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Shackle in Time — Time in Shackle on Challenging the Art of Making Predictions

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Abstract: GLS Shackle got much and the crucial inspiration from John Maynard Keynes. But that's not all. He took a number of further consequences of Keynes' thoughts. This implies for example ideal claims to economists — having to deal with both mechanical time and expectational time. In consequence the idea in this paper is to introduce Keynesian Kaleidics as an illustration of how complicated it is to analyze economic contexts. Finally it is discussed how the potential opportunities is to make alternatives to deterministic predictions on the basis of Shackles approach to economic analysis and especially the idea of scenario writing.

Key words: time; prediction; unkowledge; Keynesian kaleidics; scenario writing; moment-in-being; expectational time

JEL codes: B31, B41, D80

1. Introduction

The art of making predictions is a recurrent problem in economics. The recent financial and economic crisis is no exception and was not really anticipated and so it has been with crises many times before (Bezemer, 2010)[1].

It is very clearly expressed by Paul Krugman (2009, p. 1): "Few economists saw our current crisis coming, but this predictive failure was the least of the field's problems. More important was the profession's blindness to the very possibility of catastrophic failures in a market economy." or Ben Bernanke (2010, p. 5): "Most fundamentally, and perhaps most challenging for researchers, the crisis should motivate economists to think further about their modeling of human behavior. Most economic researchers continue to work within the classical paradigm that assumes rational, self-interested behavior and the maximation of "expected utility".

These economists describe a number of problems for economics: Insufficient insight into human behavior and undetected system failures, problems with the prevailing paradigm and modeling effort. All of this creates a poor basis for prediction.

This is the occasion to reconsider how the issues have been previously addressed. And therefore it is no coincidence that GLS Shackle (1909-1992) should be involved in this regard. His approach was more realistic and acts contrary to the mentioned approaches where economic agents often are faced with fundamental uncertainty.

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[1] Bezemer (2010) has presented a paper where he gives evidence that stock-flow consistent macroeconomic models helped anticipating the credit crisis and economic recession. The ubiquitous general equilibrium models in mainstream policy and research did not do it.

In these cases there are good reasons why it is difficult to make simple predictions.

The aim of this paper is first to introduce the inspiration that Shackle got from Keynes and secondly to specify Shackles further development of this about the concept of time. Subsequently the idea is to introduce Keynesian Kaleidics to illustrate how complicated it is to analyze economic contexts. In view of this the paper finally discusses the potential opportunities to make alternatives to deterministic predictions on the basis of Shackles approach to economic analysis.

2. Shackles Leit Motif

It is well known that G.L.S. Shackle in his economic thinking is Keynesian — even in someone's eyes a tirelessly fundamentalist one of this kind (Coddington, 1983). This categorization has probably done more harm than good. Against this background, it is much more interesting to identify the contributions Shackle had to Keynesian economics (Latsis, 2015, p. 1163; Pheby, 1987, p. 35)[2].

One of his acquaintances — J. L. Ford — has framed Shackle's main focus:

> "The overwhelming majority of Shackle's academic writings have been concerned with the many implications of the presence of uncertainty in the economic milieu; in effect, his *leit motif* has been, "time, expectations and uncertainty" (J. L. Ford, 1993, p. 688).

Shackle admired Keynes's untrammeled daring — his willingness to look into the abyss, to accept the fact that we must act without foreknowledge (Hill, 2008, p. 63)[3]. Shackle is even more explicit in one of his judgements:

> "The greatest innovation in Keynes's great trilogy of the *Treatise*, the *General Theory*, and the epilogue in the *QJE*, is his theory of the rate of interest. It is presented in fullest freshness and liveliest colors, and almost in its completed form, in the *Treatise*" (Shackle, 1974, p. 54).

