

## The growth imperative of large-scale civic societies, beyond (or systemically more fundamental than) market capitalism

Josh Floyd (ed.), with colleagues S, J, and T

On 20-Jun-20 S wrote:  
At last!

<https://www.nature.com/articles/s41467-020-16941-y>

Wiedmann, T., Lenzen, M., Keyßer, L. T., & Steinberger, J. K. (2020). Scientists' warning on affluence. *Nature Communications*, 11(1), 3107. doi: 10.1038/s41467-020-16941-y.

For over half a century, worldwide growth in affluence has continuously increased resource use and pollutant emissions far more rapidly than these have been reduced through better technology. The affluent citizens of the world are responsible for most environmental impacts and are central to any future prospect of retreating to safer environmental conditions. We summarise the evidence and present possible solution approaches. Any transition towards sustainability can only be effective if far-reaching lifestyle changes complement technological advancements. However, existing societies, economies and cultures incite consumption expansion and the structural imperative for growth in competitive market economies inhibits necessary societal change.

On 20-Jun-20 2:51 PM, Josh Floyd wrote:

It's clearly an important article. But also a major missed opportunity (correct me if I've missed something in my reading) to recognise that the growth imperative is a feature of all large-scale societies, and not just of market capitalism (let alone attributable to a sub-set of the individuals comprising the collectives that are organised on those lines).

I continue to be troubled by the extent to which this elephant is so easily overlooked. I appreciate how inconvenient it is, but as long as it's ignored, then this is all just deck chair shuffling -- because fossil fuel enabled market capitalism has gigantized the path dependent starting position for all future alternatives. Where ever we (humans, collectively) go from here, we have to do it from and with the large-scale societal legacy.

So let's say, as a thought experiment, that the replacement of market capitalism meets with overnight success. We wake up tomorrow, and it's gone (and by fantastic miracle, there is a set of functional institutions for coordinating human activity in its place, with dramatically smaller footprint at  $T = 0$ , than the arrangements that were in place the night before). And let's say that, unlike the [snapocalypse](#) (seriously, if you haven't seen it, it's very relevant, I had no idea until boys hit their Avengers phase recently), a major chunk of the global population doesn't disappear overnight also.

Then we're still left with seriously gargantuan large-scale societies, with their own structurally built-in growth imperatives. And so while the likes of us are all kicking back celebrating this great success for humans, the social world is continuing once again on it's merry growth trajectory, only we're all too conceptually (ideologically) blinded to see it until

the next round of global accounts come in and we're left scratching our heads at why the damn thing just keeps heading in the same wrong direction again despite everything that's been achieved.

Does anyone in their right mind seriously think that that would be the better time to get to grips with the implications of large-scale social organisation? And if not, then can anyone explain to me why it is so assiduously avoided at the moment? (OK, I jest, the answer to that is of course obvious, but still...).

Josh

[anticipating silence to follow] [editorial note: I should point out that this was a statement about what I expect we as a society at large will do in response to me or anyone else raising this issue, rather than necessarily how I expected colleagues here to respond.]

On Sat, Jun 20, 2020 at 3:12 PM Josh Floyd wrote:

OK, I have I think managed to answer my own question about whether I've missed this in my (poor) reading:

"Can we learn from societies, e.g. indigenous and pre-industrial societies, which managed to live without economic growth?" (p. 7).

So there it is: pre-industrial = without economic growth. My mind boggles at how such societies then actually arose -- were they beamed down by aliens or something? And if so, what about the aliens??

Josh

[A note of clarification sent in a side response to T on 20 June:

The principal point I'm drawing attention to is that this issue of the relationship between large-scale social organisation and growth is not recognised or acknowledged. I'm not saying that *large-scale is inevitable*; rather, that *continued growth will apparently be inevitable* if the alternatives that replace what we've got now are also built on similar large-scale foundations. Fighting against growth in large-scale societies is like fighting against the inevitability of pareto distributions everywhere they occur in nature (i.e. rather than designing structural responses that recognise and respond to the fact of the phenomenon).

[The Nature article linked at top by S], like 99 % of everything that is written on the subject, treats the growth imperative as solely a consequence of misguided political-economic ideology, and therefore that "when those in power come over to [insert preferred alt ideology], all will be solved". I'm saying that unless the growth imperative is recognised as a structural situation that goes much deeper than particular ideology, then it's deck-chair-shuffling (even if short-term degrowth is achieved).

