

The Economy with Climate and Environmental Responsibility

Andrew Basden

Economic growth damages both biodiversity and climate. It always has done so and Dasgupta [2021] and others argue that it always, necessarily will do so. Climate change, pollution and biodiversity loss are inherent in economic growth, at least as we know it.

The reason this matters, Dasgupta argues, is that human life and justice depend on biodiversity and climate stability, and so does the economy itself. Also, from a Christian perspective, Creation care is a responsibility with which God has gifted humanity. Some, such as Jackson [2009], argue for “Prosperity without growth”, but the Covid-19 pandemic has opened up another option: shrinking the wealthy (“Western”) economies. This may be heresy to most economists and governments, but is an option we should consider.

Though a few have suggested reversing economic growth as an ideal, this article tries to suggest how such a course might be made real. It is a position paper, which adopts a different way of understanding what the Economy is and what role it should play. As we will see, we must be able to take externalities into account, understand their diversity, and recognise that economic activity can do harm as well as good, and that much that does harm is non-essential.

The article briefly discusses economic growth, then it summarises Dasgupta’s [2021] *The Economics of Biodiversity*, the significance of which is that it was commissioned and published, not by the UK Department of the Environment, but by the Treasury; does it signal that the Treasury has at last woken up to the importance of biodiversity and climate? However, it has several weaknesses, so a brief critique is made, suggesting that its weaknesses may be addressed. Then the idea of shrinking the economy is discussed, and a new foundation for understanding economic activity is introduced. This offers a practical conceptual framework with which we may understand kinds of externalities, the good and harm generated, and how we may judge what is non-essential. This approach might encourage the integration of religious and secular perspectives, and might open a new way for economic activity and climate / environmental responsibility to work in harmony rather than against each other.

On Economic Growth

Why does economic growth harm the climate and biodiversity? What can and should we do about it, by people, businesses, governments, and so on? Answers to both questions have been debated for years, without resolution.

To summarise much of the discussion of “Why?”, economic activity requires resources taken from the biosphere and waste to be put back there. Though nature can regenerate and deal with most waste, it does so slowly. When our demands were meagre, there was little economic problem (though there might have been aesthetic, moral and religious problems, e.g. with dumping waste or driving a species to extinction). Economic growth not only increases demand and waste, but it fosters technology and lifestyles that amplify these - and all that is multiplied by the population of those who make the most demands, especially

those in the wealthy cultures. As so-called less-developed nations (LDNs) become wealthier, they add to those making larger demands.

Example: The 'demand' for exotic foods in wealthy nations means corporations can take local food-growing land from families in LDNs, which not only generates injustice but also reduces biodiversity. Example: The demand for soya raises the global price, which makes it attractive to destroy rainforest to grow it, thus removing both biodiversity and absorption of greenhouse gases. Example: Economic growth requires more business meetings, more goods transported and more services delivered - and all these lead to more travel, which generates more greenhouse gases. Aviation is particularly dangerous. Example: Technological innovation is exciting and has made cryptocurrencies (Bitcoin etc.) possible. However, to 'mine' these and maintain their blockchains require inordinate amounts of electric power. Currently, even with a very low level of usage, this is about 0.7% of global electricity supply, and it is rising fast as more and more people are attracted towards using them [Ellson 2021]. Yet those who develop and run cryptocurrencies avoid thinking of their responsibility here.

Alarmingly, humanity's demand, sometimes known as our global **ecological footprint**, is currently much greater than nature's ability to supply - currently 1.6 times (and it was 1.7 before the Covid-19 pandemic began) [Dasgupta 2021]. With more flying, more cryptocurrencies, more demand for exotic foods and other goods, and so on, this will become much worse - especially with so-called less-developed nations aspiring to Western, wealthy standards of living. The situation is dire and needs urgent attention. We are, as Tearfund [2020] puts it, "Burning Down the House" and of those young Christians they surveyed 80% believed the climate crisis is our responsibility and 90% want action.

Some have suggested other kinds of economy, such as the Doughnut Economy [Raworth 2017], in which we are called to limit ourselves to 12 social "foundations" without overshooting any of 9 ecological "ceilings". They offer useful insights, but they have not yet gained traction in real-life economic planning and activity. Milanovic [2018], while liking Raworth's idea, criticises it for not facing the contradictions of economic growth, for assuming 'green' activities are effective, and, most, for ignoring human selfish aspirations.

The issues are exceedingly complex, especially to standard academic approaches, and we need to change direction before we understand everything. This is, perhaps, what Dasgupta [2021] tries to do in his *The Economics of Biodiversity; The Dasgupta Review*. Though drawing on academic work, its aim is practical: to help HM Treasury in the UK to understand how biodiversity can be accounted for alongside usual economic measures.

The next section summarises Dasgupta's message to the Treasury, and the section after that offers some critique. This leads to the need for a new foundational understanding, which is supplied later.