Shackle generally lays much emphasis on chapter 12 in The General Theory and Keynes' famous article in Quarterly Journal of Economics in 1937, which substantially relate to uncertainty and expectations. In this context, the study of Keynes' opinions in these writings about fundamental uncertainty has led to a profound study by Shackle about the concept of time (Shackle, 1958, 1965, 1972). It is in fact, an extension of and not in contrast to Keynes (Mogens Ove Madsen, 2014). Similarly, as Keynes had a showdown with Tinbergen, Shackle also makes reflections on how far you can get with formal models in economics and especially when it comes to the problem of making predictions (Ford, 1993, p. 691): "In Time in Economics (1958), Shackle, had not only cast doubt upon the validity of the formal, mechanical time dynamics models, but his observations, if correct, excluded any type of forward-looking economic model, except for the next period. Prediction could be made for one period ahead given the state of current expectations and intentions, should these be known and should their interdependence in shaping the macroeconomy be also known."

Any theory which omits consideration of time is according to Shackle devoid of value (Ford, 1993, p. 691)[4].

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[2] Latsis (2015, p. 1163) where he argues: "… that reading Shackle as an economics process theorist allows us to see some of the standard criticism of his work in a new light". And Pheby (1987, p. 35): "… Shackle's "fundamentalist" interpretation of Keynes, when viewed through a more methodological perspective, takes on far greater credibility."

[3] Hill (2008, p. 63), where he also says, that Shackle maintains, that after the 1930s economists are coping with scarcity and uncertainty and that it was Keynes who in the 1930s drew all lines of force together as by a giant magnet.

[4] Shackle had nothing left over for a Walras-Pareto type of general static equilibrium, because special characteristics derived from the lack of time: "Time and everything that belongs to time: expectation and uncertainty; change and growth; ambition, hope and fear;

It is obvious, that Shackles writings developed into a special dialectic between the concept of time and economic thinking. Shackle is in his thinking in real time and he works explicitly from a definition of time.

Thus, the question is why is it so difficult to make prediction? What are the consequences of Shackles definition of time? Are there alternative ways of development of economics? In the following sections there will be searched for answers to these questions.

3. The Keynesian Roots

Shackle has at some point given a very vivid description of his participation in a seminar in 1935 in Cambridge, where Joan Robinson presented the main ideas to be published in The General theory:

> "… no other discourse has ever released upon my mind so staggering and thrilling a flood of light. At last I understood. I was released from the torments of my thesis, which struggled to explain unemployment in terms of a model of inflation. I tore it up. I began again" (Shackle, 1966, p. 53)

Shackle discarded his Hayekian thesis in order to begin again! The revised thesis appeared as a book in 1938 with the title: Expectations, Investment and Income. This book's analysis was focused on uncertainty and expectations, but also inspired by the Swedish macroeconomic school with among others Myrdal's time concepts of ex ante and ex post.

Later on Shackle describes the anatomy of Keynes's General Theory (Shackle, 1967). What is very basic and expressly set out in Chapter 12 of Keynes General Theory is uncertainty about the future, which blows the whole edifice of traditional economy down. The latter rested, implicitly on a concept of timeless equilibrium models performances which implied full access to the knowledge of all actors.

In this way "Shackle regards the General Theory as being very different from the deterministic, mechanistic and self-contained models that were spawned by that work" (Pheby, 1987).

But inspiration comes as indicated before not only from the General Theory, but also from the Treatise on Money and Keynes Quarterly Journal article from 1937. There is something very peculiar to the General Theory: "My suggestion is that he (Keynes) wished the General Theory to be an outfit of tools, possessed indeed of its own unity and selfsufficiency, possessed of a dominant and central theme, but not constituting a rigid model of economic society. Keynes believed in the eclectic use of general ideas" (Shackle, 1974, p. 49).

In the following this inspiration from Keynes[5] will be followed by a more profound reading of Shackle.

4. Time in Economics

One of the interesting aspects of Keynesian economics is the issue of dealing with the concept of time not only in a theoretical sense, but time as a reality constitutive element.

