

RESEARCH ARTICLE



Advancing Kondratiev Wave Complexity through Bunge's Emergence, Braudel's History, Veblen's Institutions and Polanyi's Double Movement¹

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Abstract. Kondratiev has rightly been called the father of long wave analysis for his empirical and theoretical contributions to conjunctural analysis. Although many other economists of the former Russian Empire made contributions to the field, for decades, long wave studies remained in the background of scholarly inquiry until the capitalist crises in the 1970s and 1980s. Since then, long waves re-emerged as an exciting field of inquiry, leading to a better understanding of the dynamics of capitalism. This paper seeks to contribute to long wave research by applying some core principles of scientific realism, complexity and emergence to the analysis. In the first section, temporal, vertical and horizontal dimensions of complexity and emergence are scrutinised, following the realist scientific philosophy of Mario Bunge. The second section deals with the work of Fernand Braudel, who situated conjunctures (Kondratiev waves) and phases of evolution between events and long-term structures (the *Longue Durée*). The third section discusses Thorstein Veblen's culture-institutions-habits-individuals (CIHI) nexus and Karl Polanyi's concept of the double movement within the context of the long waves and Braudel's work. The study provides an in-depth analysis of the realistic vertical, horizontal and temporal emergence of Kondratiev waves of capitalism from the 1790s to the 2020s. Thus, these findings can be useful for further studies in this field, making waves more historically and institutionally relevant to understanding the world and its development.

Keywords: Nikolai Kondratiev, realism, complexity and emergence, temporal emergence, vertical emergence, horizontal emergence, historical specificity, culture – institutions – habits – individuals, double movement, contradiction, Mario Bunge, Fernand Braudel, Thorstein Veblen, Karl Polanyi

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ИССЛЕДОВАТЕЛЬСКАЯ СТАТЬЯ

Развитие волновой теории Кондратьева посредством концепции эмерджентности Бунге, исторических работ Броделя, институциональной теории Веблена и концепции «двойного движения» Поланьи

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Аннотация. Кондратьева по праву называют отцом длинноволнового анализа за его эмпирический и теоретический вклад в анализ конъюнктуры. Многие другие экономисты Российской империи внесли свой вклад в эту область. Но вплоть до кризисов капиталистической системы 1970-х и 1980-х гг. длинные волны оставались на заднем плане научных исследований. Однако последующий рост научного интереса к проблеме длинных волн позволил значительно расширить наши представления о динамике капитализма. Настоящая статья представляет собой попытку внести вклад в исследования длинных волн посредством применения основных принципов научного реализма, сложности и эмерджентности. В первом разделе рассматриваются временные, вертикальные и горизонтальные измерения сложности и эмерджентности в рамках научного реализма Марио Бунге. Второй раздел посвящен работам Фернана Броделя, который рассмотрел циклы экономической конъюнктуры («кондратьевские волны») и фазы эволюции во взаимосвязи с событиями и долговременными структурами (*Longue Durée*). В третьем разделе анализируется концепт «культура — институты — привычки — индивидуумы» Торстейна Веблена и концепция «двойного движения» Карла Поланьи в контексте длинных волн и подхода Броделя. Таким образом, в статье предлагается углубленный анализ реалистичной вертикальной, горизонтальной и временной эмерджентностей волн капитализма в период с 1790-х по 2020-е гг. Представленные результаты могут представлять интерес для других исследователей в этой области, поскольку позволяют теории кондратьевских волн стать исторически и институционально более релевантной для понимания мира и тенденций его развития.

Ключевые слова: Николай Кондратьев, реализм, сложность и возникновение, временная эмерджентность, вертикальная эмерджентность, горизонтальная эмерджентность, историческая особенность, культура- институты-привычки- индивидуум, двойное движение, противоречие, Марио Бунге, Фернан Бродель, Торстейн Веблен, Карл Поланьи

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Introduction

In the history of long wave analysis, authors born in the old Russian Empire played a dominant role. The early works of Alexander Parvus (1867–1924; born in Berazino, now part of Belarus) and Nikolai Kondratiev (1892–1938; born in Galuevskaya, Russia), as well as the important debates that involved Leon Trotsky (1879–1940; born in Bereslavka,

now part of the Ukraine), Dmitry Oparin (born near Moscow), and others in the 1920s, set the scene for a crucial stage in the development of economic thought and empirics. Many of these authors and their research topics were eschewed during the 1930s through to the 1970s in the USSR. However, more recently long wave analysis has made a comeback in Russia and elsewhere in Eastern Europe (e. g., see references in the work of Dementyev (2015)), as it has in many other nations, as a result of the crises of the world economy during the mid-1970s onwards, which have been interpreted as a Kondratiev downswing.

Of all these authors, Kondratiev's work has had the most profound influence on the development of long wave analysis, which is why Schumpeter (1939) termed such dynamics 'Kondratiev waves'. Several works of Kondratiev stand out. In 1922, Kondratiev produced a monograph called *The World Economy and its Conjuncture during and after the War* (Kondratiev, 1922), where an early statement of long patterns and dates are sketched in the light of the first-world war (Barnett, 1998. P. 105). Later Kondratiev (1923) detailed his long wave hypotheses and summarised his empirical conclusions in reply to his critics. Trotsky's many works on long waves (Trotsky, 1923; 1924) contribute to an alternative explanation, where the wave upswings and downswings are subject to the influence of an array of social, political and economic processes that go well beyond the economic data of Kondratiev (Mandel, 1975).

In response to Trotsky and others, Kondratiev (2002) differentiated between evolutionary, long wave, trend, and developmental processes (see Barr (1979)), and went on to present his most famous empirical analysis of long waves, which had its first English publication in *The Review of Economic Statistics* (Kondratiev, 1926). Here Kondratiev set out the basic periodicities and amplitudes of long waves that most scholars follow, more or less, right up to the present:

1st Long Wave: Upswing: 1780s/early 1790 until 1810–1817;

Downswing: 1810–1817 until 1844–1851

2nd Long Wave: Upswing: 1844–1851 until 1870–1875;

Downswing: 1870–1875 until 1890–1896

3rd Long Wave: Upswing: 1890–1896 until 1914–1920;

Downswing: 1914–1920 until ??

Meanwhile, Oparin developed a vigorous critique of Kondratiev's theoretical work, which to some degree 'forced' Kondratiev (following Marx's analysis of Juglar cycles) to posit his endogenous theory involving conjunctures of durable fixed capital (Kondratiev, Oparin, 1928).

