Rhythm as Form of Economic Process

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Sommaire

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Let us turn now to the neoclassical school of economics. The latter had first developed in France and Great-Britain between the second half of the 18th century and the first decades of the 19th century, then in the last decades of the 19th century in Austria-Hungary through the marginal revolution initiated by Carl Menger, and finally in the United States, although most economists had been educated in Germany and held a German PhD. This school was very late in adopting the concept of rhythm compared to the German historical school. But, by contrast with its challenger, it started a powerful international spread which lasted at least until the 1960s or 1970s. At the hands of neoclassical economists, the rhythm became one of the key concepts of the *business cycle theory*. It is therefore very important to assess the way it was introduced for the first time into economics.

_Economics without Rhythm (Juglar – 1856-1891)

Although the French economist Clément Juglar (1819-1905) is often considered as the inventor, in the 1860s, of the notion of "economic rhythm," this attribution seems rather incorrect and resulting from *a posteriori* projection.

In 1856 and 1857, Juglar published two important essays: *"Des crises commerciales en France de l'an VIII à 1855 – On Commercial Crises in France from 1800 to 1855"* and *"Des crises commerciales et monétaires de 1800 à 1857 – On Commercial and Monetary Crises from 1800 to 1855,"* followed in 1862 by his most famous book: *Des crises commerciales et de leur retour périodique en France, en Angleterre et aux États-Unis – On Commercial Crises and their Periodic Return in France, England and the United States*, a revised and expanded edition of which was published in 1889. He also published two dictionary articles under the title: "Crises commerciales – Commercial Crises," in 1863, in the *Dictionnaire général de la politique*, M. Block (ed.) and in 1891, in the *Nouveau dictionnaire de l'économie politique*, Léon Say et Joseph Chailley (ed.).

In his magnum opus *Business Cycles* (1939), Joseph Schumpeter (1883-1950) has credited Juglar with three significant innovations: firstly, the systematic use of empirical data arranged in time series; secondly, the discovery and the complete morphological description—by "phases"—of the cycle phenomenon linking observation with an original theoretical framework; thirdly, “a clear conception of the way in which theory, statistics and history should cooperate in our field” (Schumpeter (1st ed. 1954), 1983, vol. 3, p. 483, quoted by Frobert, 2014, p. 9). Because of these original ideas, Schumpeter ranked Juglar among the greatest economists and baptized “Juglar” one of three characteristic cycles, with “Kitchin” and “Kondratiev,” punctuating the process of creative destruction that swept through modern capitalism.

There is no doubt that by introducing the concept of cycle and by basing it on statistic series, Juglar made a decisive breakthrough that led economists to reconsider the notion of crisis which started to be viewed only as one phase among others in a larger phenomenon. He also introduced into economics the idea that the variations in the economy were not exogenous, i.e. triggered only by wars, disasters, climate changes, etc., but *endogenous*, i.e. determined by internal causes. These sometimes brutal variations were to be understood as normal phenomena resulting from the development of the industrial and capitalist economy itself.

However, as can already be noticed from the titles of Juglar’s works, among the notions that were available to him through his medical education, he did not choose *rhythm* to designate this new phenomenon, but *crisis*, *period*, and *cycle*. The former, which was still defined as succession of dilation and contraction, proportionate to each other, most probably appeared old-fashioned while the latter were boosted by the powerful development of life science (see vol. 2, chap. 2). If I am not mistaken, there is not a single occurrence of the term rhythm in all the aforementioned essays where one find instead a massive use of the three other ones (for Juglar’s last three texts, I used Frobert’s edition, 2014).

In fact, the term rhythm seems to have been introduced into the neoclassical school of economics, concurrently in France and the United States, only in the early 1910s. As we shall see, it was used for the first time in a quite systematic fashion by Albert Aftalion (1874-1956) in *Les crises périodiques de surproduction – The Periodic Overproduction Crises*, published in 1913, and in a more subdued way by Wesley C. Mitchell (1874-1948) in his *Business Cycles*, published the very same year.

