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Article

The Need for a Dynamic Approach to Economics

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Abstract

At the heart of the renewed criticism against neoclassical economics is the idea that it is incompatible with the dynamic type of *economic coordination* that emerges in the real world. Its focus is limited to what its accepted methodology can measure while all else is deemed constant or exogenous. It is in this need for a new approach to economics that this paper finds its aim: To provide a way to make sense of the open dynamic nature of the real world. The paper sets the stage with an expanded version of the history of economic thought: starting with nomadic society, including experiences beyond the Western one, and ending with the present system. This provides a rich and dynamic sketch of economic coordination over time, intertwined with a complex development of history and economic thought. This is then analysed with a four-quadrant framework which allows the identification of three specific variables which interact to drive dynamic change in any situation. Although these variables are simply defined as perspective (***i***), environment (***P***), and needs (***N***), their power is twofold: Firstly in the way it structures the development in the dynamic coordination, and secondly, in the way that it connects with existing theories, which implicitly presuppose these same three variables in their own exploration of how mechanisms create real-world outcomes. The text provides one such example. Affordance Theory is applied to show how the three variables interact: In our environment (***P***), affordances are said to represent latent possibilities independent of the individual's ability to recognise them, they become active given the "physical capabilities of the actors... their goals, beliefs and past experiences". Similarly, needs (***N***) in a hierarchy imply that they are latent in the human psyche where the satisfaction of one need affects a change in perspective which is an activation of the next need. Finally, the conclusion brings the three variables together into a more dynamic definition of economics, expressed as a conceptual function: ***E=f(NP)***. Rather than fixating on the specific perspectives resulting from change, this paper highlights the way in which three well-defined variables drive change.

1. Introduction

The argument that neoclassical economics is not compatible with the real world can be summarised as follows: Economic reality is open and dynamic, and neoclassical economics is simply not a good description of the stakeholders in the economy and how they think and interact in this open dynamic world.

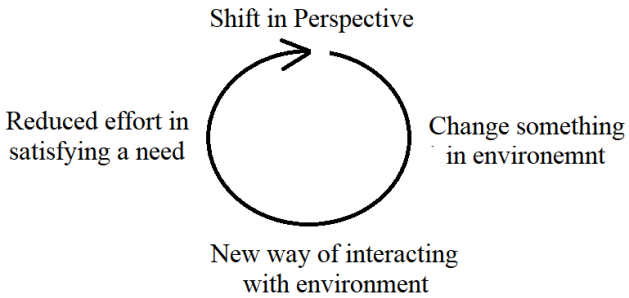
After providing a sketch of this dynamic reality, the paper offers a framework for explaining how these dynamics arise. The sketch employs a broader version of the history of economic thought and highlights the dynamics present within. This is in contrast to the static view associated with the neoclassical perspective but is also more than a simple presentation of competing perspectives. The paper then structures this sketch by mapping it onto four quadrants. These quadrants show how internal and external aspects of the individual interact with internal and external aspects of the collective to co-determine situations at specific times.

The result reveals that three variables (***N,P,i***) are responsible for the dynamic way that agents (firms, consumers, governments, etc) coordinate their interactions. The paper then turns to articulate the mechanisms by which these three variables interact. Towards this end, Affordance Theory (Gibson 1979) is applied. In the last section, the three variables are brought together in a new definition of economics, and future research possibilities that open up due to this ontological shift are presented.

2. What dynamics?

Instead of starting with the views of specific schools or with narrow limiting assumptions as in the case of neoclassical economics (OECD 2019), a dynamic approach to economics begins with the idea that our institutions, people themselves, and the world around us are subject to change, and so are the ways in which these parts interact with each other. To aid in outlining this dynamic *economic coordination* we can sketch a story through the history of economic thought. However, this history is limited in that it excludes everything that happened before the writings of ancient Greek philosophers and it does not fully represent experiences beyond the Global North. Economic coordination is a broad concept and it started much earlier. As early as human perspective shifted in a way that inspired an individual to change something in the environment. The altered environment then provided a new way of satisfying a need and new possibilities arose. An example of this could be making a tool or coding an app where the tool or app makes life easier or reduces future effort (at least for some) in satisfying a need. As soon as this cycle is present, individuals are ‘economising’ and economic analysis is justified (See Figure 1). Text Box 1 provides a sketch of this expanded history, starting with indigenous perspectives and moving on to an account of capitalist reproduction between feudal, industrial, and present day society.

Figure 1: The economic cycle



Text Box 1 provides a sketch of the richness that emerges from the above cycle.