Messages of the Dasgupta Review

The Review starts ("Chapter 0") by putting our situation into historical context. Humanity now has an impact on nature that exceeds nature's ability to support it. This has come to be so only during this past century, and it is serious.

In the next few chapters, Dasgupta shows how we may see Nature as an asset (durable goods of positive worth that we inherit or pass on), and thus bring

it into economic considerations. There are three kinds of asset: produced capital, human capital and natural capital. Since economics has tended to ignore natural capital, false ideas have arisen. Two false assumptions seem to have spread within wealthy cultures, that economic growth is good for the environment (e.g. to pay for restoration) and that technology will enable us to continue economic growth indefinitely with less environmental damage. Dasgupta shows that both of those are false [pp.45-46], especially why, even to the economy, the net costs of disrupting biodiversity and then trying to restore it exceed those of not doing the damage in the first place. Conservation must therefore be given priority over damage followed by restoration, though the latter is needed for the damage we have already done. Some defenders of economic growth appeal to the so-called Ecological Kuznets Curve, which claims hypothetically that with sufficient per-capita income, environmental damage will reduce, but that is also false; see Mills & Waite [2009] for discussion and empirical findings. These false arguments rest on two false presuppositions: that the economy can be detached from the non-human Creation, and that human beings have no sin. Dasgupta argues against the first and, from a Christian perspective, both go against the clear message of Scripture.

However, the economy and all human enterprise is embedded in, and depends on, nature, so we must bring natural capital back into our economic thinking. He does this using the idea of Ecosystems Services, which focuses on how ecosystems (nature, the biosphere), provides services for humanity of many kinds. Ecosystems that are rich in biodiversity are more productive (for us) and more resilient in themselves. But (Chapter 3), the biosphere, not being a linear system, can be grossly disrupted by fragmentation and tipping points and we cannot easily recover what we lose. This is why “markets are a woefully inadequate system of institutions for protecting the biosphere” [p.83].

Since the Economy is embedded in nature and depends on it, it suffers when biodiversity is lost - both material and so-called non-material economies are undermined. Human impact on the biosphere (Chapter 4) must be taken into account in Treasury calculations, so a simple *Impact Inequality* is introduced, as a basis for discussing, throughout the rest of the Review, what needs to be done and why. It says, in mathematical terms, that human demands on ecosystems (ecological footprint) must never exceed the ecosystems’ ability to meet those demands (regenerating after we extract resources and absorbing and processing waste), i.e.

$$N \bar{y} / a < G(S)$$

where N = world population, \bar{y} = per capita standard of living (often measured in GDP), a = efficiency with which humanity extracts from nature (a_x) and relies on nature to cope with its waste (a_y), G = Regeneration rate by which nature recovers and S = stock of nature’s capital.

As mentioned above, our demands are NOT less, but 1.7 times greater than, nature’s ability to cope (2019 figure), and growing, so it is **imperative** that we find a way to turn this round.

One problem is that the factors in this equation are not deterministic but involve risk, so Chapter 5 discusses how risk and uncertainty may be tackled. In particular, Dasgupta says, we need to calculate when to change course, away from “business-as-usual”. Doing so will involve institutions, within which we interact with each other, including households, markets, communities and the state. Given that we must trust one another to fulfil our obligations, what should

our institutions be like to support this? Such trust is (part of) “social capital”, a concept central to the economics of biodiversity.

Another problem is **externalities**, discussed in the next three chapters (7, 8, 9). Externalities are unaccounted-for consequences for others [p.187], ignored in economic calculations and decision-making. Many factors in human well-being as well as biodiversity are externalities. For example, while Amazon, the company, is worth billions, Amazon, the rainforest, is worth nothing unless it is destroyed for logging or agriculture. Is that not stupid! Externalities also mean that wealth is transferred **from the poor to the rich**, because “because national accounts do not record externalities” so “Modern consumption patterns, relying as they do on imported primary goods from distant parts of the world, are prone to being underpriced.” [p.190]

Externalities must be considered carefully in the Impact Inequality (population size, standard of living, and efficiency of use of nature’s goods and services). Doing so is not easy. Common pool resources (ecosystem assets shared locally) are important especially for poorer peoples, but are fragile, and often deteriorate for several reasons. Human behaviour (including consumption choices) must change, and population growth must be stemmed.

That is for now. How do we take well-being of future generations into account (Chapter 10)? We must be exceedingly careful how we apply the conventional economic ideas of return on investment and discounting. Unfortunately (Chapter 11), until recently, the various empirical measures of well-being have omitted connectedness with nature. Recent studies show its importance. Urbanisation with economic growth disconnects us from nature.