Rhythm as Periodic or Cyclic Oscillation of Economic Activity (Aftalion – 1913)

As early as 1908, Albert Aftalion (1874-1956) outlined an original theory of economic crises and business cycles in a series of articles published in the *Revue d’économie politique – Journal of Political Economy*, the *Revue économique internationale – International Economic Journal* and *Histoire des doctrines économiques – History of Economic Doctrines*, which were the basis for a full-grown treatise in two volumes published in 1913: *Les crises périodiques de surproduction – The Periodic Overproduction Crises*. Thanks to this remarkable achievement, Aftalion undoubtedly became the leading French theoretician on business cycle in the early 20th century.

In the Preface to his treatise, Aftalion paid homage to Juglar for having been one of the first to point out that “the crisis is only one of the moments in a whole cycle that is taking place periodically, if, it is true, the most painful” (I, p. vi). But he emphasized that the impulse given by his predecessor had to be brought further so that “when the subject is better known, we will talk less about crises of overproduction and more about economic cycles” (I, p. vi., my trans.).

According to Aftalion, the succession of one period of prosperity with another period of depression formed a “cycle” and their repetition a sequence of “periodic cycles.”

> The two alternating phases together form a cycle. The repetition of these cycles allows to consider them as periodic cycles. (*Les crises périodiques…,* 1913, I, p. 5, my trans.)

Consequently, the notion of crisis was to be reduced only to “the point where the transition from prosperity to depression takes place” and be explained from “the whole cycle.”

> The crisis is the point of intersection of these two periods, the point where the transition from prosperity to depression takes place. It marks the completion of one phase and the beginning of the next one. (*Les crises périodiques…,* 1913, I, p. vi, my trans.)

These cycles did not have equal duration—they lasted “seven to ten years” (I, p. 13)—nor equal intensity or even continuity (I, p. 13-18, 42). For in each cycle there were specific factors, especially “long term oscillations” (I, p. vii) or “long term movements,” extending one phase or reducing the other.

> The long term movement *[mouvements de longue durée]* prolongs the cyclic movement which takes place in the same direction and shortens the cyclic movement which takes place in the opposite direction. (*Les crises périodiques…,* 1913, I, p. 14, my trans.)

Nevertheless, these cycles were “periodic,” “general” if considered within a particular economy, and “international” (I, p. 18-20).

> [When reduced to the same base] the strong agreement between the price rhythms in the different countries is revealed more clearly. At the same time, one can perceive the great simultaneity of the fluctuations and similarity in their intensity. (*Les crises périodiques…,* 1913, I, p. 20, my trans.)

As Juglar, Aftalion’s purpose was to explain the various phases forming a cycle and to account for their succession (I, p. ix, 17). But, the crisis as well as the whole cycle could not be explained only, as his predecessor suggested, either by the psychology of businessmen, their exaggerate optimism, their excessive speculation, or the fluctuations of the credit supplied by the banks. Instead, Aftalion proposed to explain the crisis by the joint role of acceleration or delay in production within a theory of overcapitalization. Just like Jean Lescure (1882-1947), with whom he debated in 1910 in the *Journal of Political Economy*, he developed a theory in which the notion of overproduction, and symmetrically insufficient demand in fixed capital as much as consumer goods, which he differentiated from insufficient consumption, played a key role, and which was therefore radically different from the interpretation proposed by Juglar which was based only on excessive speculation joint with abuse of credit.

As far as we are concerned, the most striking feature of Aftalion's work was the introduction and generalization of the concept of rhythm in neoclassical economics by means of this theory of cycles. According to him, the observation of price, but also of profit, wage, production and employment statistics, revealed a "regular rhythm" composed of successive cycles of "prosperity" and "depression."

> A regular rhythm alternates a series of years of prosperity, characterized by rising prices, rising incomes, high intensity of productive activity, with years of depression when prices remain low, heavy stocks of goods weigh on the market, and unemployment among workers and factory equipment is high. (*Les crises périodiques…,* 1913, I, p. vi, my trans.)

Surprisingly, whereas Juglar used to borrow some concepts from medicine, Aftalion compared first the economic rhythm with that of poetry. By rhythmically punctuating the economic life, the crisis was analogous to the rhyme in verse.