Not least Shackle well-known "de Wries Lectures", which were published under the title Time in Economics in 1958 marks a very significant breakthrough for thinking about time in a more complete Keynesian way. In Shackles opinion Keynes' General Theory was, throughout, in two minds. It turns instinctively towards stable functions, uninterrupted movement along curves, underemployment "equilibrium", secular stagnation, step-by-step declension. But in reality it is not really the shape of the curves, but their broad bodily shifts and

discovery, invention and innovation, novelty and news" TE, p. 93.

[5] It is worth noting and what might have inspired Shackle that Keynes (1937, p. 222) also said: "The hypothesis of a calculable future leads to a wrong interpretation of the principles of behavior which the need for action compels to adopt."

deformations, which contains the meaning of Keynes' arguments. *The General Theory* had a different message (Pheby, 1987, p. 26)[6] than what is immediately communicated through the mathematical language suit (Shackle, 1973, pp. 517-518)[7].

In contrast to the historian and mathematician an economist is according to Shackle in a different challenging situation. The former treats time as space or as one dimension of space, like an outside observer. Shackle wants to contrast this with an inside view, which he calls the solitary present or the moment-in-being (Shackle, 1958, p. 13)[8]:

> "The mathematician treats time as a space, or as one dimension of a space, in which all points have an equal status, or importance or validity together, within one and the same prospect of the world … a simultaneous validity … a differential equation to express, say, the motion of the 'particle' of classical dynamics…. Consider the historian who is thinking, say, about the constitutional changes produced in England … All this long process presents itself to him in one panorama, as a unity, every part of it as real as every other part; he is an outside observer, not himself part of what he describes… I want to contrast the inside view which each of us has in the very act of living, the time in which we sense-perceive, feel, think, imagine, and decide … It is what I would like to call the solitary present of the moment-in-being." (Shackle, 1959).

If economics is treated like an outside observer would do, it will in the sense of Shackle be a kind of exterior dynamics that is mechanical in a determinate behavior of a machine of limited design — and it will claim to be predictive. But theories which tell us what will happen are claiming too much, at least if it is an econometrician:

> "In constructing his predictive macro-dynamics the econometrician naturally and properly treats the economy as a machine whose future behavior, in the absence of shocks from outside itself, is fully determined by its history over some stretch of the past, so that this future behavior is in principle predictable." (Shackle, 1954, p. 8)

It is important to note that according to Shackle, the inside view affects, however, also very much the Economist:

> "In contrast with such a theory we have one which purports only to describe the events of a single moment inside a single persons' mind. Into that moment may be packed thoughts, feelings, imaginations and decisions; but amongst these, something which has not arisen as necessary consequence of the events of preceding moments but has been newly inspired or created in this moment. If the moment can be thus essentially novel there can be no predictive inference from one moment to another but only description of the kind of brief system of events that can happen in the individual's mind in each separate moment. So this second kind of dynamics is descriptive and not predictive." (Shackle, 1954, pp. 8-9)

Time from the inside is the time in which we think, time from the outside is the time about which we think, as Shackle said[9].

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[6] Pheby (1987, p. 26), points out, that "Shackle regards the *General Theory* as being very different from the deterministic, mechanistic and self-contained models that were spawned by that work. However, he recognizes that *The General Theory* is a paradoxical work. For Shackle, this is due to the important distinction he draws between the method and meaning of Keynes's work".

[7] See by the way Shackle (1973, pp. 517-518): "A book which concludes, by difficult and entangled steps, that stable curves and functions are *allergic* to the real human economic Scheme of Things, proceeded to state this idea in terms of stable curves or functions. No wonder the critics have worn the Keynesian garment inside-out."

[8] See Shackle (1958, p. 13): "There is for us a moment-in-being, which is the locus of every actual sense-experience, every thought, feeling, decisions and action."

[9] The difference and interconnectedness between the two concepts are well explained in Atmanspacher and Dalenoort (1994, p. 293): "When we think of time, we always think of time in time. We seem to be no appropriate observers to observe time from outside. The self-referential nature of consciousness is related to the permanent change between subject and object of consciousness. In the domain of the mental, we may have a chance to discover a dynamics whose representation by a *temporal succession of states* is insufficient. There are essentially two ways of knowledge about temporal succession: mental and physical time. The former is based on inner experience, the latter on external events. However, the major difference between both concepts of time turns to be the status of the Now. It may be the Now which is the window to a dynamics beyond temporal succession".