Hundreds of works have been published on Kondratiev waves, especially since the resurgence of interest in the subject during the late 1970s, 1980s to the present, and in many ways Kondratiev's legacy continues to majorly influence scholars. Schumpeterian, Rostovian, neo-Marxian, historical, and institutional works on long waves continue to pay homage to Kondratiev as the first really scientific analyst of conjunctures of the capitalist economy. In this context, the current paper seeks to provide some tools for reconstructing how Kondratiev waves are investigated. These tools involve applying a realist analysis of vertical, horizontal and temporal emergence to enhance our understanding of long movements of the capitalist economy. This could be considered a re-assessment of long waves in the light of the type of processes Kondratiev and Trotsky analysed vis-

a-vis—the former’s ‘evolutionary, long wave, trend, and developmental processes’, and the latter’s ‘social, political and economic factors’—in a modern light.

The first tool applies Mario Bunge’s realist, complexity and emergent scientific-philosophical framework to these Kondratiev conjunctures. The second uses Fernand Braudel’s triadic temporal emergence historical model of (1) (crucial) Events with (2) Conjunctures (long waves) and (3) very Long Movements in capitalism, to situate long waves in history. In addition, the third utilises Thorstein Veblen’s evolution of institutions and Karl Polanyi’s double movement to show how institutions undergo vertical and horizontal emergence, evolution and often decay or qualitative change through new long wave forms. The argument of this paper is that Kondratiev waves can be more fully contextualised historically and institutionally through use of these tools.

Kondratiev Waves and Bunge’s Realistic View of Emergence-Complexity

This section outlines the nature of emergence in complexity theory and its importance to the Kondratiev waves, utilising the work of a scholar regarded (with many others) as the greatest realist scientific-philosopher of the last 100 years Mario Bunge (1919–2020). Bunge’s realist analysis of emergence is contained in his nine-volume *Treatise on Basic Philosophy* (Bunge, 1974; 2009¹), which is summarised and developed further in his single-volume *Emergence and Convergence: Qualitative Novelty and the Unification of Science* (Bunge, 2003a). Bunge is especially of interest to social and political economists, since he believes that an understanding of the world requires merging at least two and preferably more fields of science in order to develop an interdisciplinary analysis of the world. In this context, he has done work in the fields of social economics (‘socio-economics’) and political economy (‘econopolitology’) (Bunge, 1998), among others, since single-area fields are not conducive to adequately understanding concrete problems of the real world.

To Bunge, the core ‘thing’ (an important concept for him) about science is to resolve real world problems, such as poverty, climate change, crime, financial crises, anomalous socioeconomic performance, disease, and so on. However, since such problems can only be adequately understood through an inter-/multi-disciplinary analysis, our field of vision must necessarily be rather broad. Bunge also believes that seeing the world as comprising ‘systems’—the world political economy system, criminal justice systems (his ‘favourite’ topic), bodies, brains, cells, etc.—helps studying these problems. Bunge’s system (*s*) model (*CESM*) includes system composition (*C*), environment (*E*), structure (*S*) and mechanism (*M*): $CESM(s) = \langle C(s), E(s), S(s), M(s) \rangle$. For instance, an institutional political economy system [*IPE*(*s*):] includes the main components, such as individuals, groups, resources and institutions. The main environments include geography, climate, species and culture. The main structures include relationships within and between networks, groups, organisations and markets. The main mechanisms (or processes) include cooperation, competition, habitual practices, ways of organising, trade, work, and information processing.

For Bunge, the core principle of systems is emergence, since it is the ‘thing’ that makes complex systems complex. Emergence (or complexity) proposes that real systems cannot be reduced to simplistic ideas such as maximisation of utility, profitability, or moving to equilibrium, because individuals (as persons or corporations) always exist within a wider view of groups, institutions and society; and *long-term* change can never

¹ Bunge regards his 2009 book (informally) as a ninth volume of his *Treatise on Basic Philosophy*.

revert back to equilibrium, because important changes always involve social systems, their components, plus rearrangements of practices. Core components, e. g., individual habits and institutions, thus become modified through time and influence other changes in habits and institutions (plus other components and structures), such that socioeconomic systems undergo constant evolution and metamorphosis. Ongoing change—or emergence—to varying degrees is the norm for political economy systems.

Novelty is thus a core emergent notion (concept and process), since systems that change historically move from smaller quantitative to greater quantitative things; and, more fundamentally, from specific qualitative elements to quite different qualities (Bunge, 2003b; Clayton, 2006). This is the one of Hegel's ideas that Bunge thought was useful. Political economy systems undergo metamorphosis and eventually become so different that they constitute a new phase or stage of the system, because the habitual and institutional modifications are quite different from previous ones. Novelty also involves qualitatively different processes and outcomes of production, consumption and reproduction, such as movements from skilled workers to robotics, and from cars driven by humans to driverless cars. Optimisation and maximisation are generally not possible due to the calculative limitations of the human mind and unknown and unknowable future, they thus generate an uncertain environment, even though various tendencies and trends are able to be ascertained which offer some broad visions of the future, involving various scenarios and potential outcomes.

The *principle of emergence* (or complexity) helps us situate long waves institutionally and historically. Indeed, when Bunge was enunciating his system of philosophy he posulated, in several places, how to scrutinise long waves and long-term (secular) performance and change under capitalism, such as was posited by “Kondratiev, Schumpeter, ... Braudel, ... and a few others”. He proposed examining the mechanism(s) (or complex processes) that propel such unstable dynamics as the obsolescence and rise of different techno-economic systems (Bunge, 1998. P. 279). The mechanism investigated in this current paper is the rise and demise of Kondratiev waves of socioeconomic institutions, which encapsulates the various techno-economic structures and situates them in a wider scheme of temporal, vertical and horizontal emergent processes.

Emergence postulates that the social and political economy is a system or part of a system: systems of individuals, institutions, nations, regions and global economy (Bunge, 2003a). It also posits another good idea of Hegel: the whole is qualitatively different to the sum of the parts. Large systems, such as capitalism, are comprised not only of vertical systems (e. g., individuals, institutions, nations, regions, global economy), but also horizontal systems (e. g., meso-institutions such as corporations, states, families, global organisations, as well species, genders, ethnic groups and classes which can also be viewed vertically). Emergence also posits that every vertical level of a system (micro, meso, macro, global) is qualitatively different (novel), and cannot be reduced to lower- or higher-level systems. Thus, the workings of institutions cannot be reduced to individuals, nor can individuals be reduced to institutions. Rather, the qualitatively different outcomes correspond to the different ways in which social circles are organised, whereby individuals become active within these circles (Elder-Vass, 2011). Interaction between individuals within social circles is thus a core part of explaining the emergence of the higher-level systems or parts of systems (e. g., institutions). Emergence also postulates that there are different temporal levels which cannot be reduced to each other, but which do interact through various processes. Later we illustrate the importance of

these Time-Space-Relations corresponding to various processes within the social economy, such as Events, Conjunctures (Kondratiev waves), and the *Longue Durée* (Braudel, 1995): the ECLD historical framework.