> [The crisis] emphasizes the cadence of the rhythm as does the rhyme in verse. So we cannot understand and explain what is happening at the very moment of the crisis without having examined the whole cycle. (*Les crises périodiques…,* 1913, I, p. vi, my trans.)

But this mention of verse was made in passing and appeared as the solitary remnant of a humanist education. The most important analogue used by Aftalion was by far the living being. The whole society was presented as a great "organism" (I, v)—he never used the word "system"—within which the various functions concurrently and rhythmically varied.

> For a long time [the cycles] tended to be seen as peculiar to the flow of credit and speculation in modern societies. […] [However] the whole economic life, in its most diverse aspects, undergoes cyclic fluctuations. The swaying of alternating phases concerns an innumerable multitude of phenomena in the most dissimilar spheres of social activity and in the most different countries. This fact is quite remarkable and must be strongly underlined. Without question, it is highly instructive that, in spite of the complexity of economic relations, and the multiplicity of factors acting in all directions, combining, associating, intersecting or opposing each other, we can see that so many phenomena, prices, wages, interest, profits, unemployment, cost, productivity, concentration, work accidents, production, companies, industrial machinery, trade, discount rate, assets of banks, transport, foreign trade and a bunch of others, that so many industries, metallurgical industries, mining, textile, building industries, transportation, and in so many countries, let themselves engage in parallel or corresponding rhythmic oscillations. (*Les crises périodiques…,* 1913, I, p. vii-viii, my trans.)

Whereas, in traditional society, this organism remained more or less stable, it started to develop and complexify with the industrialization. In modern societies the interplay of the oscillating functions periodically triggered “crises of overproduction.”

> From time immemorial, humanity has known such disturbances of the economic equilibrium, these pathological states of the social organism, which we call crises. But it is only about a hundred years since the phenomenon of *periodic crises of overproduction* manifests itself. (*Les crises périodiques…,* 1913, I, v, my trans.)

To designate these interlaced variations, Aftalion used several concepts—most often in the plural—almost equivalent in his eyes: *movements*, *fluctuations*, *oscillations*, *cycles*, and *rhythms*. If “movements” remained quite vague, “fluctuations” and “oscillations” indicated variations between a maximum and a minimum (I, p. 6) which were endowed with a certain regularity. “Fluctuations” evoked the movements on the surface of a liquid and was close to the notion of “wave.” “Oscillations” suggested, on the other hand, the swing of a pendulum and a stronger regularity. “Cycles” referred to a circular return of a phenomenon similar to that of the planets and the stars. However there was actually no clear difference between these expressions that were used by Aftalion alternately out of sheer desire to avoid stylistic repetition. In a quite remarkable way, *rhythm* crowned the series and replaced, in many occurrences, one or the other of the preceding concepts, as we will see now by looking thoroughly into *Les crises périodiques de surproduction*.

Rhythm of Prices and Incomes (Aftalion – 1913)

Aftalion’s work was divided into two large volumes: *The Variations in Prices and Incomes. The Dominant Theories* (vol. 1, 324 p.) and *The Periodic Movements of Production. A Theoretical Essay* (vol. 2, 418 p.), which were partitioned in 11 “Books.”

The first volume began with a quote from Juglar stating that “the crisis coincides with the halt in prices rise,” which explained why Book I was to be entirely devoted to prices. Significantly, Aftalion indistinctly used phrases such as “price rhythm [or rhythms]” (p. 1, 18, 29, 37, 40, 44, 56, 105, 135, 141, 151, 175, 217, 294), “price fluctuations” (p. 25), “rhythmic movements of prices” (p. 7, 293), “rhythmic oscillations of prices” (p. 5, 102, 157, 294), “rhythmic fluctuations [of prices]” (p. 103, 108, 109), “cyclic movements of prices” (p. 110), “cyclic oscillations [of prices]” (p. 15, 68, 100, 102, 110), “cyclic fluctuations of prices” (p. 54, 65, 73, 86).