[Given their different stances with respect to large-scale], this actually means that the alternatives presented in the table of options in the Nature paper can't really be treated at this point as being on an equal footing in term of their merits.

I don't at all \*like\* what all this implies, but I do think that it needs to be confronted.

Josh]

On 21 Jun. 2020, J wrote:

Hi Josh,

I am curious as to why you think large-scale societies have a growth imperative? Can you elaborate? I disagree. There were plenty of pre-industrial large-scale empires etc that had nothing like a growth imperative, at least in the modern sense of constant imperatives for capital accumulation and GDP etc. To my mind, this really only emerges with the rise of market capitalism in Europe (first England). A complication (often confused by greens) is that 20th century state socialist societies also pursued growth...but, in my view, this was because they deliberately chose that goal (i.e to beat the west etc), not because their centrally planned economies had a growth imperative built into it, like market economies do. I am explaining this very quickly/crudely. But, that said, I am totally with you that sustainability requires localisation and decentrations etc. Think the authors of the paper - as you noted in second email - were implying this as well, to be fair, even if it was not made so explicit.

J

On 21 Jun. 2020, Josh Floyd wrote:

Hi J,

Well for starters on the historical record, Toynbee. Could add to that, Tainter, and also Smil's Growth.

But the best succinct statement I know of is in Fleming's entry for growth in Lean Logic, summarising Marvin Harris's observations on economic intensification across large-scale civic societies in Cannibals and Kings [<https://docs.google.com/file/d/OB-7xAQtnnL9PU2ZUSUFpT3dwNUE/edit>], see discussion from around p. 20.

But I think it's as simple as the period of market capitalism being a recent sub-period only of the historical epoch of large-scale civic societies. Societies didn't increase in scale as a matter of citizen preference for large size (Tainter). If not by choice, the fact of growth (rather than miraculous conception as large-scale societies) leaves imperative. I think we'd probably then want to know something about the dynamics of that. Stopping at the idea that economic growth is a unique consequence of collectively adopting market capitalism as political economic ideology - well it just seems intellectually lazy. Degrowth isn't simply a matter of swapping out ideological commitments. It's much harder than that. But a statement like "pre-industrial = zero growth" just sweeps all that under the carpet.

Market capitalism of course turbo charges the imperative. But it only plays out in actual scale where the energetic context allows. That the pre-capitalism default imperative based on economic intensification in all large-scale civic societies was rather mild in effect by comparison with the turbo charged version under market capitalism needs to also be considered in terms of the timing of the removal of energetic constraint.

Best,

Josh

On Mon, Jun 22, 2020 Josh Floyd wrote:

Further to the evidence for growth imperative in large-scale civic societies, Angkor Wat as a case study: <https://www.cambridge.org/core/journals/antiquity/article/landscape-of-angkor-wat-redefined/F3F0731A514E338A76DA8A906458A890/core-reader>.

"These calculations illustrate, however, how LiDAR not only helps to clarify the tremendous scale of the Angkor Wat complex, but also reinforces the point that these temples were part of an immense economic machine."

Interesting account here also that accords with the "large-scale civic societies have an inherent growth imperative" observation: [http://factsanddetails.com/southeast-asia/Cambodia/sub5\\_2f/entry-3507.html](http://factsanddetails.com/southeast-asia/Cambodia/sub5_2f/entry-3507.html)

"Recent excavations, not of the temples but of the infrastructure that made the vast city possible, are converging on a new answer. Angkor, it appears, was doomed by the very ingenuity that transformed a collection of minor fiefdoms into an empire. The civilization learned how to tame Southeast Asia's seasonal deluges, then faded as its control of water, the most vital of resources, slipped away."

Much more extensive discussion following this excerpt.

The story is, I think, much more interesting though, and relates to the way that large-scale civic societies intersect with the perennial theme of all life, the struggle to navigate a path between chaos and order. Large-scale societies represent a major swing towards the pole of order, ie throwing all chips in behind a bet on the ultimate triumph of control through abstraction, over the complexity of nature. I.e. hubris run amok. I suspect we here probably all agree on how that's going to play out long-term. (ie the background to my emphasis on the importance of epistemic humility as a foundational virtue for navigating the post-normal character of the times we find ourselves in runs a lot deeper than I may have made apparent to date).