Changes, evolutions and metamorphoses involving social circles are thus the outcome of the complex emergence and interplay of various processes. These include (1) various forms of flexible or more rigid organisational roles, rules and patterns; (2) individuals with capabilities, traits and personalities differentially affecting these roles, rules and patterns; (3) historical blind drift and chance factors generating an often meandering style of change; (4) stylised facts, patterns and contradictions emanating from within and between the systems. In this complex interdependency of various processes, loose voluntarism ('individuals are the core units for activating change') and rigid structuralism ('social systems and institutions determine individual actions') are eschewed.

Section 2 makes more explicit the process of reconstructing Kondratiev waves based on the principles of historical specificity and temporal emergence, with special attention to Braudel's historical model of Events, Conjunctures and the *Longue Durée* ('ECLW'). Section 3 details more of this reconstruction of Kondratiev waves through Veblen's culture-institutions-habits-individuals (CIHI) framework and Polanyi's 'double movement' concept linked to Braudel's historical model.

Kondratiev Waves and Braudel's Triadic Model of History

The principle of historical specificity states that political economy theory, empirics and policy must be embedded in an historical view of capitalism (and, if relevant, other socioeconomic systems), evolving and transforming through time. History is important because of path dependence: the past affects the present and the future in substantive ways. Political economy is not an equilibrium science. It is a systems science, concerned with dynamic structure, change, motion and hence emergence within institutional systems. Long-term institutional processes do not usually revert back to equilibrium once change has been instigated. Rather, the change, such as a new habit or institution, also changes (and is affected by) the other habits and institutions in the system, usually leading to amplified effects, including feedback mechanisms between people, institutions and the whole system (within a geographical and ecological environment). We are always in the process of becoming, or emerging, because the core thing about Kondratiev waves should be dynamic motion, ongoing change plus various forms of novelty through historical time.

History reveals that everything undergoes metamorphic phases, stages, and other transformations. Usually the changes are evolutionary and destructive/creative, and often revolutionary, as capitalism is forever destroying and creating durable relationships and forces, while the forces against (or reforming) capitalism are also impacting on the system (Polanyi, 2001). Such changes tend to eschew voluntarism and structuralism, as mentioned above, since there is in motion a complex ongoing process of interacting individuals, habits, institutions, organisations, cultural patterns and vested interests. Kondratiev wave analysis needs to become more flexible by incorporating four rules into its framework. The first rule is: individuals affect change through modified habits, capabilities, traits and personalities. The second rule is: individuals influence change through working with others within organisations such as corporations, states and families, which have specified (and changing) roles, routines, rules and norms. The third rule is: blind drift and chance factors affect transformation through non-linear and mean-

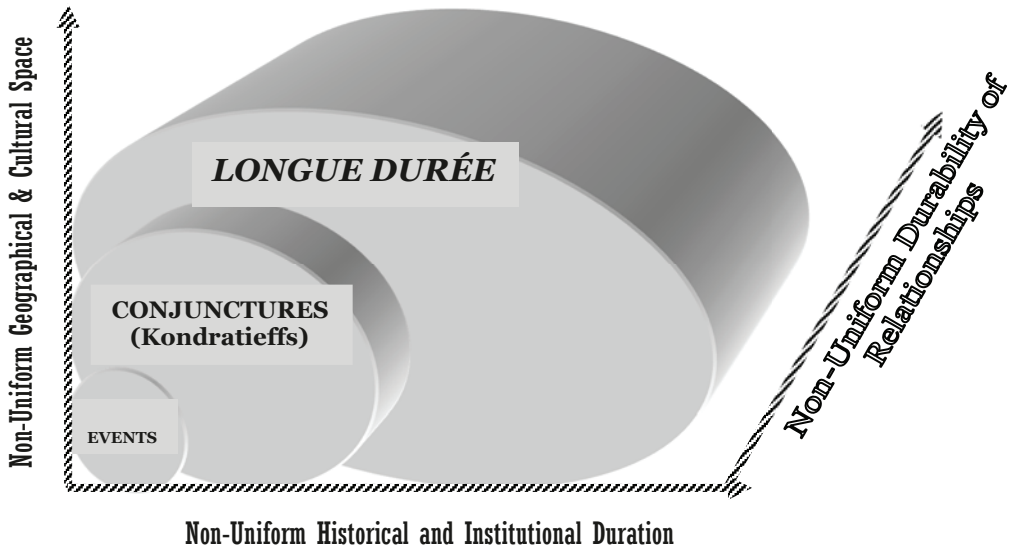


Fig. 1. Space-Time-Relational Emergent Levels: Events, Conjunctures & Longue Durée (Stylised). Historical Time-Space-Relations (cross-hatched indicating non-uniform styles, duration, space, relations)

dering patterns that are usually hard to predict (Jennings, Waller, 1994). The fourth rule is: there are stylised processes, historical regularities, and contradictory patterns which provide some very broad prognoses for the path of history.

Complexity, emergence and Kondratiev wave scholars seldom explicitly analyse temporal emergence, because they usually have a cursory understanding of history, even though they often discuss novelty as a core element of waves. Novelty emanates from history, from the emergent processes involved in resources, institutions, groups and individuals working through time-space-relations to transform reality. Political economy is intimately concerned with history and complexity, and it is not surprising to see complexity theory and especially temporal emergence as important to their inquiry. For instance, Veblen (1912), the founding father of institutionalism, unwittingly analysed emergence, as linking historical evolution with institutions and in turn institutions with habits and individual ways of life, at the structural and temporal levels (see Section 3). Veblen's temporally emergent perspective is similar to that of Fernand Braudel (1902–1985), who, to reflect how important he is, was voted the top historian of the past 60 years¹.

Braudel, of the French Annales School, made these temporal emergent levels more explicit, that can help situate Kondratiev waves in history. In his three major works, he provides a complex view of capitalism temporally emerging through a multi-dimensional emergent perspective. In his multi-volume magnum opus, written partly in a German POW camp during the second world war, *The Mediterranean and the Mediterranean World in the Age of Philip II* (Braudel, 1973), he showed that there are different ontological levels to the history of humanity, which can be summarised as comprising “Event history”, “Conjunctural history” (e. g., Kondratiev waves), and “structural history” (*Longue*

¹ A 2011 informal poll of historians, by History Today, concluded that Braudel was the ‘top historian of the past 60 years’ (followed by E.P. Thompson & Eric Hobsbawm): <https://www.historytoday.com/blog/2011/11/top-historians-results>.

Durée): the ‘ECLW model of history’ (Braudel, 1982a). Figure 1 below provides a stylistic outline of examples of these emergent levels through historical time, environmental space and socioeconomic relations.

Braudel saw Events, Conjunctures, and the *Longue Durée* (broader structures) as linking non-uniform historical and institutional time (‘duration’) with non-uniform ecological and geographical space and non-uniform socioeconomic relationships, through emergent processes with differential styles and durabilities. This specific example illustrates quite different temporal-space-relations processes such as a moderately important election in a nation-state (event), a long wave dynamic for a region (conjuncture), and a specific hegemonic trend for the world-economy (*longue durée*).