Book II was dedicated to income, whether from wage or profit. Similarly, Aftalion used phrases such as “rhythm of wages” (p. 114, 119, 121, 122, 123, 128, 133, 134, 135, 139, 141, 151, 157, 167, 175), “rhythmic variations of wages” (p. 125), “rhythmic fluctuations of wages” (p. 127, 141), “periodic oscillations of incomes” (p. 111, 204), “periodic oscillations of wage [or wages]” (p. 113, 134, 151), “cyclic oscillations of wage” (p. 141).

In Chapter II, since the income variations depended on those of labor productivity and workers action, Aftalion also used expressions such as “rhythm of productivity” (p. 135, 141) and “rhythm of workers action” (p. 145). Changes in economic activity thus led, in Chapter IV, to “periodic oscillations of unemployment” (p. 163)—or in the Table of Contents: “rhythm of unemployment” (p. 322, 164, 166)—but also, in Chapter V, to “periodic oscillations of pauperism and crime” (p. 168, 170).

Naturally, interest rates also varied, in Chapter VI, according to “rhythms” (p. 171, 175), “periodic oscillations” (p. 171), “periodic fluctuations” (p. 173), resulting in Chapter VII in “periodic oscillations of profits” (p. 182, 189), “cyclic oscillations of profits” (p. 187), “fluctuations of profit” (p. 183) and “rhythm of profit(s)” (p. 193), which explained, in Chapter VIII, “the rhythm of bankruptcy” (p. 200, 201).

Finally, in Chapter X, the oscillations of wages and profits had a variable influence on the “rhythm of nuptiality and birth rate” (p. 207, 210).

Book III was devoted to cost and productivity. Aftalion began, in Chapter I, with “the rhythm of the cost in money” (p. 211) following up, in Chapter II, with “the rhythm of the cost in kind and of productivity” (p. 213), and, in Chapter III, “the causes of the rhythm of productivity” (p. 217). Then he analyzed, in Chapter IV, “the cyclic oscillations in technical progress” (p. 226), in Chapter V, “the cyclic variations in industrial concentration and enterprise selection” (p. 229), and, in Chapter VI, “the cyclic and long-term variations in productivity” (p. 237). He devoted the chapter VII, to the “rhythm of the cost in human existence” (p. 241) and the “rhythm of work and railway accidents” (p. 242, 243). The last two chapters of this book were devoted to the “rhythm of the cost of money” (p. 244, 245, 246, 248) in general and in specific industries.

Book IV was dedicated to the dominant theories and their explanation of crises. Unsurprisingly, there were fewer references to rhythm in it (p. 294, 295, 298, 316).

Rhythm of Production and Capital (Aftalion – 1913)

In the second Volume *The Periodic Movements of Production*, Book V was entitled “The Rhythm of General Production and the First Essay of Explanation” (vol. 2, p. 5). After having dealt with the data concerning the price fluctuations in the 19th century, in France, Great Britain, United States and Germany, which were considered since Juglar as the main causes of the economic crises, Aftalion wanted to complement his first analysis with another one developed from the angle of production. According to him, this perspective was indeed utterly missing in the previous studies on business cycles and he wanted to prove that if crises were correlated with strong variations in prices, the latter were in turn correlated with the fluctuations of production.

The first chapter of Book V dealt with “the periodic oscillations of the liquid capital of firms and the rhythm of general production” (p. 7), “the fluctuation of the capital” (p. 7), and “the rhythm of the capital” (p. 12). Chapter II observed “the rhythm of the production according to that of the metallic and fiduciary circulation” (p. 14), “the rhythm of clearing” (p. 19). Chapter III did the same with “the rhythm of production according to that of the circulation of goods” (p. 21), with particular attention to “the fluctuations in the quantities transported by rail” (p. 21) and “the periodic movements of foreign trade” (p. 23).

Chapter IV finally proposed a “first attempt to explain the rhythm of prices by that of production” (p. 29 and 39). It suggested the possible relation between “the cyclic oscillations of global production” and “the rhythm of prices” (p. 30), or between the “fluctuations of the global production” and “those of the prices” (p. 30), or between “the rhythm of global production” and “that of the general numbers index of prices” (p. 34, 39).