Text Box 1: Dynamics through history

Nomadic Society or Indigenous perspective: The concept of *goods and services* as we know it didn't yet exist, there were social interactions with others, laws that govered ones's interaction with the land and others, and the basic things that nature provided autonomously and freely. They lived in harmony with the world and valued equality and sharing; it was this culture and goals that were an important part of their 'economic' systems. Lots remained undiscovered (like electricity or transport), and the possibilities that these would afford and the changes it would bring but they did not have a pressing need for it, it did not fit into their way of life, they were unaware (Sahlins 1972). After they found ways to alter their environment to satisfy their needs easier, the new environment led to new needs and their view of the world and their own place inside it changed (see Figure 1).

Feudalism and early nation-states: All over the world, private ownership became more common, sharing less common, and empires expanded. Autonomous supply by nature became dependent on agriculture, trade, and the expansion of the empire. A need for power gained prominence. Here society typically gets divided between those who own land and those who work on it. Religious teachings or a type of 'righteousness' becomes popular which is usually part of the state and plays an important part in creating order and producing the first economists doubling as philosophical or religious thinkers (de Roover 1958). The state used 'religion' to create order and churches still use it to pull people and societies out of the exploitative mindset that runs rife in gang empires of today's world, providing context to the growth of the Catholic Church in Rio.

Industrialisation: Industrialization changed the rules again. A new 'platform' called companies started to commoditise things into 'goods and services', market them to create a need, and supply it to those who have adequate 'effective demand'. The system does not only produce capital, it produces labourers and consumers. We see a range of new concepts applicable to this new period (Smith 1776, Keynes 1937). The perspective was to work and earn money, the goal is growth regardless of other costs.

"Green": New goals emerged, sustainable development, equity, and social justice. Animal rights, feminism, the triple bottom line, civil rights, etc. all became popular as a response to problems and shifts in power relations associated with industrial age thinking.

The present: Supply is becoming automated. Economic agents need and consume information that is sometimes free and at other times very costly. Ideas like labor and production functions lost their logic, it is not about output but rather what is afforded by certain things. For example, consider the smartphone, it can't really be called a good or service in the classical sense, it is a combination of so many things that afford you to do and be part of different things. Many things are 'free' to the user because it is 'networked' supply, where

questions such as who really supplies who and with what become more complex. Information changes our perception dramatically and our new goal is to keep up with this information. The Economy becomes so creative that it makes economists scratch their heads.

System-wide changes result when individuals with certain values within societies reach critical mass and when individuals change institutions and their environment to better serve their own or collective needs. This evolving coordination (for better or worse) is present in each culture's history. It is a co-evolutionary process involving culture, the physical infrastructure of the time, and individuals' psycho-social development.

The different value systems introduced in Text Box 1 each saw reality in their own way, it makes sense to introduce that before the different schools or perspectives that emerged out of the history of economic thought. With economic pluralism it is realised that each perspective contributes something worthy to economics and has its own way of seeing reality. However, this paper aims to stress a dynamic approach that goes beyond valuing each perspective individually.

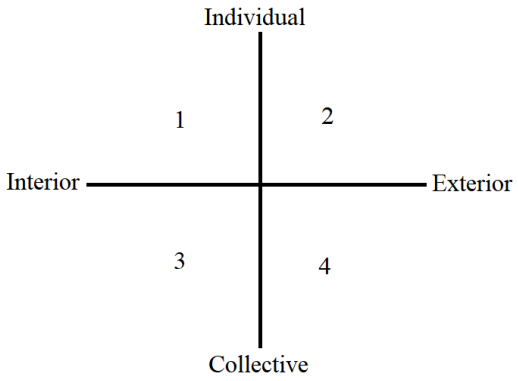
As a general note, although Text Box 1 outlines five systems, ultimately it is not important how many there are or how they get divided. Many historical analyses exist, for example, there is Aristotle's analysis of the formation of the city-state, the German Historical School's more empirical analysis of economies transitioning from feudalism to capitalism, Karl Marx's historical materialism, the historical feminist account of social reproduction, etc. Different accounts each place the focus on a slightly different part of reality. If my only goal was to be as inclusive as possible given the space, then I have certainly failed. However, the account alludes to deeper dynamics at play. It needs to be asked how this open and complex history could be placed into perspective in a way that reveals why history has taken the path that it did. In other words, how our economies came to be and why it is evolving. These questions of how and why have been pushed to the background after neoclassical economics came to occupy the mainstream.