So we must find a way of valuing biodiversity (Chapter 12). There are several ways of doing this within economics. One way (Chapter 13) is, when seeing ecosystem services as assets, to ensure natural capital is included alongside human and produced capital. Dasgupta calls this “**inclusive wealth**”, and suggests this should **replace GDP** as the measure of the economy. Chapter 13* proposes equations for optimum allocation of goods and services.

Chapters 14 to 20 extend those topics. There are major differences in sustainability across the world, especially affecting **less-developed nations** (Chapter 14). **Trade** has been very bad for biodiversity because it decouples demand from supply, but things can be done to ameliorate this (Chapter 15). **Demand from land** and the ecosphere, for food, minerals, fibres, timber etc., has greatly reduced biodiversity under the current economic system and technology, but maybe different techniques or technology can help us increase our efficiency (Chapter 16). **Transition** to sustainability incurs several kinds of risk that must be managed (Chapter 17). Considered as an economic asset, there is sufficient ecological stock for the future if we conserve, protect and restore. **Conservation and protection** of nature is more important than restoration, because restoration is never 100% and usually more costly in the long run (Chapter 18). However, **restoration** of degraded ecosystem (rewilding is one example) has an important part to play - but it requires “unprecedented ambition”, and should be brought into **land-use planning** (Chapter 19). **Finance** for conservation and restoration can come from both public and private sources, each of several kinds (Chapter 20). Engagement, monitoring and influence are all important to achieving this.

The final Chapter 21, discusses Options for Change. We must do three things:

- ◆ Rebalance our demand on nature and nature's ability to supply (Dasgupta's Impact Inequality), including conservation and restoration measures, and changing our consumption, our production, supply chains, trade and pricing, and reducing population growth;
- ◆ Change our measures of economic progress, especially moving away from GDP to indices and indicators that include inclusive wellbeing and natural capital;
- ◆ Transform our institutions and systems, concerning global public goods, the global financial system, empowering citizenship, and education.

Comments on The Dasgupta Review

Dasgupta's *The Economics of Biodiversity* is a magnificent contribution, a comprehensive review of how the fields of economics and finance can serve, rather than undermining, climate and environmental responsibility. Given that the Treasury has for too long been wedded to GDP, by which the environment and climate are grossly undervalued, this opens a door for them to move on and take biodiversity into account. The Review covers many real-life issues that are sometimes overlooked.

Here are three examples of what I like. In Chapter 11, he points out that, until recently, many measures of well-being have omitted and overlooked connectedness with nature. (Therefore, the fact that none or few of the empirical studies of well-being give importance to nature, does NOT mean nature is unimportant.) In Chapter 14, he argues how biodiversity loss reduces prosperity, especially of less-developed nations. This starkly shows that those who say "focus on poverty and don't waste effort on environmental matters" (voiced by some anti-environmentalists), are completely wrong, and that such a policy would undermine the very thing they claim to want to do? Chapter 15 argues how trade has been very bad for biodiversity because it decouples demand from supply, especially when carried out internationally.

Therefore, in the following criticisms of it, I do not want to undermine Dasgupta's excellent Review, but rather to suggest ways in which it could be enriched and made even more workable. I will suggest some specific points, at which it could be improved (and Christians especially might contribute), then suggest a more radical discussion is needed, which is relevant not only for HM Treasury but for everyone.

Dasgupta has mathematized the economics of biodiversity (probably because the Treasury required this). Doing so weakens the Review's discussion of some things, such as voluntary activity, attitude, faith and beliefs. It tends to think in terms of resources and rights more than an attitude of responsibility. For example, while I welcome his economic argument of how trade destroys biodiversity by decoupling demand from supply, will merely fixing the economic system solve that problem? Is it not also a problem of attitude? If we take an attitude of responsibility that considers the other carefully, then trade can continue without biodiversity loss. But usually our attitude is self-absorbed, even self-centred, and decoupling merely gives us the excuse to, and convenience of, not thinking about the other not being concerned. Though Dasgupta does recognise the importance of attitude, etc., he tends to gloss over them and fails to offer any systematic way they may be taken into account; we suggest a systematic approach to these below.

He deliberately adopts the Ecosystems Services approach. Though he recognises that this precludes allowing non-human creatures value in themselves, he wants to bring them into economic thinking as assets, and by doing so he opens a door for policy makers and economists, especially in the Treasury, to take biodiversity seriously. I suggest that, once they are through that door, we should lead them on further, into areas where they recognise the innate value of Creation. Gunton et al. [2017] might offer a way forward, arguing that we must go beyond presupposing value comes only from human benefit, to “Valuing the Invaluable”. How this is possible is briefly outlined later.

The assumptions Dasgupta makes, for example when discussing how to cope with risk, lead to over-simplification, especially because they ignore the aspect of faith, beliefs and commitments. For example, “we assume that the decision-maker (DM) is a concerned citizen: her viewpoint is societal” ignores the reality of selfishness, hidden agendas and corruption. Humanity has not yet discovered any legal or economic system that can cope with these; they require a change of heart - see later. Dasgupta tries to deal with risk in a rationalistic way, whereas perhaps one answer is to foster a attitude of responsibility.