Shackle (1965) ended up by making a four-way classification of Time: Mechanical time, evolutionary time, timeless models and expectational time (Shackle, 1965; Carvalho, 1983-1984))[10]. What is of particular interest here is the dynamic movement in time: Translation of the moment-in-being along the calendar axis (outside) and from one moment in to another (inside):

> "… the theoretician is confronted with a stark choice. He can reject rationality or time … Instead of accepting the incompatibility of time and reason, and electing to base our theories on one or the other, we can denature 'time' and make it an artifact, a space whose distinct points are co-valid like those of physical space." (Shackle, 1972)

This is the ideal claim to economists — having to deal with both mechanical time and expectational time. This is pivotal for the following sections.

5. Keynesian Kaleidics

Shackle has on several occasions rounded the concept of kaleidics[11] as an alternative to the ordinary Marshallian equilibrium analysis. As mentioned before there is an arresting contrast between the method and the meaning of Keynes General Theory. The method of the book is an analysis of equilibrium, but the meaning of the book is, that this kind of rationality is in the nature of things impossible and baseless, because men confront an unknown and unknowable future (Shackle, 1965, p. 44), and it is subsequently in the famous QJE article that Keynes discovers the soul of his own work (Shackle, 1965, p. 45), and refers to the concept of fundamental uncertainty or radical uncertainty and hammered out in the sentence "we simply do not know".

This contradiction in Keynes's theory causes Shackle to look for an alternative that can overcome equilibrium thinking. "There is a toy called the kaleidoscope, in which three mirrors face inwards in a tall pyramid and repeat in symmetrical reflections the random mosaic of colour formed by loose pieces of stained glass on the floor of the instrument. This toy seems strangely apt as an analogue of Keynes's method" (Shackle, 1965, p. 47).

This comparison with a kaleidoscope led Shackle to name Keynes's method at Kaleido-statics, since Keynes explained each temporary pattern as a natural result of certain circumstances (Shackle, 1972, p. 433): "The method implicit in the General Theory is to regard the economy as subject to sudden landslides of re-adjustment to a new, precarious and ephemeral, pseudo-equilibrium, in which variables based on expectations, speculative hope and conjecture are delicately stacked in a card-house of momentary immobility, waiting for "the news" to upset everything again and start a new dis-equilibrium phase". But their abrupt transitions one into another, Keynes left unexplained (Shackle, 1965, p. 48).

In Shackles interpretation, Keynes unfortunately went from a good method to a bad one between Treatise on

[10] Shackle (1965) especially the chapter "A Scheme of Economic Theory", where he defines the four concepts of time. See also Carvalho (1983-1984) for an interpretation of the definitions of these time concepts, where mechanical time is the time of the external observer, who knows everything, future as well as the past. Evolutionary time, where the observer is no longer omniscient — it is a segment of real history. Timeless models, in which time does not flow — like in General Equilibrium models. Expectational time, where agents know that the past is immutable and the future is to be created.

[11] The analogy of the kaleidoscope has also been used by Keynes himself (1930, p. 81): "Nevertheless we must not argue for these reasons that an expansion of the currency influence relative prices in the same way as the translation of the earth through space affects the relative position of the objects on its surface. The effect of moving a *kaleidoscope* on the coloured pieces of glass within is almost a better metaphor for the influence of monetary changes on price levels. For the way of thinking which I have criticized overlooks, or undervalues, the importance of two other factors, neither of which is conveniently included in 'economic friction'". Shackle (1974) was astonished, when he found this sentence many years later, because the analogy coincided with the one he used himself.