3. The three variables

Neoclassical economics finds the answers to *their* world in demand and supply of goods and services, but since the *real* world is dynamic and since other times does not have the environment, institutions, concepts, goals, and perspective assumed by neoclassical economics, how can we best understand the reality that lies outside that narrow perspective?

There are four philosophical dimensions to this broader reality. These four dimensions are visible whenever thinkers try to make sense of reality, it is visible in Descarte, in indigenous perspectives, in Veblen's (1989) explanation of what it means to see economics as an evolutionary science, and in psychology where distinctions are made between different behavioural antecedents. While a discussion on how the four dimensions underlie each of these is beyond the current scope, this paper adopts a conceptual shortcut: *Ken Wilber's Theory of Everything (1996)*. Wilber organises these four dimensions into four co-dependent quadrants as a way to offer an accessible and complete picture of reality (see Figure 2).

Figure 2: Four-Quadrants model of Integral Theory



The first quadrant refers to processes internal to the individual. It includes motivations, preferences, feelings, habits, desires, goals, etc. Here, Internal means physically unobservable.

The second quadrant refers to external processes of the individual and includes the neural system, kinesthetics, the reproductive system, etc. This quadrant is concerned with human physiology and the body. While this is important for economics, for example in evolutionary and feminist perspectives, I will leave this to a future paper.

The third quadrant refers to things internal to the collective. It includes culture, ethics, shared worldviews, and institutions etc.

The fourth quadrant refers to collective things that can be observed externally, it includes the natural environment, physical parts of institutions, technological artifacts, infrastructure, etc.

This forms the basis for where we find the answers to the real world: The first variable (related to quadrant 1) is Needs ($\boldsymbol{N}$), not just a specific set of needs considered by orthodox economics but a range of things and concepts that humans can spend time pursuing because all of this influence opportunity cost, time spending and economic decisions. We also don't just consider a snapshot of needs in a specific time but an evolution of needs.

The second variable (related to quadrant 4) is the things in the Environment ($\boldsymbol{P}$) that satisfies all of these needs. How we see our environment and see ourselves interact with what is around us should be at the core of economics. Our environment determines what is possible and what is not, it's where we work, play and create. The orthodox view of the environment focuses on goods and services of industry and government. However, there is so much more to the environment that impacts opportunity cost, time spending, and decisions. Here the orthodoxy leaves a gap in explaining the real world and fails to capture everything that has value to us. $\boldsymbol{P}$ gives a more broadly defined concept applicable regardless of the time that you are in.

The third variable (relating to quadrant 3) is the developing consciousness or perspective ($\boldsymbol{i}$) which weaves itself through society, it allows us to see possibilities that others didn't, like the enlightenment that brought an end to the dark ages and sparked the industrial age. Robert Solow (1985) once said all economic activity is embedded in a web of social institutions,

customs, beliefs, and economic attitudes - these social institutions and customs are represented with $\boldsymbol{i}$.
How $\boldsymbol{P}$ and $\boldsymbol{N}$ interact given a certain $\boldsymbol{i}$ will be investigated in the next section.

4. How the three variables give rise to real-world dynamics

To help understand the mechanisms that operate between the three variables and how this ultimately gives rise to real-world situations, we can take theories of, for example, ecological perception, bounded rationality, technological development, capitalist forms of reproduction etc, and map these to the three variables. The first of these theories, namely Gibson's Theory of Affordances, found in his 1979 book on ecological perception, will now be mapped. This will reveal how Needs ($\boldsymbol{N}$), Environment ($\boldsymbol{P}$), and perspective ($\boldsymbol{i}$) interact in the real world.

Gibson's theory has been applied to disciplines such as Information Technology, design and robotics, but never to economics. This will now be done in the remainder of this section, however, a more complete application will be developed in a subsequent paper.

The theory of affordances was originally introduced in ecology to describe how an animal interacts with (shapes and is shaped by) its environment. It is perfect to apply to a dynamic economic landscape since it reveals how individuals perceive value in their niche over time (Heft 2003, pp 173-176; Chemero 2003; Chemero 2013 pp 192-193; Rockwell T Chapter 10). In ecology, each species (humans included) lives in a niche, a niche is different from a habitat, it is not a place but is a way of life (it is an $\boldsymbol{i}$), the habitat would be represented with $\boldsymbol{P}$.