In Chapter 9, Dasgupta argues that human behaviour is influenced by others, socially, being either “competitive” or “conformist”, and he then uses those categories throughout the chapter. I find that greatly disappointing. The pair come from rationalism of the 1920s and allow no insight into **real human behaviour**, including justice, love and commitment to causes, which cannot be squeezed into those categories. Later I will suggest that we can enrich our understanding of human behaviour by reference to multiple aspects.

In Chapter 16, Dasgupta seems quite optimistic about the ability of technology to reduce our ecological footprint. He does not seem to address the issue of **changing lifestyle** - which our later discussion suggests is crucial.

Dasgupta’s discussion of the impact of economic growth on biodiversity is limited. Though he alludes to some of the problems in, for example [p.46], “Competition among rival services has been a prime force ... Moreover, commercial demand frequently trumps local needs ... International public opinion and pressure from the country’s elite are often tepid. These complex interrelationships have generally been ignored by growth and development economists ...” he offers no way to address them.

Overall, Dasgupta presupposes a form of rational economic actor: humans are assumed to behave in a way that maximizes utility, always trying to work out that out rationally. Though he augments this with uncertainty, social influences, societal viewpoints and technology, it is rather simplistic and over optimistic, leaving little room for human sin, such as pride or revenge, and it shows little awareness of the diversity of kinds of externalities. Our conceptual framework below helps us tackle these.

Shrinking the Economy?

Instead of economic growth, or even curbing it [Raworth 2017] or “Prosperity without Growth” [Jackson 2009], the Covid-19 pandemic has opened up another option to economic growth: shrinking the economy. It may be no coincidence that sectors that were responsible for spreading the Covid-19 virus are ones that do damage to climate and biodiversity: aviation, road transport and hospitality.

Aviation has around ten times the ecological footprint of rail (per passenger or tonne) [EEA 2019]. Road transport, though with smaller per-passenger-mile ecological footprint than aviation, currently has many more journey-miles. Hospitality depends on importing exotic foods, and generates much of this travelling. All three characterize wealthy lifestyles. Was Covid-19 a warning to the wealthy?

Activity within every sector of the economy does a mixture of good and harm, with the harm/good ratio varying. Much of the harmful activity is non-essential. So it may be useful to consider the option of allowing those sectors with much non-essential harm to shrink, or at least remain shrunk.

There are several types of non-essential. One classic example is that two trucks pass each other on the M6, one carrying biscuits made in London bound for Glasgow, the other carrying biscuits made in Glasgow bound for London [Schumacher 1973]. That it generates nearly a thousand miles of climate change emissions in the process makes it not only non-essential but also harmful. During the first few months of the Covid-19 pandemic, the British Road Haulage Association [RHA 2020] complained that nearly half their trucks were “parked up” because, they said, “people are not buying non-essentials.” That suggests that the UK goods economy before then consisted of 50% non-essentials.

Another type is what Graeber [2018] calls “bullshit jobs” - paid employment that is “completely pointless, unnecessary or pernicious”, such as those who create the impression that something useful is being done when it is not, or those employed to harm or deceive others on behalf of their employers. He estimates that 50% of (Western) jobs are “bullshit”. Both those kinds of non-essential can and should be tackled.

A third kind is less easily tackled: the work done to rectify avoidable harm, which might include crime, obesity, alcoholism and drug abuse - and of course those rectifying environmental damage. This third kind of economic activity is deemed essential when certain kinds of human sin occur, but it has been found that revivals led by the Holy Spirit can tackle them, such as happened in Wales in 1904, when crime and drunkenness fell because people’s hearts and minds were transformed [Morgan 2004].

A case may be made that the wealthy economies of the world are bloated with harmful non-essentials. Let us consider several sectors - and readers can add others. Details can be worked out, as indicated later.

- ◆ The harm/good ratio in gambling is very high. Unless one sees serving those addicted as an essential, gambling is almost wholly non-essential.
- ◆ Alcohol’s harm/good ratio is high and much of it is non-essential. If the market and marketing were set up properly, then might non-alcoholic drinks supplant alcoholic ones?
- ◆ Aviation. Every mile or km flown contributes to climate change emissions and a large majority of flying need not occur, in that many business meetings, breaks, holidays and long-distance tourism are, arguably, less essential than justice for the poor. (The aviation industry defends itself by suggesting use of non-fossil-fuels, but that is no solution, because either growing fuel uses land that should be used for growing food or for biodiversity, or generating hydrogen consumes electricity that should be used elsewhere.)