Josh

On 23-Jun-20 J wrote:

Josh, a few additional thoughts to share with you.

Did pre-modern large scale societies have a growth imperative? I think a lot depends on how one defines growth. I think the answer is clearly no, if one is talking about stable/constant (more or less) rises in per capita income over time. I think there is an overwhelmingly strong case that this is a modern phenomenon, the origins of which economic historians have pretty accurately traced back to England in the 17th century (which I, along with emerging scholarship, would further causally link with the prior emergence of agricultural marketisation/capitalism in England). For the evidence on this [see this article in](#)

[Our World in Data](#). Or just take a look at the below chart (I know you can question the data on these types of charts, but I think it illustrates the basic picture)...

<https://ourworldindata.org/grapher/maddison-data-gdp-per-capita-in-2011us-single-benchmark>

As that article shows, before the modern era, there was of course growth of empires and cities etc (like i.e Angkor Wat). But, so far as I am aware, they never produced steady rises in *per capita income*. Historians talk about pre-modern societies being stuck in a 'malthusian trap' (interestingly, turns out Malthus was right...about just about all societies before his time!). Basically, any technological advance that occurred typically produced more people, rather than higher per capita incomes. We could say that 'growth' before the modern (capitalist) era, was extensive rather than intensive - i.e involving expansion of territory by states or cities, often/typically at the expense of other regions, or peasant classes etc. In this sense, its true that European societies had a kind of growth imperative, as different fiefs often competed with each other for land/territory and peasants to exploit. But rarely (or only exceptionally), involving steady and generalised rises in labour productivity, and thus income, like what we see in capitalist societies today (well, we used to see it; productivity growth is getting very sluggish now!).

Of course, it's true that large civilisations of the past were - despite the lack of a constant income growth - often unsustainable (and, on reflection, maybe this is what you are actually saying?). Given they relied mainly on renewable energy and materials, they often exploited these at rates faster than they could be replenished and this was often a major factor in their decline (i.e listened to an interesting podcast on the Mayan civ decline in this respect). But I dont think this proves that large-scale societies are necessarily unsustainable. In thinking this through, I guess I would also want more clarity from you on what you mean by large scale societies? For instance, I think we all agree that economic localisation etc is needed for sustainability today. But could there still be viable large scale (albeit reduced) systems, settlement and institutions - perhaps even global - in a sustainable civilisation? I don't rule this out..

The other thought I had was to say that, of course, it was not just the emergence of market capitalism that produced growth in the above sense. It was also - and crucially - the discovery of fossil fuels (though I would argue, it was capitalism that came first, but this social system quickly required the energy of FF to continually expand). In a recent blog Chris Smaje said the I=PAT equation should be replaced with: Human Ecological Impact = Grain Farming + Capitalism + Fossil Fuels. I think I more or less agree!

Thanks for provoking thoughts on this. Agree with knowledge humility. Having written this out, i maybe can see your point, and will think more on it. Just wanted to clarify more where I was coming from...

J

On Jun 23, 2020 Josh Floyd wrote:

Thanks J for further thinking together on this. A number of key points very quickly:

1. Large-scale civic societies: neolithic; fixed settlements; centralised bureaucratic control over extensive territories; agricultural production of staple food crops and associated storage; high degree of social role differentiation and specialisation c.f. paleolithic societies. Highly hierarchical power structures.
2. Reconstructions of GDP, let alone GDP per capita, aren't relevant, and especially when this is aggregated as "world GDP". Orders of magnitude too abstract. Need to look at specific socio-politically complex (to use Tainter's and the orthodox term in sociology) societies i.e. "civilisations". Not GDP reconstructions, because this doesn't take into account the primary issue, being increasing intensification of production -- more land, labour and other resource use per unit of output with time, productivity gains directed towards expanding intermediate economies, being the economic necessities of large-scale systems, not of individual citizens. Per capita GDP is way too crude for societies that by their very nature were highly unequal, with very large peasant classes providing labour to support elites. So flat GDP per capita masks flat consumption for most citizens, while material affluence for ruling, managerial etc classes could well be increasing.
3. On intensification of production, see Harris's *Cannibals & Kings*  
<https://docs.google.com/file/d/0B-7xAQtmnL9PU2ZUSUFpT3dwNUE/edit>.
4. The growth in physical economies is readily apparent in all such societies that came to control increasing territories over time. It's no good looking at "the finished product" as the unit of analysis, it's all about the historical trajectory over time for "a society". There are naturally definitional challenges, as "a society" is in constant flux. Look to the processes though by which coordinated administration and control over increasingly large territories has occurred time and again.
5. There might be ways of having "large-scale societies" without economic intensification and growing intermediate economies. My point is that if any approach to dealing with the current growth conundrum does not recognise and address this fundamental structural issue with large scale, then it is doomed to failure.

