A Prosocial Coordination Protocol for the Planet

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Motivation

Under the prevailing economy, human civilisation has achieved the height of its industrial and technological success. Yet, increasing inequality and environmental degradation are forcing us to consider whether the paradigm is serving people and the planet. Looking for alternatives, we recognise that an improved economy must begin to respect ecological boundaries and social wellbeing, and shift from prioritising self-interest towards encouraging prosocial relationships. How can we disrupt the established paradigm and bring about systemic change in the real world?

With the latest advances in AI, complexity science, and blockchain technologies, we now have the opportunity to create novel protocol-based social coordination systems. Widespread transition to a new paradigm now involves people opting in to a digital social-economic network when they are ready, instead of necessitating the difficult process of conventional political transformation.

The need for elected human representatives and centralised institutions is replaced with consent-based protocols which define how we conduct our relationships with one another and our environment. These new ‘economic’ protocols can be designed with different rules and explicitly defined objectives embedded into their very architecture.

Proposition

The core economic rules are like the DNA for a large component of our collective social and economic behaviour. A minor, well-crafted change in this DNA would yield immense transformation of the emergent social behaviour and impact of our species - reshaping our social relations, our economic output, and our collective impact on the planet.

Therefore, we devise an holistic, peer-to-peer social coordination protocol, implementable on existing blockchain technologies. Its core rules are designed to emergently fulfil the following objectives:

- Facilitate prosocial coordination, favouring co-creation and collaboration over competition
- Fulfil psycho-physiological needs, ensuring wellbeing for all humans
- Regenerate the planetary resource ecology, attaining widespread abundance
- Remain viable across locations and through time, respecting the local and global boundary conditions of place and planet

To realise such a design without falling into the trap of reinventing the prevailing macroeconomic system, we must begin from a new set of fundamental assumptions. To this end we adopt a tabula rasa approach, where we start by revising our assumptions about our relationship with the world.

The Food Web

Planet earth is a rare haven for life in a vast universe. It is home to the only complex living systems we have yet discovered. Building up from the most basic physical resources, ecosystems have emerged in which species of all kinds consume and nourish one another in a deeply interconnected food web.

In the case of humans, our psycho-physiological needs and our sociality have extended this ecological food web into what we call 'the economy' - a system for **social coordination** around **resources** to fulfil human **needs**.

Needs-Driven Economy

Since our needs drive what we consume, the economic food web begins with gathering them. Each person uploads their needs via a gateway application, specifying the type and location of each need. The geo-localised needs are then broadcast as requests to the entire economic network.

Once uploaded, individuals' needs are aggregated into shared needs, and the different types of needs are then ranked by their frequency and intensity relative to one another, yielding a global measure of the relative importance of our shared planetary needs.

As every economic participant can see what is needed and where, potential providers can leapfrog the information barriers to economic interaction, like the need for market research and advertisement. Consequently, every person is immediately able to contribute towards fulfilling requests, leading to broad inclusion, equal opportunity and economic participation.

Prosocial Incentives

Now that we know what our shared needs are, we can set up incentives to motivate economic activity. In social systems, incentives are often used to align people's attention and behaviour towards certain activities, steering the group behaviour.

The profit motive is the main reward construct in the prevailing economic protocol - the DNA from which our group behaviour emerges. Profit arises directly from the system of market-based pricing - wherein suppliers set their own prices and therefore profits as high as possible. The market then requires competition to bring prices and profits back to an equilibrium. Although profit can be earned by improving value to consumers, over time, profit-maximising strategies tend to serve the self-interest of suppliers - ultimately converging on behaviours which are detrimental to people and the planet.

In the proposed design, the self-interested profit motive is replaced with a well-defined incentive to serve one another's needs. The aggregated information about geo-localised needs can be used as a parameter to steer a reward function, such that higher rewards will be given to those who fulfil the most prevalent needs first. In essence, the community publishing their needs are indirectly setting a **needs-based incentive**. The community is rewarding suppliers who fulfil their needs, instead of suppliers setting their own prices and profits for themselves.

Following these rewards, producers emergently orient their behaviour towards the fulfillment of the community's needs. This is similar to the way whereby people currently pursue profit, with the key difference being that the reward now encourages prosocial behaviour.

By replacing profit with a prosocial reward, we remove perverse incentives which reward antisocial individual gain, rebalance the power relationship between people and producers, and realign one's individual incentive with a measure of common good. This simply could not be achieved with the competitive price system and profit motive of the prevailing economy.

Resource Ecology

When producers organise to satisfy requests, they will need to combine resources and labour to produce the required products or services. Resources are linked together in **recipes** which relate all resources to their constituent components in specified physical units. For example [1 loaf] bread = [320g] flour + [375mL] water + [2g] yeast. Every time a recipe is requested, orders for its component resources are requested too. I.e. every time you request bread, you in turn request flour = wheat + milling and so on.

These recipes are then chained together into a web called the **resource ecology** - a graph built up from resource recipes where each node represents a unique type of resource. The resource ecology can be likened to a transparent and shared web of supply chains in which every resource is geo-localised. By shifting from a concealed collection of abstract, linear supply chains to a transparent geo-localised resource graph, local providers can easily fill gaps in the resource web and optimize long supply pathways. Consequently, the resource ecology harmonises the efficiencies of globalisation and the resilience of localisation.