- ◆ Other motorized transport is also universally harmful. Though with lower per-passenger-km climate change emissions than aviation, road transport destroys wildlife and is a major factor in lack of exercise. Though road transport provides some good (e.g. freedom of movement, social activity, and distribution of goods and services), is there a surfeit of these, which makes much of it non-essential?
- ◆ Hospitality is more complex. Social and aesthetic activity are good - until (a) they enforce peer pressure (e.g. to take drugs), degenerate into competitive, disdainful put-downs, and stoking up feuds, (b) the exotic and luxury of the wealthy is given priority over the needs of the poor. Trade makes this worse because it decouples demand from supply [Dasgupta 2021, 377] (as well as being itself a source of greenhouse gas emissions).

Such sectors might be shrunk as a matter of policy and practice. By most economists and governments, the idea of shrinking the economy is hardly ever considered as a possible course of action. What about jobs? What about poverty? These are valid points, and environmentalists are often caricatured as ignoring them; most environmentalists today actually do recognise them, but how to take both these and environmental issues into account is not always clear. Dasgupta makes a attempt at this, but it is rather too general.

Has not economic growth generated prosperity in material goods and convenience in services, in the 'advanced' economies? Is economic growth not a prerequisite for technological advance? Is it not needed for the arts to flourish? Is it not necessary, some argue, in order to pay for cleaning up the environment? (This last suggestion is shown to be shallow and false by Dasgupta, as well as by others!)

Yet, if we dig deeper, do we find more sinister motives for supporting and working for economic growth? Do we find the greed of those who already have more than enough? Do we find the hubris of "Our economy is growing faster than yours"? Do we find political agendas of both left and right?

This calls for debate and also academic research. (Is this an opportunity for Christians to contribute?) However, since we do not have time to wait for research, it is necessary to act on the worst cases, even if we might make mistakes.

Acting Now

It may be theoretically possible to find ways to reduce the harm without shrinking some sectors, but do we have time to wait? Whatever sectors readers wish to choose in place of those, if there are sectors of wealthy economies that are bloated with harmful non-essentials, then we need to stem that harm immediately by shrinking them.

Has the Covid-19 pandemic given us a real opportunity to shrink harmful sectors of the economy, by having engendered among us a willingness to give up some of our non-essentials and enjoy other aspects of life? At least we need not, and should not, give those sectors grants and loans to regrow. Of 25 measures for economic recovery after the pandemic, bankers, governments and academics, all agreed that subsidies to airlines are the least favoured option both

environmentally and economically - yet many governments have ignored this [Hepburn 2020].

With irreversible biodiversity loss and climate change, we need to act fast. However, to do this wisely, we need to address three questions that Dasgupta does not (at least not adequately):

- ◆ What kinds of externalities are there?
- ◆ How do we distinguish good from harm, when most sectors are a mix of both?
- ◆ How do we determine what is non-essentia?

Answers to these questions, even in initial form, would enrich Dasgupta's approach, and the Treasury's calculations. At this stage, we do not need finer distinctions; initial answers will be sufficient to tackle the worst offenders.

Those three questions have seldom been asked together, and none adequately researched on their own, as far as I know. So, since time is short, I will suggest an approach that can answer them, which comes from a different academic stable. It comes from a kind of Christian thinking, but is relevant to the secular aspects of life like biodiversity and the economy (and, in my experience, it is liked more by Muslims, Hindus and Secular thinkers, than by Christians!) It sets our understanding of economic activity on a different foundation, and offers a conceptual tool with which we can address those three questions.

A New Foundation for Understanding Economic Activity

The foundation is provided by a rather different kind of philosophy, which emerged during the twentieth century in the Netherlands, which tried to be true to Biblical revelation while also being true to philosophy as philosophy. Specifically, it rejected the encroachment of theology onto philosophy or other theoretical thinking as 'queen of sciences' and the attempt to stifle the criticality that is proper to theoretical thought by means of religious dogma. The philosophy, called by some "Reformational Philosophy", was pioneered by Herman Dooyeweerd and Dirk Vollenhoven, and it offers us both a foundation on which to stand as we try to address those challenges, and a conceptual tool to use while doing so.

It was very critical of reductionist approaches. To treat the economy as all-important is reductionist. It is to make the economy an idol, to which all else is sacrificed [Goudzwaard 1984]. It is when an aspect is treated as all-important, that Creation is put out of joint so that biodiversity is lost, air, water and soil are polluted, and climate crisis threatens. Both capitalist and Marxism are guilty of this. Reformational Philosophy is also critical of approaches that merely react against such reductions, such as some anti-capitalists and romantics end up doing. Instead, Reformational Philosophy allows the economy a proper role as part of human functioning. This is depicted in Figure 1a, in which the economic activity is shown along with family and religious activity, which, along with many others not shown, constitute the whole of human activity. What are seen as externalities to economists are shown shaded. When we confine our perspective to the economic, then we obtain a truncated view, as shown in Figure 1b.