Josh

On 23-Jun-20 J wrote:

Thanks Josh. Lots of food for thought. I have grabbed a copy of Harris book - look forward forward to reading. As I finished writing my previous, a lot of contrary ideas came into my head, some of which you have raised, so yeah my thinking is in flux here!

But just one further question: what exactly is the fundamental structural issue that you see with large scales and that dooms us to failure? Why does it result in a "grow imperative"? Sorry if you have already answered this, but I'm not clear on how you see this. Feel free to point me to

Something you have written. Or maybe I should just read Harris...?

J

On 23-Jun-20 Josh Floyd wrote:

Yes, see Harris on the structural issue, but even better for a succinct summary see Fleming's entry on growth in *Lean Logic*.

I think the origins run deeper though than they discuss, and can be summed up by "The

solutions to our problems create bigger problems than they solve." The origins for this, I think, can be found in the abstract systems of conceptions that form the necessary coordination and control apparatus for large-scale societies, and the relationships between these abstractions, and the living systems within which they are embedded and upon which they rely, and for which they also act as sources of perturbation. The systems of abstractions will never have sufficient variety to cope with the variety of those living systems. There's a mis-match in complexity, and in adaptability. The systems of abstractions have implications for the living systems with which they are coupled, exerting adaptive pressures on the living systems which in turn exert adaptive pressure on the systems governed by the abstractions, and hence on the systems of abstractions themselves. But those systems of abstractions, in order to "get off the ground" in the first place in terms of doing their coordinating and control work, have major rigidities that are not sufficiently amenable to adaptation.

On the variety idea, see Stafford Beer's viable systems model, incorporating Ross Ashby's law of requisite variety, typically described as something like "If a system is to be stable, the number of states of its control mechanism must be greater than or equal to the number of states in the system being controlled."

So, in short, large-scale societies are established and develop if their founders and subsequent leaders manage to maintain a sufficiently convincing illusion of control (over their own internal relations, and relations with their natural environments). But that apparent control will always eventually succumb to its inherently illusory character. There is always a gap between human conceptual models, and the realities that they seek to represent. Human understanding is always incomplete. The variety gap means that reality, nature, will always have the last word.

To maintain viability, human societies need to conserve adaptation with the environments with which they are structurally coupled in evolutionary drift. That needs a quality of adaptive flexibility that large-scale will eventually, at some point, preclude. The structures, and especially the systems of conceptions, on which large-scale coordination and control relies, must have a certain rigidity in order to fulfill their coordination and control functions -- that is how large collectives are aligned in a common cause. Those systems of conceptions must be limited in their flexibility to do their work. And that is ultimately the basis for their downfall. If such systems (including motivating cultural myths and images of the future) must change so much in order to conserve adaptation with a changing environment that they can no longer meet the criteria for coordinating the large and diverse populations entailed by large scale, then the society disintegrates. There is only so much change that can be accommodated by a collective if it is to remain as a coordinated collective (if its adaptation is to be conserved); and yet ongoing viability for the coordinated collective is conditional on continuous adjustment to conserve adaptation.

Josh

On Wed, Jun 24, 2020 Josh Floyd wrote:

Part 2, where I pre-empt the question that is probably on your mind and that all of us should be asking, about the missing links in Part 1 of the story from last night:

OK, but why does all of this necessarily lead to \*growth in physical economies\* per se?