Money and The General Theory (Shackle, 1974, p. 80)[12]:

> "(Keynes) laid out on the bench the component parts of a Kaleidic method. Some of the best such parts he discarded, some incompatible ones be included, the conception as a whole he left incompletely and awkwardly assembled. But he showed what economics can be in the hands of a man who combined in some degree the insights, the felicities and the inspired audacities of the mathematician, the historian and almost the poet" (Shackle, 1974, p. 83)

In Shackle's approach Keynes' work can be reduced to two concepts, namely uncertainty and the liquidity preference. Investment, Shackle argues, is determined by the expectations of entrepreneurs which is vulnerable to unpredictable streams of "bad news" causing them to withdraw from the field and leaving resources unemployed. This is made possible by uncertainty. Liquidity preference can also explain the existence of money and the need to hold onto it in the face of uncertainty (J. F. Muellers, April 8, 2008).

Here we are in accordance with Shackle (1974) at the core: "Uncertainty is the kaleidic factor" and where there is uncertainty money is needed and every need for it can be said to arise from the lack or impossibility of knowledge (Shackle, 1974, p. 61).

Keynes (1937) posed in this respect a wonderful question: Why would anyone outside a lunatic asylum wish to use money as a store of wealth? He gave a clear answer by saying, that money was hoard as a hedge against incertitude — because the future can be very uncertain:

> "Because, partly on reasonable and partly on instinctive grounds, our desire to hold money as a store of wealth is a barometer of the degree of our distrust of our own calculations and conventions concerning the future" (Keynes, 1937).

This relationship is very important in the Keynesian monetary theory of production. More generally, Shackle following description of the sudden shift an economy: "The economy is in the particular posture which prevails, because particular expectations, or rather, particular agreed formulas about the future, are for the moment widely accepted. These can change as swiftly, as completely and on as slight a provocation as the loose ephemeral mosaic of the kaleidoscope." (Shackle, 1965, p. 44)

In another passage some years later, Shackle describes Kaleidic changes in the following way:

> "The meaning of these situations is that of momentary, ephemera glimpses at selected an rare points of a mainly un-adjusted, groping and speculative process, involving vast numbers of variables subject in many cases to an inherent restlessness and precariousness" (Shackle, 1974, p. 72; Lachmann, 1976, p. 61).[13]

For Shackle the general consequence is, however, clear enough: Economists can study the past, observe the present and imagine the future (Bausor, 1983, p. 2)[14].

To recap the previous distinction between exterior and interior dynamics, this approach to the time aspect also gives the following issue:

> "There is on one hand, the objective aggregative mechanical predictive dynamics sought by the econometricians, and on the other the subjective private descriptive dynamics of an individual … a study of human conduct, is faced with the question of free will or determinism" (Shackle, 1954).

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[12] It is worth noting, that Shackle (1974, p. 80) states, that "The two books are the same book. They express the same vision, the same distillation of experience, the same construction of thought. Yet their formal method and assignment of importance are vastly different". Differences are also found in the case of certain elements of theory

[13] Shackle (1974, p. 72). Restlessness are also described by Lachmann (1976, p. 61): "Restless asset markets, redistributing wealth every day by engendering capital gains and losses, are just one instance, though in a market economy an important one, of the forces of change thwarting the equilibrating forces. Equilibrium of the economics system as a whole will thus never be reached".

[14] See also Bausor (1983, p. 2): "The epistemic asymmetry of past and future also generates asymmetry between cause and effect. Constructing the future is an act of fantasy".

The possible contradiction between determinism and free will is generally a very central theme for Shackle, when we are dealing with a human society. It is also essential to how we can talk about and deal with the art of prediction.

From prediction to scenario-writing in economics

Shackles concept on time and thought on Keynesian Kaleidics means, that traditional deterministic and linear projection is not possible:

> "We can attack the thesis of the predictability of the economic world at three levels, claiming either, first, that prediction is impossible in practice; or secondly, that it leads to logical contradictions; or thirdly, that it denies the humanity of man" (Shackle, 1958, p. 103).

Shackle sees little scope then for prediction in economics. On the other hand explanation is a less demanding task than is prediction:

> "Prediction is at an unfair disadvantage. The symmetry of prediction and explanation is true only in an abstract world, where the data on which reason is to work are complete and certain for both purposes. This symmetry assumes at the selection of data has already been performed, is a manner which is guaranteed (whence and be whom?) to be correct" (Shackle, 1972, p. 349).