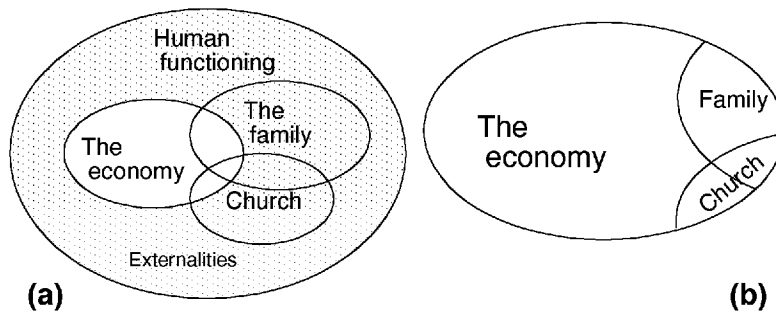


Figure 1. The economy as one part of overall other human functioning.

It was the Dutch statesman, Abraham Kuyper, who recognised that the different spheres of society, some of which are shown in Figure 1a, should not encroach on each others' sovereignty. Dooyeweerd developed, extended and deepened this idea into a comprehensive philosophy, which is showing promise in many areas of research and practice [Basden 2019, Chapter 11] - including in ecosystem valuation.

In Dooyeweerd's philosophy, all Creation / temporal reality exhibits many aspects, which form the foundation of all temporal reality [Dooyeweerd 1955,I, 4] and are modes of being, functioning and good (and corresponding evil or harm). Given his sensitivity to this, and his presupposition that Creation is good, Dooyeweerd asked what aspects there are and, a painstaking exploration of this (pages 1-426 of Dooyeweerd [1955,II]) yielded fifteen aspects - quantitative, spatial, kinematic, physical, biotic, psychical, analytical or logical, technological, lingual, social, economic, aesthetic, jural, ethical and that of faith [Dooyeweerd 1955,I, 3]. His suite of aspects enables us to distinguish multiple types of good (value) and harm, and the modes of functioning that cause the good or harm. Table 1 gives examples of each.

(Note: Dooyeweerd (1955,II, 556] warned that suites of aspects "can never lay claim to material completion. A more penetrating examination may at any time bring new modal aspects of reality to the light not yet perceived before." Even his own suite is only a best guess. Nevertheless, Dooyeweerd's suite is among the best we have, being more comprehensive and better grounded in both philosophy and reflective experience than most [Basden 2019, 212], so it is recommended for use here.)

Aspect	Functioning	Dysfunction	Repercussions	
			Good	Harmful
Quantitative	Amount		Reliable sequence	
Spatial	Simultaneity Continuity		Continuous extension	
Kinematic	Movement		Change (non-stasis)	
Physical	Force, causality		Persistence	
Organic / Biotic	Feeding, reproduction	Starvation, suffocation	Vitality, survival	Disease, extinction
Psychic / Sensitive	Interaction	Insensitivity	Emotional and sensory vitality	Sensory, emotional deprivation
Analytic	Distinction	Conflation	Conceptual clarity	Confusion
Formative	Working, planning, constructing	Laziness, destroying	Achievement, construction	Lost opportunities, destruction
Lingual	Expressing, signification	Deceiving	Information	Misinformation
Social	Relating, befriending	Disdaining, hating	Friendship, amplified activity	Working against each other
Economic	Frugality	Squandering	Prosperity	Waste, poverty
Aesthetic	Harmonizing, enjoying	Fragmentation, narrowing	Integrity, interest, fun	Fragmentation, boredom
Juridical	Giving due, responsibility	Irresponsibility	Justice	Injustice
Ethical / Attitudinal	Self-giving love, vulnerability, trust	Selfishness, self-protection	Culture of goodwill	Competitive, harsh culture
Pistic / Faith	Belief, courage, commitment	Idolatry, disloyalty	High morale in society	Loss of meaning, morale

Idolatry: Treating something non-absolute as absolute

Table 1. Aspects, with examples of good and harm meaningful in each.

Rethinking

By opening up wider vistas of meaning, Dooyeweerd allows and encourages rethinking. At the level of individual theories, we can see which aspects they include and omit. For example, we can now understand the limitations of Raworth's [2017] Doughnut Economics as recognising only some of the aspects - physical, biotic, lingual, social, economic and juridical. It is the missing ethical, pistic and aesthetic aspects around which Milanovic [2018] happens to build his critique. (A fuller discussion of that, Raworth's reply, her wish to find imaginative answers, must wait till later.)

We can also reconceive whole economic concepts like jobs, in a way that might escape conventional dichotomies, such as providing jobs that do harm versus condemning families to poverty. The idea of jobs, as we know them today, emerged from of the Industrial Revolution, and thus is not to be venerated as absolute. "Jobs" are no universal good thing; for example they generate huge

amounts of stress (17.9 million days lost in UK through stress [HSE 2020]). Instead, we might focus on human functioning, of which “jobs” form only part (see Figure 1). Has not the Covid-19 pandemic revealed, and reminded us, that home-making and engaging with nature, for example, are important, even though not paid activities? Should they - and a myriad like them - be valued more highly than they are? Aspects help us value them: those two examples are meaningful in the social and ethical, and biotic and aesthetic aspects, even if not much in the economic.

