ecosystem services are understood to provide an instrumental characterisation of values associated with nature.

- Is it justifiable to describe nature as providing *services* to people? What might be the strengths and weaknesses of employing this metaphor to make sense of people-nature relationships? Are there alternative ways this instrumental relationship could usefully be described?

Researchers have increasingly queried the intrinsic-instrumental value debate, arguing for a greater focus on what is special in relationships between people and nature.

“ Few people make personal choices based only on how things possess inherent worth or satisfy their preferences (intrinsic and instrumental values, respectively). People also consider the appropriateness of how they relate with nature and with others, including the actions and habits conducive to a good life, both meaningful and satisfying. In philosophical terms, these are relational values (preferences, principles, and virtues associated with relationships, both interpersonal and as articulated by policies and social norms)”

(Chan *et al.*, 2016: 1462)

One way of illustrating the new focus is to distinguish between *de dicto* and *de re* values:

- *de dicto* values—nature is valued because of its general properties; a tree bears fruit.
- *de re* values—nature is valued because of its particularity; a tree harbours a memory.

Think of your own examples of this distinction between *de dicto* and *de re* values and reflect:

- Does the ecosystem services framework reflect *de dicto* or *de re* values of nature?
- How might consideration of *de dicto* or *de re* values inform decision making about the natural world?
- What problems or advantages might arise from basing decisions on *de dicto* or *de re* values?



DECISIONS

In the prominent science publication, *Nature*, McCauley (2006:27) explains that,

“ The underlying assumption is that if scientists can identify ecosystem services, quantify their economic value, and ultimately

bring conservation more in synchrony with market ideologies, then the decision makers will recognize the folly of environmental destruction and work to safeguard nature.

The author is unconvinced, adding:

“ We must act quickly to redirect much of the effort now being devoted to the commodification of nature back towards instilling a love for nature in more people.

The alignment of ecological knowledge and economics is now a prominent but controversial dimension of efforts to integrate consideration of the natural world into the policy- and decision-making process. The aim is to quantify and value the natural environment in terms of the economic value of ecosystem services, for instance to inform cost-benefit calculations.

- If valuation is a way of reflecting the value of nature in decision making, why is this practice considered problematical by many conservationists and environmentalists? What objections or concerns might arise from the assessment of nature's value, based upon the metric of money? To what extent are those objections well founded?
- Why might conservationists and environmentalists advocate for, or at least reconcile themselves with, the economic valuation of nature, in spite of underlying concerns and reservations? What arguments and assumptions about decision makers might lead them to pursue the valuation of nature in monetary terms?

As Ozdemiroglu and Hails (2016) explain, economic analysis is a way of helping to understand the relative pros and cons of different choices, but it is not a replacement for social or political debate. In the story, the economist argues similarly that economic valuation should be considered an “ingredient in decision making, not an end in itself”. Consider then:

- On what grounds should decision making about the natural environment be informed and guided through a process of public engagement? What ethical and substantive reasons make public participation in environmental decision making important?
- How might economic valuation information be used in conjunction with evidence arising from more participatory forms of decision making?

- To what extent should decisions give primacy to the strength of reasoning arising in public deliberation, as opposed to the weight of economic analysis?
- Does all decision making require the use of economic analysis or public engagement with respect to nature? How might we discriminate over the need for different types of evidence, for instance depending on the complexity and controversy of a decision?



ACTIONS

The Biophilic Wonderland proposed by our characters promotes a range of green infrastructure benefits to people, from flood alleviation to carbon sequestration. Making the case for multiple benefits at a range of scales—personal, city wide, catchment level—is considered by many as crucial to winning an economic case for investments in nature. Indeed, the question our characters ask is important: ‘who’s going to pay for it all?’ Reflect on this issue of ‘paying for nature’ and where responsibilities for payment may reside. Ask yourself:

- What is the relative role of the state, market and voluntary sector in economically supporting the delivery of valued ecosystem services? Should nature’s services be enabled through the payment of public taxes, where the coordinating role and actions of government loom large (such as the state paying farmers to protect biodiversity)? Or should they arise in the form of private transactions by way of a fee (such as local residents paying a fee for the upkeep of a local nature reserve, or water companies paying farmers to keep water clean)?
- What are the potential repercussions of developing approaches to conservation and environment based on ‘market-based’ and ‘market-like’ principles? Are there limits to extending markets into spheres of broad public good and benefit and of conceiving of environmental schemes where people are the ‘providers’, ‘sellers’, ‘consumers’ and ‘beneficiaries’ of services?
- What risks and opportunities might arise from the use of wider finance instruments—such as bonds or equity—to enable investment that is directed towards the quality and functioning of the natural environment? What special challenges might arise for green projects in attracting investment?