> The movements of production and *supply* of goods account for the periodic movements of prices. Their slump, in particular, the crisis, is the result of overproduction. (*Les crises périodiques…,* 1913, II, p. 38, my trans.)

However, Chapter V recognized some loopholes in the theory which explained "the existence of the price rhythm" but not "the duration of its phases."

> [As a result of the increase in production] should not prices have decreased throughout [the boom period]? But they have gone up. Similarly, the stagnation of production is immediately apparent after the crisis. Should not the prices have gone up almost immediately after the crisis? In fact, they continued to decline. […] Therefore, the observation of the *global* production rhythm shed light only upon the reason of the *occurrence [la survenance]* of a global rise and decline in prices, [in other words] the existence of a rhythm. It does not give us the explanation of the duration of this increase or decrease, the *duration* of the phases of the rhythm. This is an antinomy which constitutes one of the great difficulties of the theory of cycles and periodic crises. How can price increase last for the next three or four years of prosperity, how does it make us believe in a persisting under-production for a whole period when production is so large? How can price fall continue during the three or four years of depression, why does it seem to imply overproduction during an entire period when production ceases to increase? (*Les crises périodiques…,* 1913, II, p. 40-41, my trans.)

In order to check if "the truth would not be in a new theory of underconsumption [actually underdemand, as we shall see] more firmly built than its elders?" (p. 44), Book VI first addressed "the rhythm of the production of industrial machinery and raw materials" (p. 45). Chapter I was devoted to "the rhythm of production of raw materials, pig iron and coal, and the action of demand on their prices" (p. 45). Chapter II dealt with "the oscillations in the intensity of the *current production* of fixed capital" (p. 52). Chapter III with "the cyclic oscillations in the growth of steam engines in operation" (p. 60). Chapter IV with "the oscillations in the number of the various machines in operation in the processing industries" (p. 76). Chapter V with "the oscillations in used tools in railway operations" (p. 89). Chapter VI with "cyclic oscillations in shipbuilding" (p. 105). Finally, Chapter VII summarized the previous findings in a "great law" concerning the fluctuations in fixed capital.

> 1. Fixed capital increases by alternating periods of strong and feeble growth. 2. The differences between the figures of these periods are extremely considerable. Fixed-capital-producing industries witness either considerable increase or drowsiness in their activity. 3. The same chronological relationship almost always persists between the movements of the fixed capital and the alternating phases of the cycles. Periods of strong capital growth begin and end *late* on the beginning or the end of general prosperity. Periods of low growth of fixed capital begin in the depression some time after the crisis and extend during the first years and up to the core of prosperity. (*Les crises périodiques…,* 1913, II, p. 114, my trans.)

To complement the study of capitalistic consumption, Book VII analyzed "the cyclic oscillations in the production of consumer goods" (p. 127). Chapter I discussed "the periodic fluctuations in the quantities of residential dwellings" (p. 127). Chapter II, "the cyclic oscillations [fluctuations, in the Table of Contents] in the production of the cotton industry" (p. 132). Chapter III, "the movements of production in wool and other textile industries" (p. 145). Chapter IV, " the cyclic oscillations in the production of metal consumer goods" (p. 152). Chapter V, " the oscillations of production in the consumer goods industry taken as a whole" (p. 156).

Book VIII was then devoted to "a second attempt to explain the price rhythm" (p. 171). Chapter I proposed "the explanation of the general price rhythm" (p. 171 and 207). As mentioned in Book V, Chapter V, there were some discrepancies in the usual explanation of the fluctuations of prices by those of the production. The two curves had "different rhythms." This difference was caused first by the necessary delay in the building of plants and installation of new machinery triggered by the relative lack of capital and consumer goods during the beginning of prosperity, and the inevitable delay in stopping the use of these costly plants and equipments to produce capital and consumer goods when the depression had already begun.