Of course, it is important that people are adequately resourced for their lives. That is the role of the economic aspect, to which “jobs” currently contributes much. But we must also ask, “What kinds of lives to resource?” The assumptions of those in wealthy cultures about what constitutes good living may be critiqued, not just by anti-capitalist or puritan reaction, but more fundamentally by referring to each aspect. Do we presume, aspire to and expect a surfeit of enjoyment (aesthetic aspect)? At the expense of justice to the less-developed nations and the biosphere (juridical)? Are we self-centred and unconcerned (ethical)? What do we most deeply assume, expect and aspire to about life (pistic aspect)?

Christians might see a link with “affluence, arrogance and unconcern,” which was the reason given by God, via the prophet Ezekiel [16:49], for why Sodom was destroyed and Judah was sent into exile. This is an issue of lifestyle, to which we aspire and which we take as ‘normal’. If we take the Biblical revelation seriously, then the solution is a change of heart, which is a pistic (faith) function of letting go our idols and letting the Holy Spirit re-orientate our aspirations, expectations and assumptions towards “the kingdom of God” [Matthew 6:33].

Understanding Externalities: The Economy as Human Functioning

The aspects are actualized when things function as subject in them, for examples the biotic, when plants, animals and humans functions therein as the activity of life. Most later aspects are actualized in human functioning. Each such aspect is a way in which reality can be meaningful, is a mode of functioning, a mode of being, and each defines a cluster of institutions in society (in Figure 1, the economy, family and church are primarily meaningful in the economic, social and pistic aspects respectively). All aspects, Dooyeweerd contended, are equally important to the overall harmony, well-being, health, prosperity of Creation - its *shalom*.

Economic activity is just one contributor to this among all the others, and has no prior claim to being more important than others. Its role within wider reality is to manage resources that enable the other kinds of functioning to work well. So, the Economy is valid, but only in relation to all other human functioning, and hence to be neither elevated nor denied. It is valid to see any thing or function in economic terms, including the biosphere, as long as we do not see it *only* in economic terms. Its physical, biotic, social, ethical etc. functioning are also important.

Dooyeweerd’s suite of aspects offers us a set of kinds of externality, which are not only external but meaningful and of value regardless of human benefit. Every economic activity involves functioning in the other aspects, which are meaningful in ways not allowed for in economics on its own and not able to be incorporated adequately in its equations, except as undefined external variables.

Not only are externalities consequences that are meaningful in aspects other than the economic, but also they are multi-aspectual factors that affect the economic activity. Dasgupta argues in depth for the impact of biotic functioning (biodiversity) on the economy, but not that of other aspects.

Take the example of a chemical factory. Its consequential externalities include power consumption and climate change emissions (meaningful in, and seeing the factory in terms of, the physical aspect), pollution and health (biotic aspect), a hub for social activity (social aspect), ugly in, or harmonizing with, the landscape (aesthetic aspect), and paying low or high wages (juridical aspect). These are all the factory seen from aspects other than the economic, and may be good or harmful. Externalities that affect it include: power cuts and storms (physical aspect), pandemics (biotic), community feuds (social), morale of society (pistic-faith). What has been called Quaker Capitalism tried to take many of these into account [DP 2010]. It may be that a Biblical Christian perspective has often been open to a wider diversity of aspects than has Humanism.

Dooyeweerd's suite offers us a systematic way to value all things, which does not depend on linking value with human benefit in the way that Ecosystem Services does, on which Dasgupta relies. Gunton et al. [2017] uses Dooyeweerd's aspects as a conceptual framework for "valuing the invaluable". Each aspect defines a different basic kind of value. A species is valuable, not only because it provides humans with some good but because it is meaningful in the biotic aspect without reference to human benefit. For Christians and other religious people, it is meaningful the Origin of all aspects, the Creator of All. (In the Hebrew Scriptures, we find the theme of inherent value of creatures without serving human needs, in Job 39 and Psalm 104.)

Good, Harm and Non-Essentials

The second question, of differentiating good from harm, may also be addressed by reference to Dooyeweerd's aspects because aspects, from the biotic onwards, defines distinct kinds of both good and evil, positive and negative. Table 1 gives examples of these.

Given that all things function, at least potentially, in all aspects, allows us to acknowledge that a thing might function positively in one and negatively in another simultaneously. Dooyeweerd's aspects can help us separate out and recognise both good and bad, without driving people into opposing camps for-or-against. For example, mining cobalt in the Democratic Republic of Congo, provides the economic and technical good of a resource for making mobile phones, while at the same time juridical harm of oppression and unfair conditions for cobalt workers, and contributions to the DRC economy that are less than they ought to be.