Affordance Theory is about identifying the specific things or 'features of the environment' that 'afford' something to the organism given its niche. This results in a different approach to our world than what we are used to from the orthodoxy, it does not start with a representative agent model, it considers a complete picture of anything the organism can spend time on pursuing or can possibly need and how this changes through time (Chemero 2009, pp. 26). So called *features* of the environment as applied to economics could be products, services, the internet, events, social media platforms, anything that affords something to the individual. Gibson and Norman (1988) explain that, in our environment, affordances represent latent possibilities independent of the individual's ability to recognize them but always in relation to the individual. For example, transportation independent of whether the wheel is discovered yet (Reed 1996, pp. 26) (See Figure 1 again).

Although the theory has never been applied to economics, it fits the three variables well: Maslow's pyramid of needs and other theories in psychology implies that needs are sequential, so does affordance theory, treating needs as latent in the human psyche where the satisfaction of one need affects a change in perspective which is an activation of the next need. The theory provides the links between the 3 variables, it provides the rules of how the variables interact.

This approach also makes sense when looking at business models. For example, Starbucks is not merely about the coffee, but about all the other things it affords to its customer, made possible by a collection of physical features. When Starbucks closed some of its branches in Australia (Allison 2008) it was because people did not see these affordances, in other words, it lay outside their niche.

If there is an unknown affordance there is not yet a need; then this individual is unaware like the nomads or the Australians and will reject a product as they do not have (and might never have) a need for it. Unless, of course, their niche or way of life changes. If there is a known affordance that an individual does not have access to then that individual will have an unsettled need. To keep things simple it can be said that affordances are facts of the environment (P), they are unlimited, waiting to be discovered (Reed 1996, pp. 26), so are needs (N). An affordance is the connection between these two developing spheres and the group of active affordances depends on the niche or consciousness (i). This approach offers a new ontology where the focus turns to the variables responsible for change instead of the transitory phenomena resulting from change.

5. Conclusion

This paper began by presenting a rich sketch of real-world conditions. It then used a four-quadrant framework to illustrate the underlying dynamics within that context, focusing on three specific variables. Finally, it examined how these variables interact to shed light on the mechanisms that connect causes to effects in the real-world setting initially described.

The dynamic approach, grounded in the interaction of three key variables, offers a way to describe the real world more accurately. Rather than relying on representations of economics that emphasise a specific value system tied to a particular 'filter' applied to these quadrants—such as the neoclassical view that continues to dominate today, the dynamic approach supports a more functional definition of economics.

To distinguish among the various specific views of economics, let each be denoted by a lowercase e, followed by a subscript i (a constant) to represent a particular perspective at a given time. In contrast, the dynamic view of economics is denoted by a capital E, reflecting its broader form.

$$e_{i=1}, e_{i=2}, e_{i=3}, e_{i=4}\ldots \text{ as opposed to } E$$

These are of course not real numbers which can be manipulated algebraically, each represents a whole complex of ideas. For example, an orthodox perspective might lead to the definition that "Economics is a study of unlimited needs and scarce resources." At that constant point in time with the certain set of needs and state of development in the environment, the perception indeed was that "economics (e_i) is the study of endless needs (n_i) and scarce resources (p_i). It was all about the specific subset of needs (n) from industrial era perception (i) and the specific environmental features that they considered (p_i) according to their perspective, represented by active affordances.

Equation 1: Economics from a specific perspective

$$e = n_i p_i$$

However, since definitions should not just focus on one perspective, ***E***conomics = everything from ***i***=1 up to ***i***=∞ to include all perspectives that could impact our needs and reveal affordances as the dynamic system emerges over time.

Equation 2: Economics as a function of our changing Needs and Platforms

$$E = f\left(\sum_{i=-\infty}^{\infty} n_i \quad \sum_{i=-\infty}^{\infty} p_i\right)$$

We can then represent the complete set of small letters with capital letters: ***N***, ***P***. Everything that happens in an economy, every activity, advance and opinion is the result of a dynamically interacting creative force between our Needs, Platforms, and changing perception. From this perspective, ***N*** and ***P*** are both unlimited with the active part determined by the relevant ***i***. This is our *dynamic* definition of economics.

Obviously, Equation 2 is not meant for substituting real values. It is not something for a mathematician to solve or a physicist to imagine a three-body problem of economics. There are, however, some future areas of research that could follow.

It can be investigated how this new ontology changes our understanding of neoclassical concept, one example might be asking how the concept scarcity changes when affordances are treated as unlimited resources.

The application of Affordance Theory (and other theories) to the three variables can be more fully developed in order to explain the mechanisms by which the variables interact.

The second quadrant (the body) can be included in the dynamic approach, this could relates to the implications of technology that enhance human physiology or the role of the body in feminist accounts of capitalism.