“[S]o-called historical events, the trivial happenings of ordinary life—a train accident, the price of wheat, a crime, a theatrical performance, a flood” (Braudel, 1982b. P. 175)—tend to emanate in the “short-term” often without any significant impact on institutions or long-term history; they tend to be the terrain of microeconomists, microsociologists and microhistorians. These events tend to dissipate or lose their significance through time as people settle down and recover from their impact. However, there are such things as “Great Events”, including, for instance, world wars, revolutions, major terrorist attacks such as 9/11, and the meetings at Bretton Woods in 1944, which do not so easily evaporate and, in turn, affect the next level, that of the conjunctures.

Braudel saw the second level, the conjunctures, as changes associated with short cycles, Kondratiev waves and phases of evolution of capitalism. This includes, for instance, the waves of change linked to mercantilism in the 1400s to the 1700s. Then, there occurs a stage involving industrial capitalism, starting with ‘competitive capitalism’ of the 1790s-1840s through to ‘large scale production’ emerging in the 1850s, through to the 1890s in the core; then the stage of ‘monopoly capitalism and imperialism’ (dominated by finance) from the 1890s through to the 1930s; followed by the ‘Fordist and Keynesian welfare state’ era starting in the 1940s through to the structural crises of the 1970s and 1980s; and thereafter the evolution of ‘neoliberalism’ (dominated again by finance) from the 1980s to the global financial crisis and its aftermath of 2008-[2014], and the corona crisis. This time scale most evidently corresponds with the temporally emergent rise and demise of systems of institutions associated with Kondratiev waves.

The third time scale, which especially interested Braudel, was the *longue durée*, involving at least one hundred years of structural arrangements that evolve usually relatively slowly but consistently through historical time. Typically the changes are slow, but occasionally they become structurally crucial and apparently sudden, such as the long-term evolution and transformation of mercantilism (commercial capitalism) from the 15th through to the 18th centuries especially in Europe; and industrial capitalism, from the late 1700s through to the present, although more latterly especially including other processes such as virtual reality and services. These structures involve human geography (e. g., relationships involving climate, regions and resources), culture, civilizations, and hence mental images and ideologies as they constrain and enable action and evolution into the future. Evolution and metamorphosis involve also periodic and structural crises; these “deep structures of life [which] are its moments of rupture, its brusque or slow deterioration under the impact of contradictory pressures” (P. 195).

In *The Mediterranean World* (Braudel, 1973), Braudel treats all three levels as important, since he has three sections: ‘economic geography’; social and economic history; and individuals and groups. In his second major work, the three-volume *Civilization*

and *Capitalism 15th-18th Century* (Braudel, 1979), most emphasis is given to the conjunctural and structural levels. His third great work, the two-volume, *The Identity of France* (Braudel, 1986), treats all three levels in a synchronous fashion. Braudel sometimes treats events as trivial: but, as the record shows, and some authors emphasise (e. g., Kinser (1981)), for Braudel it depends on the subjects in question, and, in principle, all three levels interpenetrate and are crucial to the complexity and emergence of the processes that evolve (as Macfarlane (1996) also argues).

Turning to political and social economy, Braudel (1982b. P. 202) notes that, “The genius of Marx, the secret of his lasting power, is that he was the first to invent real social models, based on the historical *longue durée*”. He added that the trouble with Marx and many of his followers is that such “models have been frozen in their simpler form, by treating them as immutable laws, as a priori automatic explanations”. These (neo-) Marxian models can be enhanced, however, “if one allows them to enter the changing rivers of time [where] their framework would be ... constantly applicable, but in nuanced forms, successively blurred or rekindled by the presence of other structures, ... subject to rules ... and ... other models” (P. 202).

Kondratiev wave analysis could be said to be doubly anomalous. Firstly, it needs to be supplemented through nuanced forms, other structures, rules and models; secondly, more importantly, it largely ignores the *longue durée* (in principle), and hence eschews the innovation which its mentor (Marx) created, and which Braudel posits as crucial for an understanding of the world. Kondratiev wave analysis should mediate the three temporally emergent levels—episodic time (events), conjunctural time and the *longue durée*—especially when it comes to events that change history and the structural arrangements of long-term capitalism. Indeed, since Kondratiev wave analysis seeks to explain and describe the movement of capitalism from at least the 1790s to the present and beyond, it necessarily has to take into account, in principle, the *longue durée* to comprehend capitalism as a system and its long-term institutions plus cultural, climatological and geographical arrangements, and the core events within which history is embedded.

Some such self-conscious, mediation of conjunctures, events and long-term structures vis-à-vis temporal emergence needs to be incorporated into Kondratiev waves, even if it specialises mainly on the conjunctures/phases. This type of ‘temporal-spatial-relations emergence’ recognises that none of the time-space-relations dominates any of the others a priori, and that some degree of interaction between events, conjunctures and the long-term is required methodologically to enable Kondratiev waves to be realistically scrutinised. For instance, a necessary requirement for buoyant performance of the intermediate Kondratiev wave level is for the event level (including individuals and groups) to be operating effectively, and also for the long duration institutions, ecological structures and relationships to be supportive of performance dynamics. Some Great Events, such as the GFC and the corona crisis, impact on and are affected by the conjunctures; while long-term (*longue durée*) processes such as changing geopolitical (hegemonic) power, and concentrations of greenhouse gasses (GHG) in the environment, impact on and are affected by both conjunctural and major event, time-space-relations performance.¹

¹ Of course, some versions of long waves do include, e. g., US hegemony, as one of the core institutional spheres in their analysis, but it is undertaken in an ad hoc fashion, and other long-term processes (such