TRANSFORMATION

As our characters resolve to promote an array of biophilic solutions in their locality, they are confronted by a local ‘extinction rebellion’ gathering and are asked to reflect on the nature of effective action: how might transformations towards more sustainable models of living arise? Our characters appeal to pragmatic solutions but are contrived by the protesters as apologists for a broken system. The underlying provocation of the extinction rebellion is: ‘we cannot solve our problems with the same thinking we used when we created them’. Reflect on that basic tension:

- To what extent do pathways to more sustainable relations between people and nature occur with the context of the existing system, or is change of a more radical character required?

The discussion notably contrasts two economic models: the first implying the status quo of economic growth, the second a more radical model of degrowth:

- Green growth—emphasising the possibility of economic growth whilst avoiding irreversible and costly damage to natural assets.
- Degrowth economy—emphasising that downscaling increases human well-being and enhances ecological conditions.

Reflect on these distinct economic visions:

- What grounds are there to claim that economic growth offers a pathway to more sustainable relations between people and nature? What would be the characteristics of a green economy? How would it support conditions that help better connect people with the natural world? What would change in people’s relationship to nature if we were to downscale production and consumption, as opposed to growing the economy? Can we support the creation of a Biophilic Wonderland without the economic rewards of growth? What kind of alternative system of cooperation and action would be necessary to achieve this vision?

Transformation is envisaged to be primarily economic and structural in character. Reconsider this emphasis:

- Does transformation contain other, non-economic dimensions, for instance transformation at the social, cultural or political level? How do these different dimensions relate to one another in a process of change?
- What role does individual action and choice play in the wider process of system transformation? Does transformation always occur at a level above and beyond the individual? What role does a transformation 'within'—such as changing values and mindsets—play in a process of change? How might these transformations of the 'self' occur?



CODA

A narrative of transformation is also a narrative of interdisciplinarity. As such, our characters entertained perspectives from different disciplinary areas; among these history, economics, geography and the biosciences.

- Reflect on the breadth of disciplinary knowledge deployed in this account. Were there any surprising absences? What other traditions and approaches to knowledge might be brought to bear our concerns to value nature?
- What does Swyngedouw (2011) lament when speaking of the way “the social sciences and humanities have condescendingly left the matter of nature to their natural science colleagues”? Does the challenge of valuing nature endure as a question of primarily analytical and technical knowledge? What alignment and approach to the integration of disciplinary knowledges would create the conditions to value nature in constructive, but critical, ways?



Artworks Referenced



Wanderer above the Sea of Fog (c. 1818) by Caspar David Friedrich. This image was chosen to help visualise two concepts: first, the idea of humans as separate from, and above, the natural world (31); and, second, by removing the person from the image, the idea of a pristine, external nature beyond human activity (16, 24).



La Jument (1989) by Jean Guichard (*Tous les Phares de France*, 58). This image was chosen to help visualise the *Prisoners of Nature* argument, in which nature actively shapes and limits the conditions of human life. 31, 39



Two Figures Reclining in a Landscape (1921) by Henri Émile Benoît Matisse. This image was chosen to help visualise the *Affiliates of Nature* framework, emphasising the ways in which humans bond with the natural world. 32, 39



Image based on *Echo and Narcissus* (1903) by John William Waterhouse, depicting a daffodil (or *Narcissus*) gazing at its own reflection in place of the title character Narcissus. This image was chosen to help visualise the *Intrinsic Value of Nature*—the value that nature would see in a mirror, separate from the value imposed on it by humans. 46, 51

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About the Authors



Rob Fish is a social scientist and human geographer based at the University of Kent, United Kingdom. Rob has published widely on the social cultural and participatory dimensions of natural resource management and has played a prominent role in the elaboration of interdisciplinary approaches to the valuation of nature within environmental policy and decision making. He is a founding lead editor of the British Ecological Society's *People and Nature: A Journal of Relational Thinking*.

Holly McKelvey is an illustrator and visual science communicator based in Lübeck, Germany, whose travels as well as her background in geology and ecology flavour her art on the relationship between humans and nature. Her work has frequently been published in the British Ecological Society's magazine *The Niche*, and she has collaborated with German Watch and PAN Germany, among others. She is also a founding editor and illustrator for *Stonecrop Review*, a literary magazine on urban nature.

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