I think it runs like this. The abstract systems of conceptions that are foundational for any

large-scale society, in order to unify and coordinate a polity around collective action inspired by shared images of the future, are instantiated in physical infrastructure and formal institutions. Stuff gets built, and constitutions, legal systems, rules, regulations, laws and standards are all enacted. This entails an inherent path dependency even from the most nascent stages.

Once built and enacted, it becomes very difficult to roll these infrastructures and institutions back. They shape the ways things are done, and "stand in" for a great deal of thinking and acting that would have to proceed from first principles (or at least much closer to these) in their absence. This frees up a great deal of creative energy, but this energy is then necessarily channeled and bounded along particular paths. Interestingly, this parallels Jonas's "needful freedom" as an organising principle for life in general -- but I think it also comes with much less flexibility than for living systems outside of civic societies.

The capital investments represented by physical infrastructure (and I think that this also in important ways applies to formal institutions, though the processes are obviously different) are everywhere subject to depreciation. To continue providing their initial value, they must be maintained. As a civic society grows in scale, so does its physical infrastructure, and hence the maintenance costs of the entire infrastructure stock. This maintenance is the purview (or at least a major part of) the intermediate economy -- the large and growing area of economic activity that directed not towards the satisfaction of citizen's consumption wants, but what Fleming refers to as the "regrettable necessities" entailed by large scale.

There's a further dimension to this, alluded to in Part 1 of this response yesterday. The physical infrastructure and formal institutions, as instantiations of abstract systems of conceptions, are always subject to the limits of those systems of conceptions. Human design and the evolutionary processes by which living systems conserve adaptation produce distinctly different forms of "infrastructure". The implications of this are evident everywhere that human-designed and built infrastructure, whether the product of large-scale civic societies or less formal living arrangements, are abandoned and no longer maintained for whatever reason, and "nature re-established a foot hold". Industrial mono-culture farming abounds with obvious examples also of the failure of abstract systems of conception to exert anything but very temporary control over living systems.

Back to the point above briefly about the difficulty of rolling back what is once set in train. If it's not easy to roll arrangements back, then the default response, when these large-scale human designed systems come into conflict with "natural" living systems, is to add on to what is already in place, if the costs of doing so can be born. This quickly means that large-scale systems can no longer properly be treated as "designed from top down", rather they evolve from ground up, but typically in a piecemeal and reactive way, and still subject to the limits of abstract conceptualisation.

So I think this covers the basic structural dynamics for why physical economic growth seems to be an inherent characteristic of large-scale societies.

I don't think it necessarily implies as bleak a prognosis as might be read into it. If this is recognised, then the things that have traditionally been attempted through control-oriented large-scale civic planning and design processes can be approached differently. This is of course the set of problems that the systems sciences have been working on for going on now for the last century, so perhaps given their success or lack of to date in shifting course, we



might not be encouraged. I don't know though that what has happened to date can necessarily be taken to have exhausted all available options. There is quite a lot of espoused interest in things like "learning systems", which if taken seriously and with genuinely open-to-other-horizons action-oriented inquiry might offer different futures. My current sense though is that these "over the horizon" developments, as emergences from the contemporary situation in which human social organisation is pretty much entirely enacted in the form of large-scale civic societies, would likely lead to arrangements that would no longer be recognisable in terms of the historically relevant criteria -- even if they did in fact entail co-ordination of large numbers of people (>> Dunbar #) over large (>> typical range of any individual's) territory.

Josh

On 25-Jun-20 J wrote:

Just so you know, I am going to mull on your words for a bit. Realised my original thoughts kind of missed the point a bit. You've really got me interested in the question of sustainability and growth etc in pre-industrial societies. I have actually been listening to an amazing podcast series called the fall of civilizations (highly recommend) which goes through why various civilizations collapsed. Your reference to the Khmer empire has prodded me to listen to the episode on that - half way through and your point about productive intensification has been well illustrated. More thoughts soon...

J

On 25 June 2020 Josh Floyd wrote:

Have added Fall of Civilizations to podcast favourites.

A comment I made to S yesterday about this conversation, as he had reflected on how it relates to another thing we're working on at the moment: "Was fascinating to learn about all that [i.e. stuff above], hadn't been fully aware previously of much of what was written in those responses to J." Writing very helpful for thinking.

Josh