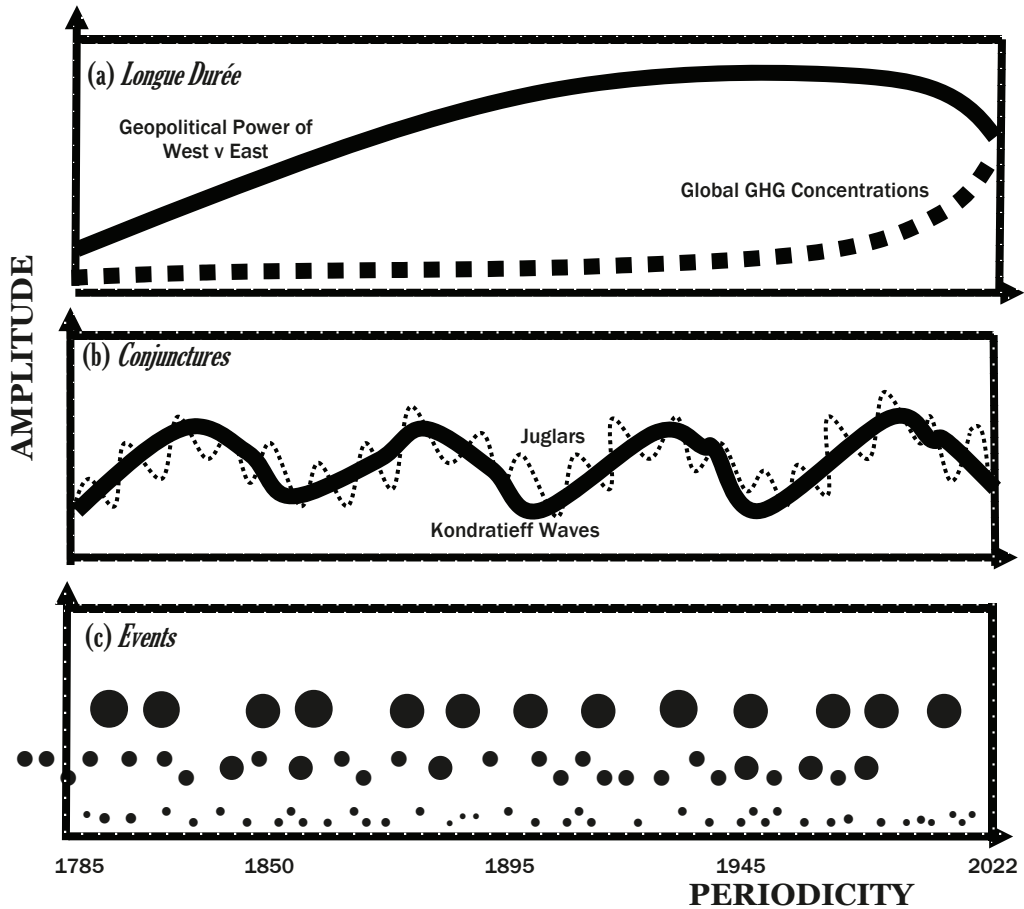


Fig. 2. *Emergent Rhythms of Longue Durée, Conjunctures, Events* (● = Great Event(s); ●● = Event(s)) (Stylised) (Not to scale) (source: Adapted from Geels (2006))

Events, conjunctures and the *longue durée* have different wave periodicities and volatilities. Figure 2 illustrates these three types of dynamics in broad, stylistic terms.

Shown here are *longue durée* rhythms such as the relative geopolitical (or socio-economic) power of West versus East, and concentrations of GHGs in the environment. Typical conjunctures shown include (40–80 year) Kondratiev waves and (7–11 year) Juglar cycles (Sherman, Kolk, 1996), plus phases of evolution of capitalism. Crucial events symbolically shown include wars, revolutions, major international accords, and short-term stylised facts. The processes of the *longue durée* tend to be more durable (with less erratic waves) than the conjunctures, which in turn are more durable (and less erratic) than the events. However, the real power of the historical model comes through interactive motion between all three processes. Hence, critical to Braudel is the process of transition throughout history, especially if and when events, conjunctures and structures are all moving upwards through Time-Space-Relations; and especially when they are all moving downwards as capitalism undergoes combined structural, conjunctural and event crises of reproduction, growth and confidence. The interactive processes re-
 as ecological structures and processes) have not yet been included, as part of the *longue durée* impacting on performance.

produce novel emergent outcomes for the historical system of capitalism: such as, on the one hand, major upward evolution, and, on the other hand, major systemic, conjunctural and event crises, change and possibly (and eventually) demise.

For instance, crucially, in *Civilization and Capitalism, Volume 3: The Perspective of the World*, Braudel (1984. P. 618) examined the significance of the instabilities of the mid-1970s, such as the rising power of OPEC, stagflation in the core economies, declining aspects of the Bretton Woods Agreement (BWA; Great Events); and the relative demise of US hegemony (*longue durée*). He then raised the core question of whether these changes correspond to some combination of (1) a declining Kondratiev wave of the conjuncture, and/or (2) a new transformational phase of capitalism as crucial as the transition from mercantilism to industrial capitalism (*longue durée*), and/or (3) the “start” of terminal secular crises of global capitalism, and the beginnings of a new historical socio-economic-political system (*longue durée*). However, being so close spatially, temporally and relationally to such processes in world history, Braudel was uncertain about his conclusions on this difficult question.

Nevertheless, raising this question reveals, yet again, how crucial the interdependencies between events, conjunctures and the *longue durée* can become, especially in such potentially epoch-making historical junctures, such as during the 1970s onwards. We may indeed have been and periodically may have re-established a critical intersection of all three Temporal-Spatial-Relational processes, as system crises of capitalism unfold through the decades. Among others, Immanuel Wallerstein (1999; 2001; 2013), who initiated and directed the Fernand Braudel Centre for many decades, has taken up the thesis of the ‘ongoing periodic and structural crises of the historical system of capitalism’ since the 1970s, and persistently argued it over several decades.

Conjunctures or Kondratiev waves thus need to be contextualised with long-term evolving structures and major events to reveal the greater complexity of emergent history. In this context, Section 4 will examine Veblen’s CIHI and Polanyi’s double movement, using Braudel’s model of history to highlight the complexity of industrial capitalism’s vertical, horizontal and temporal emergent performance from the 1780s to the 2020s.

Vertical, Horizontal & Temporal Emergence: Veblen, Polanyi & ECLW

O’Hara (1993) showed that Veblen (1857–1929) provided very *broad generalisations* about economic evolution that presaged recent Kondratiev wave analysis and provided a general summary of waves and phases of socioeconomic change since the late 1700s, especially in the core economies. Veblen also provided insights into institutions, habits and individual action towards certain objectives which enhanced Kondratiev wave analysis (O’Hara, 2000; 2002), and need to be documented more specifically. Figure 3 illustrates the way in which we incorporate Veblen’s theory and empirics of culture-institutions-habits-individuals, CIHI, into long wave inquiry, through the *vertical* dimensions of emergence:

This diagram shows the vertically emergent relationship between micro, meso, macro, regional and global systemic processes in the social economy, as well as illustrates some core relationships between the vertical and horizontal levels. Veblen’s (1912; 1964) great innovation was to eschew loose voluntarism and rigid structuralism by connecting the hegemonic culture of the vested interests with institutions, and in turn the institutions with habits and individuals, in a way that seeks to comprehend problems of social repro-