In addition aspects provide a systematic basis on which to pose deeper questions about presuppositions underlying the more visible good and harm. Dysfunctions (and good functioning) in later aspects tend to be less obvious to analysts and pundits, so often overlooked, yet they have pervading and long-term repercussions. For example, why do we need so many mobile phones, and why do we need them to be as cheap as they are? We might find greed and a desire to impress as reasons for these, which are dysfunctions in the ethical and faith aspects. They are the root of the juridical harm.

To address our third question, it often seems to be the case that harmful **non-essentials** are rooted in dysfunction in the later aspects. While the aesthetic aspect affirms some non-essentials to be good in every human life, these should be enjoyed with justice (juridical aspect), generosity and self-giving love (ethical) and right view of our own meaningfulness in Creation (pistic; c.f. Romans 12:3). Otherwise the non-essentials become the bloated economy. Economic activity that rests on aspectual dysfunction may be shrunk without much harm ensuing - though it might take effort to achieve. There can be no rigid formula here, but rather we are called to apply wisdom in judging essential and non-essential. Wisdom is served by recognising the importance of each aspect individually and all together and the relationships among them (which may be found discussed in Chapter 3 of Basden [2019]).

Aspectual dysfunction is, to Dooyeweerd, a going against the grain of Creation. Dysfunction is not merely an option that people happen to choose, but something harmful to the whole that rebounds on individuals. It is not something that can be balanced out by good in other aspects, because dysfunction in one aspect distorts our functioning in others, including the economic. It undermines, jeopardises and prevents the *shalom* of Creation, of Reality working well together. Christianity calls it “sin” and Dooyeweerd lets us see more clearly its different kinds (c.f. Table 1).

When we choose to remove dysfunction, things not only begin to repair but often even work better than we expect. If that is so, then shrinking harmful sectors of the economy, including tackling jobs, is likely to be easier than many fear.

This offers hope in resisting vested interests. To vested interests, one aspect is important - whether the technical, aesthetic, social or economic, etc. - and, because all aspects are important, they can argue for the importance of their favourite aspects. Focusing attention on their aspect, they imply its superiority over others. They stand condemned, however, by humanity as a whole and by Reality as a whole, for obliterating and denigrating the other aspects, such as love and justice (and by God [Micah 6:8]). The answer to arguments from vested interests is neither antagonism nor acquiescence, but to identify the aspect(s) they treasure, affirm those, but then critique their narrow view and enrich the dialogue by reference to all the other aspects.

This approach might contribute to fulfilling Dasgupta’s [2021] Options for Change. Rebalancing our demands on nature requires more than conservation and restoration; we must tackle the roots of dysfunction especially within the later aspects. Measures of economic progress can be informed by aspects - the biotic for biodiversity itself, in harmony with the social, juridical, ethical and other aspects. Transforming systems cannot be achieved without recognising pistic functioning.

Conclusion

So, if we are to cut out some of the harmful non-essentials that bloat our economy, for the sake of biodiversity and the climate - to say nothing of the health and mental health of people - what do we do? An important first step, advocated by Dasgupta [2021], is to get externalities (non-economic factors) into the calculations that economists use, especially in Government departments, so that the direction of policy can be shifted away from purely economic growth.

However, we must also take account of the diverse kinds of externalities, and must recognise that some sectors of economic activity cause harm and are non-essential. These sectors should shrink, and the Covid-19 pandemic has given us an opportunity to do this.

A way of doing this has been suggested, based on Reformational philosophy, using the suite of aspects of reality worked out by Dooyeweerd. It offers a new foundation for understanding the Economy as just one sphere of human functioning alongside others. Though philosophical, this foundation has proven immensely practical. Dooyeweerd's fifteen aspects can be used to enrich Dasgupta's [2021] *The Economics of Biodiversity* (and Raworth's [2017] *Doughnut Economics*) by separating out the kinds of externality, and of good and harm, and it can help us address non-essentials.

This is a position paper, for which details must be worked out. As far as I know, the issues of diversity of externalities and of good, harm and non-essentials, have not been researched nor discussed together before, so exploring this approach is a new venture, and we must be both wise and bold.

Dooyeweerd's aspects provide a basis for discussion. Notice how they welcome faith and ethical issues into discourse alongside others as two of fifteen aspects; in this way it can integrate sacred with secular. Given that Dooyeweerd worked from a Biblical Christian perspective, this offers an opportunity for Christian thinkers to engage and contribute fruitfully and radically, especially along the lines of LACE: Listen, Affirm, Critique, Enrich [Basden 2021]. The way in which Dooyeweerd respected philosophy and science, differing from many Christian thinkers, makes his approach acceptable and adoptable by all.

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