Resource-Based Economy

With the resource ecology available, we are able to replace market-based pricing with **resource-based prices**, where the value of any resource reflects what it costs to be produced. When a product is requested, its resource-based price is calculated. The values of its component resources are summed together, cascading through recipes until the most basic resources at the extremities of the food web. Here, the value graph is rooted in the most fundamental physical units like energy and human time.

Since the value of every resource is directly equal to the sum of the values of its constituent resources, prices come to reflect the true costs of production. Thus, a **fair-trade economy** is established, free from profits, economic rents and speculation which seep into market-based prices.

Resource-based pricing enables us to directly relate all of our economic activity to its impact on the resource base. Since resource-based prices are not measured in dollars, but rather physical units, economising on price directly implies economising on resources. Cradle-to-cradle life-cycle costs, from production to end-of-life are also included in the prices of goods the moment they are created. Moreover, the needs-based incentive gives the resource ecology no incentive to produce surplus to what is needed. Therefore sustainability and a circular economy become an emergent consequence of the protocol.

Regenerating the Resource Commons

In the prevailing economy, the resource base is only considered valuable insofar as it can be exploited to feed consumption. A system which aims for widespread abundance must move beyond sustainable exploitation of resources towards planet-wide regeneration of the ecological resource base. In order to achieve this, the mechanisms for degradation must first be addressed, and then a new mechanism for regeneration introduced.

In a private-property based system or an open-access system, individuals look out for themselves at the expense of the group. When resources are considered scarce, individuals race to exploit their desired share of resources before they miss out, degrading the resource base in the process. This process is called the 'tragedy of open-access', commonly mislabeled as the 'tragedy of the commons'. **The commons** is in fact an ecologically viable alternative to the 'market' for collectively managing and allocating resources, as opposed to open-access where no management system applies.

In order to avoid this scarcity-fuelled race to the bottom, we assert the **primacy of the commons**. The concept of private-property ownership and exchange of exclusion rights on goods gives way to **stewardship** and **allocation rights** for managing the shared common pool resources. People do not individually 'own' resources but rather, earn rights to allocate them from the commons for a time.

Effective stewardship is rewarded with another incentive, targeted at regenerating the resource commons. Every resource maintains a **reserve**, and a corresponding **reserve ratio** which describes the percentage of resources withheld from its total available resource pool. A **regeneration incentive** is computed from the reserve ratio and then used to encourage the reserve's replenishment via natural and augmented processes, starting from the fundamental resources and the carrying capacity of the planetary base. Resources can only be extracted to fulfil needs if the resource base has been regenerated to increase its carrying capacity to a sufficient level.

Planetary Boundary Avoidance

For any system to remain viable in the long-term, it requires a negative feedback mechanism to stay within limits. In an ecologically sound economy, these limits must include local and global planetary boundaries, such as the maximum amount of carbon emissions allowed in the atmosphere before runaway global warming occurs.

As the economy nears a planetary boundary for a particular resource or waste stream, the protocol modulates its reserve ratio. Consequently, the regeneration incentive grows as the resource becomes scarce, increasing its effective price. This incentivises regeneration activities, and disincents the use of the targeted resource or waste stream - in this case carbon dioxide.

As economic participants, we agree to alter our consumption and regeneration behaviour to remain within limits and to aim for targets defined by the distributed governance of the commons. Via a distributed consensus mechanism, we collectively set targets and boundaries in any relevant economic sector. The system then automatically realigns incentives for the entire group to navigate towards or away from them. Instead of post-mortem analysis after boundaries have already been crossed, crisis can be averted by pre-emptive collective action well before critical limits are reached.

Impact and Transition

We present protocol-based economics as the primary leverage point for addressing looming ecological and social challenges. Widespread adoption of a novel social coordination protocol which achieves the stated objectives would induce a systemic impact with enormous benefits for social and environmental wellbeing.

The proposed protocol, whose basic elements have been described above, provides us with a viable system to aid us in recovering from our degraded state. It guides us back towards prosocial coordination, regenerating abundance and the fulfilment of wellbeing, while restoring harmony between people and the planet.

This transition system is familiar enough to the global economy that anyone who agrees with the proposed economic rules can opt in when ready. It enables a piecewise, smooth transition without having to isolate oneself from society. We foresee that with time, the prevailing political-economy will be assimilated into a new and improved paradigm with vastly different consequences.

We envision transition as a worldwide cooperative endeavour where solutions are shared and reusable everywhere. The protocol serves as a trustworthy infrastructure for connecting people, communities, foundations and sustainability initiatives together in a new economic grid where fair trade, wellbeing, prosociality and regeneration are the basis.

Participants who engage in this new economy can trust in fair indirect reciprocity - that everyone else who participates will be bound by the same set of rules and be rewarded in the same manner for their contributions. Communities everywhere can nucleate alone but then merge when they are ready; and the contributions across communities will be fungible. By coming together around a protocol, a coordinated transition becomes possible with much greater breadth and speed.

Realising the Transition

Change is not only possible, but necessary to be able preserve our planet and the precious life within it, including human civilization.

We are catalysing the transition to the next stage in human social coordination, revisited in the interconnected age and built upon the newfound possibilities offered by the internet. We are currently implementing the proposed system on existing blockchain technologies. However, we are well aware that there is much more work to be done for the emergent social change to manifest in real communities around the globe.

Therefore, we are seeking to build a network willing to commit resources to co-create and bring this new economic paradigm to life. Granted there is alignment with the core values embedded in the protocol, we are open to all forms of participation, contribution and collaboration which will sustain and accelerate this endeavour.