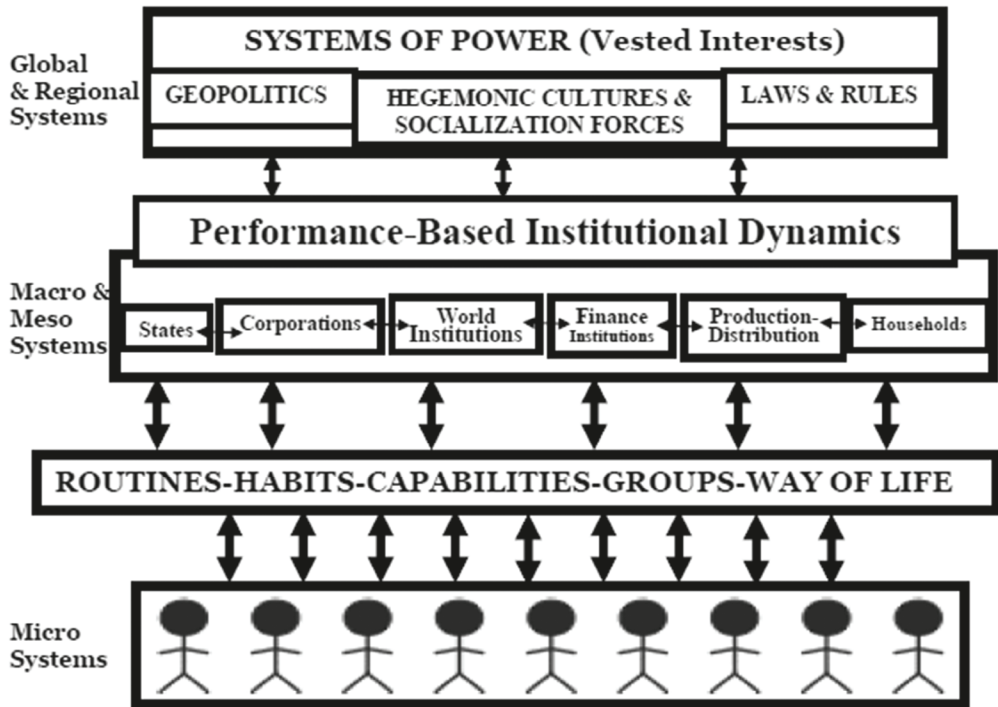


Fig. 3. Vertical emergent levels: Micro, meso, macro, regional and global systems

duction and agency. He thought that individuals seek certain objectives but are also influenced by habits and routines, which enable them to become involved in roles within institutions, which are influenced by hegemonic cultural arrangements, rules and laws. Individuals do not exist in isolation since they are to varying degrees socialised into accepting the prevailing institutions of, for instance, business, nationalism, religion and conspicuous consumption, through these habits and accepted ways of life and thought. However, occasionally they will evade such socialisation forces or embrace different ones by “choosing” more innovative solutions for the ‘life of the community’, as Veblen (1912) called it.

The way in which Veblen sought to explain the relationship between theory and history was neither through description nor through abstract theory. Instead, he seems to have unwittingly undertaken a particular version of what is now called “Big History” (see Christian (2018)), which seeks to conceptually explain the main factors underlying motion and change, while being able to apply this conceptual apparatus to history in terms of the big issues and stylised dynamics. In this context, Veblen’s vertically emergent triadic architecture, schematically summarised in Figure 3, seems remarkably similar to the temporal-spatial-relations, structure-conjunctures-events, Big History, triadic schema of Braudel; and reading Veblen’s works it is clear that he sought to lay the foundations of the long view (Veblen, 1912; 1914; 1990), while also outlining the phases of evolution and conjunctures of the system (Veblen, 1965; 1964), and interspersing it with core event history in order to realistically embed the discourse in real time (Veblen, 1917; 1941).

For Veblen, habits and institutions are the social cement that bind individuals together and condition or influence the ‘way of life’ of the community. This way of life is enabled by correlating beliefs, values and behaviours between individuals and groups.

The main institutional spheres at the meso-horizontal level that Veblen studied were those of business, industry, the state, finance, world-economy, and the family-community. The creative force of society he thought to be the 'community's joint stock of knowledge' (an emergent phenomena) which includes the knowledge, skills and technologies of the community, including (among other factors) trust, communication, plus instrumentally dominant mores and norms. The problem is that dominant individuals, classes and groups of people tend to come together to exploit the community's joint stock in their own interests at the expense of the (emergent) common good (Veblen, 2010).¹

The way in which people within institutions are influenced by the vested interests against the 'common people' is through the socialising influence of business, nationalism, religion and demonstration effects that usually affiliate working and middle class citizens with the upper classes through patterns of habits, mores and consumption. These habits (Waller, 1988) and routines (Nelson, Winter, 1982) establish certain repetitive actions and thoughts that enable the institutions to be reproduced usually without major rebellion. Individuals formulate these habits as a result of interaction within and between familial, community, educational and national (and sometimes regional and/or international) institutions, wherein they become influenced by various "enabling myths" (Dugger, Sherman, 2000).

Armed with a theoretical apparatus of the CIHI nexus to evade loose voluntarism and rigid structuralism, Veblen developed a temporally-emergent understanding of the evolution of the institutions of capitalism from the late 1700s through to the early 1900s (O'Hara, 2000; 2002). Figure 4 shows how this Veblenian conjunctural history (and Polanyian history, see below) can be linked with the *long-term* and *events* to place the overall picture in (tri-figure) Time-Space-Relational, Braudelian, context (with the help of Hobsbawm, 1962–1999). Firstly, Veblen recognised the process of uneven development and the tendency towards hegemonic dominance, both at the international level and through domestic and regional institutions. He concentrated on the tendentially hegemonic nations as a point of departure (Veblen, 1990). He saw the emergence of industrial capitalism (in the long-term) and particularly competitive capitalism as a phase of evolution from the late 1700s through to the mid-1800s (1790s–1840s), especially emanating from the forces of British hegemony (1815–1875), and agents, such as especially the captains of industry, who provided finance plus organisational and technological skills for profitable enterprise. The rise and demise of performance through this phase was strong, with the conjunctural decline encapsulating 'structural crises of adjustment' (Freeman, Louca, 2001), including Great Events, such as the European Revolutions of the 1830s and 1840s.

From the 1850s, Veblen saw a new era of capitalism emerging, especially as continental Europe and the US consolidated their place in the market economy through the establishment of joint stock companies, shareholdings and the 'captains of industry'. This new wave of capitalism emerged through the long boom, large scale production and eventually inadequate market expansion. The subsequent overproduction and underconsumption trends in the major economies and elsewhere set in, especially from the mid-1870s, when deep recessions and crises emerged (also in the mid-1880s and mid-

¹ See the associated research on the principle of the instrumental and ceremonial functions of institutions associated with control of the social wealth, and the use of power, to influence the use of resources within the institutions and the wider culture (e. g., Bush (1987); Stanfield (1989)).