Symmetry is not possible, but what is left? Shackle opens a loophole, which is interesting to look at. Expectational time gives a freedom or power of the mind to create images and associate them with future moments (Shackle, 1954, p. 4). There is a texture in the world which prescribes, not what will happen but what can happen (Shackle, 1966, p. 760):

> "Each agent is deciding in a world of *subjectively bounded uncertainty.* For Shackle, this means that for each action open to the agent, s/he discerns a great range of possible ultimate consequences, but a range which, within any finite horizon, is bounded. All this may give the sequence of states seen by our detached observer a sort of continuity of texture which will enable him/her to make short-range guesses about the future" (Vahabi, 1998, pp. 557-558).

Vahabi states that the author/scientist of inertial dynamics then is moving away from the role of prophet towards the task of scientific description. There will be set a different agenda for the work to create a performance on an economy's future development: From being single-line predictors to scenario planners.

> "However, an inability to specify or define stimuli in advance does not necessarily mean that the economist cannot draw up scenarios concerning how particular systems may fare, and which policy measures might usefully change their fortunes. The economist should at least be able to classify and order environments in terms of key characteristics — for example, stability/turbulence, static technology/dynamic technology — before considering ways in which the decisions makers might seek to cope with different patterns" (Earl & Kay, 1985, p. 38).

From a Shackelian perspective it will be rejected that economists should make deterministic predictions (Shackle, 1958, p. 105)[15], but it will not be denied, that it is possible to provide insights on a range of things that could happen (Earl & Kay, 1985, p. 35). This means that it should be possible to highlight areas of uncertainty and delimit the bounds of unknowledge, but also to propose improvements to the design of a system and to discover ways of modifying or eliminating incidence of surprises in the environment (Shackle, 1953, pp. 112-117).

Loasby (Loasby, 1994, p. 519) notes, that too few economists have realized, but many in business have long known, that the purpose of a planning process is to change behavior and he mentions Shell as an example of a

[15] Shackle (1958, p. 105), has characterized these kinds of predictions in the following way: "predicted man is less than human, predicting man is more than human."

firm, where they gradually came to use scenarios as a way of giving greater freedom to its managers and that they "should explore alternative actions and their various possible consequences, and should do so liberating their imaginations from the constraints that are built into forecasting models, and from other sources of rigidity" (Loasby, 1994, p. 519).

Uncertainty as the driving force seen from a kaleidic perspective is not a threat to economic analysis and even to the possibility of rational behavior (Loasby, 1994, p. 520), but provides room for imagination, and the hope of discovering new knowledge (Earl & Littleboy, 2014, p. 198).[16]

6. Conclusion

The financial and economic crisis has not been easy to predict for economic science. It provides a challenge especially if prediction shall be a unique hallmark in economics. Shackles very early realization of the concept of time plays a special role in the understanding of economic events and leads him to two complementary concepts, expectational and mechanical time. It gives him the opportunity to give a different interpretation of Keynes real purpose in the General Theory, but equally also opportunities for a different approach to the problem of prediction. This has, as shown the consequence, that Shackles universe involves the creation of an alternative analytical approach, called Keynesian kaleidics. This does not provide opportunities for prediction as in traditional deterministic models, but instead it will be the answer to the prediction challenge, where it paves the way for the scenario writing.

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[16] According to a letter from Shackle to Jefferson in 1981 this is interestingly also recognized by Shackle: "I was extremely excited to read the lecture by Mr. Richard Seidl to the conference on Corporate Finance, in which he had explained Shells disavowal of the attempt to predict, as an unique path of history, the course of affairs for coming years, and Shells adoption of a new philosophy, calling for multiple scenarios differing widely from each other, and insisting on special attention to extreme members. This sheaf of diverse scenarios seeks to answer the question, not what will happen but what could or can happen. Since this is the attitude to our irremediable unknowledge of the future which I have been urging for very many years".

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