A deeper analysis of the three variables could involve investigating their active and latent parts, either empirically, logically, or in computerised experiments, the Dynamic Approach is not specific to any modelling method.

Instead of thinking about supply and demand in a production function or about static classifications of goods and services, researchers could start thinking about access to affordances and about affordances being either active or latent, Gibson's "features" of the environment could be classified into groups or sets according to their specific attributes which shows the shifts between the commons, supply dependent on firms and institutions, and supply that is automated or networked between individuals to give insight to the workings of the real world.

REFERENCES

Allison, M. 2008, 'Starbuck closing 73% of branches in Australia', *The Seattle Times*, July 29 2008. Page 3.

Backhouse, R. 2001, 'How and Why should we Write the History of Twentieth-Century Economics', *Journal of the history of economic thought*. June 2001 23(02):243-251.

Backhouse, R. & Fontaine, P. 2010, "Introduction: History of Economics as History of Social Science," History of Political Economy, Duke University Press, vol. 42(5), pages 1-21.

Beck, D. Cowan, C. 1996, *Spiral Dynamics: Mastering Values, Leadership, and Change.* Blackwell Publishing, Chichester.

Chemero, A. 2003, An outline of a theory of affordances. *Ecological Psychology.* doi: 10.1207/S15326969ECO1502_5

Chemero, A. 2009, Radical embodied cognitive science, MIT Press, Cambridge.

Chemero, A. 2013, Radical embodied cognitive science, Review of General Psychology doi: 10.1037/a0032923

Dawkins, R. 1976, *The selfish gene*. Oxford University press, Oxford University.

DeRoover, R. 1958, 'The Concept of the Just Price: Theory and Economic Policy', The Journal of Economic History. Vol.18, No.4 (Dec.,1958), pp. 418-434. Published by Cambridge University Press.

Dow, S. 2009, 'History of Thought and Methodology in Pluralist Economics Education', October 2009 Sheila Dow, A Pluralist Handbook for Economics Education, London: Routledge, 2009, pp. 43-53.

Fullbrook, E. 2008, 'Pluralist Economics'. 2008 - philpapers.org. Palgrave Macmillan

Gibson, J. 1979, 'The Theory of Affordances: The Ecological Approach to Visual Perception', Houghton Mifflin, Boston.

Gordon, D. 1965, 'The Role of the history of economic thought in the understanding of modern Economic theory'. *The American Economic Review* Vol.55, No.½ (Mar. 1, 1965) pp. 119-127.

Graves, C. 1970, 'Levels of Existence: An Open System Theory of Values', *Journal of Humanistic Psychology.* 10(2): 131-155

Heft, H. 2003, Affordances, Dynamic Experience, and the Challenge of Reification Ecological Psychology, 15(2), 149–180

Keynes, J.M. 1936, *The General Theory of Employment, Interest and Money,* The Macmillan Company, London.

Natsoulas, T. 2004, 'To see things is to perceive what they afford: James J. Gibson's concept of affordance' The journal of mind and behaviour Vol. 25 No.4 pp. 323-347 Published by Institute of Mind and Behaviour, Inc.

Norman, D. 1988, *The design of everyday things,* Basic Books, New-York.

OECD 2019, Organisation for Economic Cooperation and Development. SG/NAEC(2019)3 12 Sept 2019. *Beyond growth: Towards a new economic approach.* 17-18 Sept 2019, OECD Conference Centre.

Reed, E. 1996, *Encountering the World: Toward an Ecological Psychology*. Oxford University Press, New-York.

Rockwell, T. 2005, *Neither brain nor ghost: A non dualist alternative to mind-brain identity theory* Chapter 10: Dewey and the Dynamic Alternative.

Sahlins, M. 1972, The Original Affluent Society. Extract from *Stone Age economics* by Marshall Sahlins. 1972 Aldine Atherton Inc. Chicago, Illinois.

Smith, A. 1776, An Enquiry into the nature and causes of the Wealth of Nations, W. Strahan and T. Cadell, London.

Solow, R. 1985, Economic History and Economics. *The American Economic Review, 75*(2), 328-331.

IEDAE, 2016, *Dynamic Theory of Needs Supply and Progress*. May 12, 2016, Available online <https://youtu.be/ids3CyA5EKQ>

Weeks, J. 1989, A critique of neoclassical macroeconomics. St. Martins Press. New York

Wilber, K. 1996, *A brief history of everything.* Boston and London: Shambhala pp.200-285.

Williams, J. McNeill, J. 2005, 'The current crisis in neoclassical economics and the case for an economic analysis based on sustainable development', U21 Global Working Paper, 2005.