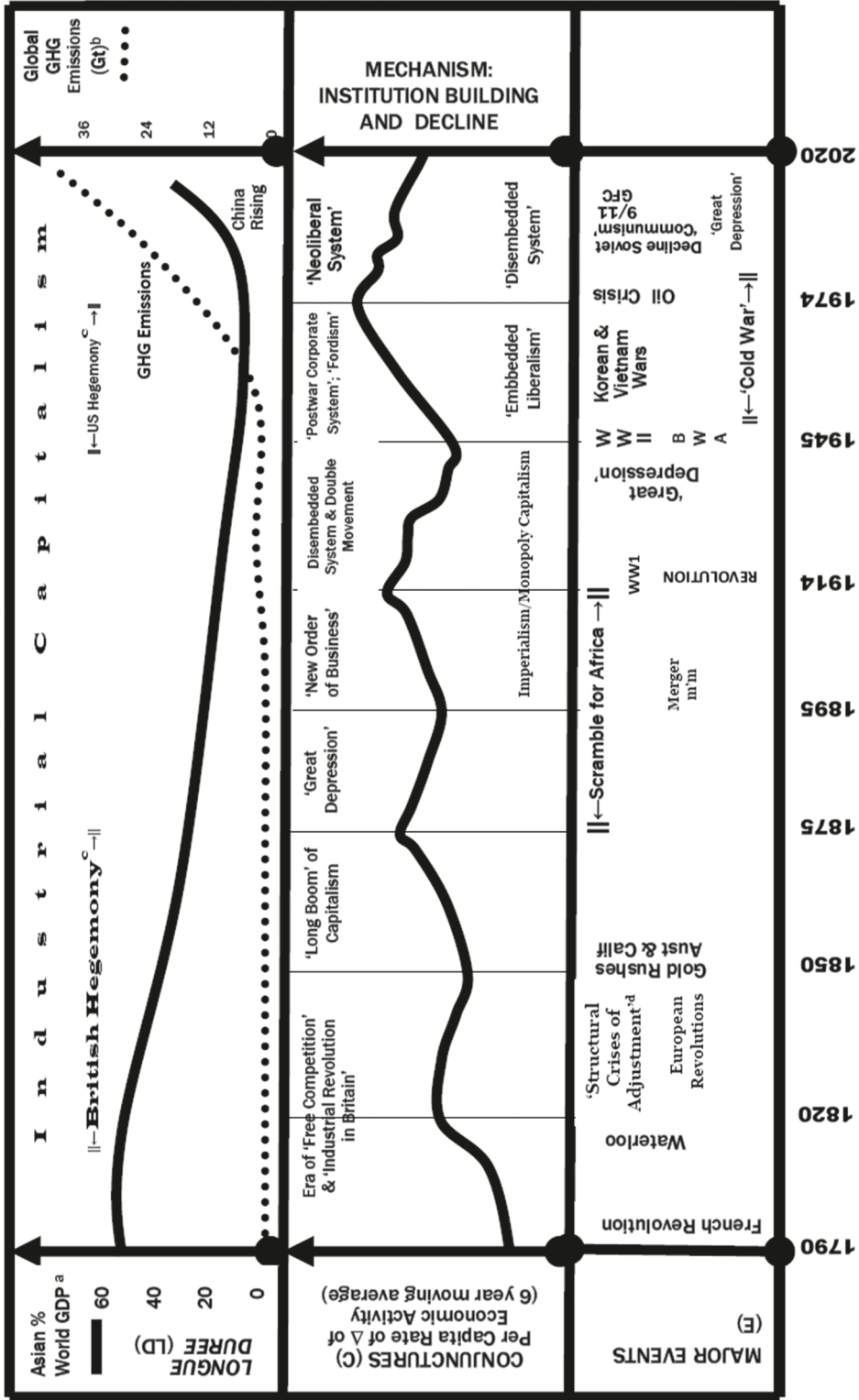


Fig. 4. Veblenian & Polyanian Style: Events, conjunctions and longue durée, (C=Stylised) (Source: a) Maddison (2007. P. 381); b) Ritchie, Roser (2020); c) Wallerstein (1983); d) Freeman, Louca (2001))

1890s in the major economies) hence the popularly known “Great Depression” of prices and profits during 1873–1896 (Freeman, Louca, 2001. Ch. 6).

Much of Veblen’s work is an attempt to explain the periodic and structural problems emerging through the 1870s–90s “Great Depression”; the “solutions” established to generate an alternative set of institutions for profitable business from the 1890s to the mid-1910s; and the endogenous contradictions variously promoting excessive boom, major dislocation and depression from the 1910s and 1920s (through the 1930s). He put emphasis on the resolution of overproduction and underconsumption through the new, temporally emergent “New Order of Business”, as he called it, emerging around the turn of the century (circa 1896–1900), underlying profit and accumulation through five key (or core) horizontally emergent institutions. The first was the trend to *consolidation and oligopoly* in the key sectors, especially steel, construction and primary industry. The second was the *imperial trend* of colonisation and globalisation, as British hegemony gave way to other nations seeking imperial power and authority (e. g., Germany, USA). The third was *greater financialisation* through the emergence of powerful ‘investment’ banks, intangible capital valuation (e. g., ‘goodwill’), absentee ownership, the higher use of credit and the dominance of the ‘captains of finance’. The fourth was a *state apparatus* in support of business through interlocking relationships of governance, tariffs, subsidies, armaments and legislative oversight. The fifth was a set of *familial and community institutions* of conspicuous consumption, emulation and the power of ‘substantial families’ within the leisure class who receive much of the economic surplus.

These five dominant institutional clusters, set within the context of groups of “social individuals”, events, historical trends and chance factors, provided the foundation for a Kondratiev upswing, promoting reproduction and possibly accumulation and broader performance in the major economies (his case study was the USA) from the late 1890s through to the mid-1910s. However, as mentioned, Veblen saw endogenous ‘contradictions’ (another good idea of Hegel) within and between these five institutions that he thought eventually would generate not just periodic major crises but also major system-depression for capitalism. The five dominant institutions provided a relatively well-synchronised set of social organisations and relationships between people that collectively exploited the community’s social wealth of knowledge, technology, communication and trust, at least for a time, as the anomalies within the existing institutions grew in significance, eventually leading to major dislocations, crises, and instabilities (Kondratiev wave downswing).

Endogenous contradictions within and between these institutional spheres manifested through multiple crises, since the institutional relationships were anomalous from the start, and as history evolved the intrinsic anomalies grew more problematic through time. The first such crisis was the First-World War (1914–1918) which upset the pattern of long-term reproduction set up decades earlier (van Duijn, 2006); wherein Veblen foresaw possible replacement of the vested interests of business with an alternative system of Soviet workers councils and community institutions working for the common good (Veblen, 1919; 1921). The second anomaly was the ‘roaring twenties’: a temporary boom based on speculative bubbles, debt financed systems, and effective demand anomalies, that helped to precipitate the ‘Great Depression’ (1929–39; including the high unemployment period) that Veblen (1923) predicted and which emerged shortly after his death, representing the greatest opportunity for progressive social change since the war.¹

¹ Despite Veblen’s innovations, especially his performance-based institutional theory and empirics, he did (along with Polanyi) underplay the labour process aspect of institutions.

Karl Polanyi's (2001) thesis of the disembedded economy and the protective response—the double movement—complements *flexible* Veblenian and Kondratiev wave analysis.¹ Polanyi (1886–1964) saw the Great Depression of 1929–39 and the Second World War (1939–45) as the culmination of the systemic emergent contradiction of capitalism, the double movement, between the disembedding *forces* of the “free” market and the embedding forces of reciprocity, redistribution, householding and informal market-places (or as Kirdina–Chandler (2017) states, “exchange” v. “redistribution”, or the X-Y matrix). The Great Depression and World War II were said to be the results of destructive creation caused by markets as workers were mobilised away from communities and families in the interests of expanding wage labour and generalised commodity production. Money and credit were regulated by the Gold Standard (and silver) from the mid-1800s, which set limits on the ability of markets to realise productive sales and investment, while banks and credit unions expanded debt instruments, creating fictitious capital values above fundamentals. Additionally, real estate, mining and capitalist agriculture enhanced the commodification of land to expand rent and business returns.

All this influenced various individuals, groups, institutional players and cultural forces to promote various “protective responses”, part of the double movement, to save society from the ravages of the market system, through corporate agglomeration, extreme nationalism, totalitarian states, and also eventually the New Deal and welfare-warfare capitalism. While the experiments to create *potentially* more embedded systems were both short-lived (e. g., German and Italian fascism) and long-lived (e. g., Russian state ‘communism’), in the US and Western Europe, varieties of Fordism, Keynesian welfare/warfare state, a moderation of competition, the renewal of family formation, (US) hegemony and regulated finance managed to succeed in generating both a new phase of evolution of capitalism and a new wave upswing of expanded profits, accumulation, growth and more general performance from the late 1940s through to the early-mid 1970s.

Long wave approaches to long-term change re-emerged in the 1970s-1980s on the basis of thirty years of institutional and technological emergence, consolidation, maturity and crisis during the 1950s-1970s. This was the clearest case in recent centuries of the rise, consolidation and demise of a relatively coherent but ultimately contradictory and crisis-oriented set of institutions. For a time, the institutional spheres of Fordism (including the limited capital-labour accord), the Keynesian-welfare/warfare state (capital-citizen accord), US hegemony, moderated competition, regulated finance and familial accord provided an embedded system of relative stability that generated high profits, investment, and growth for numerous nations of the core and many satellites during the 1950s-1970s. In the late 1960s and early 1970s, cracks started to appear in the institutions, and the contradictions manifested themselves in the mid-1970s, 1980s and onwards in the core and much elsewhere. Through uneven development, some nations in parts of the world, especially Asia (e. g., China), started long wave upswings during these crisis times for the core and elsewhere. At the aggregate global level, there are variable outcomes, depending on region and special attributes of some nations, as was seen earlier in this paper. (See O’Hara (2012; 2015; 2022)).

Thus, commencing in the late-1960s or early-mid 1970s, the contradictions of the Fordist mode of regulation or the post-war corporate system began to manifest themselves in several areas of the world, especially in the USA and Europe, and indeed much elsewhere as well. The first real sign was the 1974–75 global recession, followed by even

¹ See the articles by Veblen & Polanyi, respectively, in Davis, Christoforou (2013) book of readings.

deeper malaise in the early 1980s. Neoliberalism was becoming institutionalised, to varying degrees, in the global, regional, national and subnational communities through corporate activities, plus the contributions of Reaganomics, Thatcherism, new classical economics, monetarism, and supply side economics. The instabilities and crises continued, even getting more extreme, through the debt crises in the (semi-)periphery in the 1980s; global equity market boom and bust of the late 1980s and subsequent recession of the early 1990s; the Asian crisis, Internet bubble and crash of the late 1990s and early 2000s (along with the associated corporate crises); followed by the Global Financial Crises of 2008, and the corona crisis, the worst declines since the Great Depression of the 1930s.

Neoliberalism and the Washington Consensus policies thus gained ground and eventually dominated much of the global landscape (Mavroudeas, Papadatos, 2011). Neoliberal ideas and practices became engrained in the culture, institutions, habits and individual tendencies within many nations of the world (especially in the core, with regional variations). The key institutional structures and processes of neoliberalism include (a) a capital-labour regime favouring capital (a hybrid involving the flexible system, neo-Taylorist practices and global-spatial strategising); (b) a deregulated national financial system; (c) a deregulated system of global and regional trade and finance; (d) policy structures favouring lower taxes for business, balanced budget objectives, monetary policy controlling inflation, and dismantling of key elements of the welfare state; (e) the emphasis on greater competition and innovation in business; and (f) the advancement of individualism in familial and 'community' life.

Of course, protective responses have perpetually been propagated against the life of neoliberalism's tenure, and by the time of the GFC and especially the corona crisis, its hegemony has been broken, as it has become 'unfashionable'. These protective responses include, at the level of policy, the institutionalisation of functional finance, macroprudential functions, lender of last resort, and handouts to business and individuals, at least while socioeconomic crises are in operation. However, neoliberalism's institutions of deregulated industrial relations and finance, cash-starved public hospitals and universities, plus eschewing functional finance, usually continue to operate during non-crisis times (O'Hara, 2021).

Utilising Veblen's nexus of CIHI and Polanyi's double movement aids our understanding of Kondratiev waves by linking micro, meso, macro, regional and global dimensions as a matrix of interdependent Time-Space-Relations. This multi-dimensional vertical, horizontal and temporally emergent view of capitalism eschews rigid structuralism and loose voluntarism and needs to be incorporated into the basic fabric of Kondratiev wave theory and empirics.

Conclusion

The paper started by introducing Kondratiev's work on long waves set within the context of the Russian debates with Trotsky and Oparin and suggesting that these debates have helped shape long wave discourse right up to the present. Then Mario Bunge's realist concepts of complexity and emergence (temporal, vertical and horizontal) were introduced, indicating they can assist in advancing the state of Kondratiev wave theory and empirics when juxtaposed to Braudelian, Veblenian and Polanyian history and institutions. Braudel's temporal-historical model was thus used for situating Kondratiev waves within the context of major events and long-term structures: temporal-vertical

emergence. Kondratiev wave complexity can also be enhanced by using Veblenian and Polanyian temporal, vertical and horizontal emergence to situate culture, institutions, habits and individuals through the episodic, conjunctural (long wave) and long-term evolution of capitalism during the 1780s-2020s. It was concluded that using Bungian complexity and emergence in Braudelian, Veblenian and Polanyian contexts is a means of making Kondratiev wave analysis more flexible, institutional, evolutionary and historical.

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