> Because of certain characteristics of the capitalist technique of production, i.e. the time which is necessary to manufacture machinery, and because of the continuance of the activity of this durable and costly machinery, we observe two dissimilar rhythms in particular industries [viz. capital equipments and consumer goods industries]. And the rhythm of general production results from the combination of these two rhythms. (*Les crises périodiques…,* 1913, II, p. 171, my trans.)

The delay in the final rhythm of production should then be explained by the conjunction of two more elementary rhythms: that of the production of plants and equipments, and that of consumer goods which yet remained the driving force behind both of them.

> Although two dissimilar rhythms are observed in the production of the various kinds of goods, in that of goods distant to the satisfaction of the needs as well as in that of goods close to it, it is the rhythm of the production, of the *supply* of this second category of objects, that presides over the general movement of prices. […] In spite of the two different rhythms of production, the general price rhythm is *unique* because it obeys the decisive impulse of one of them. It is the rhythm of the supply of goods which are closer to the satisfaction of needs, finite fixed assets, objects of consumption, which is the engine of the general oscillations of prices. (*Les crises périodiques…,* 1913, II, p. 179-180, my trans.)

Chapter III looked into the rhythm of the storing of goods and its effects on the rhythm of prices. The conclusion was that the "rhythm of supply" quite possibly determined the "price rhythm" but that it was now necessary, in order to prove it conclusively, to take into account the rhythm of the demand.

> It may be assumed that the cyclic oscillations of prices throughout their duration are due to the movements of the *supply*, to the alternation of overproduction and underproduction of certain categories of goods, finished machinery and consumer goods. But we cannot be sure. Perhaps the rhythm of supply is sufficiently explanatory of the full extent of the price rhythm. But perhaps other factors intervene alongside supply. It is now appropriate to consider what concerns the

> demand. (*Les crises périodiques…,* 1913, II, p. 216, my trans.)

Rhythm of Demand and Speculation (Aftalion – 1913)

Consequently, Book IX dealt with “the rhythm of the demand. Its action on prices” (p. 219). Aftalion analyzed, in Chapter I, “the rhythm of the actual demand for consumer goods” (p. 219). Then in chapter II, “the causes of the rhythm of the demand and the nature of its action” (p. 233), “the causes of the periodic variations of the income in money” (p. 233). In Chapter III, “the rhythm of the demand for fixed capital” (p. 243).

These additional analyses allowed Aftalion to suggest, in Chapter IV, a “third attempt to explain the rhythm of prices” (p. 246). If the variations of prices were clearly determined by the oscillations of the supply of plants, equipments, and ultimately consumer goods, the model was still based on the abstract hypothesis of a demand which was rising regularly. Therefore, to be closer to the facts, “the rhythm of the demand” ought also to be taken into account to supplement the first rhythmic model.

> While remaining dependent on the rhythm of supply, the rhythm of demand strengthens the action of the latter in a very appreciable way as to the intensity and perhaps also the duration of price oscillations. (*Les crises périodiques…,* 1913, II, p. 250, my trans.)

To that, Aftalion added, in Chapter V, “the rhythm of the speculative demand” (p. 251), which should be also taken into account since it exacerbated the oscillations in prices, even if the latter were mainly determined by the “rhythm of supply” (p. 255).

These progressive addenda allowed Aftalion to finally propose a fourth model which, this time, integrated all aspects of the problem of price rhythm.

> We have thus completed the examination of the successive approximations by which it was necessary to pass in order to take into account the complexity of the factors acting on the rhythm of prices and to highlight the respective influence of each one of them. It is ultimately the supply of certain categories of goods as it operates under the conditions created by the capitalist technique of production which, with the help of a secondary action of demand, has appeared, as a result of successive repercussions, to explain the rhythm of prices and consequently that of incomes. (*Les crises périodiques…,* 1913, II, p. 258, my trans.)

Book X addressed “the theoretical possibility of overproduction and insufficient demand” (p. 257). Chapters I to IX dealt with the first point and concluded on “the impossibility of a permanent general overproduction” (p. 337). In Chapter I, Aftalion rejected the objections based on the existence of branches having very different rhythms. For him, the production followed only one “great rhythm of ebb and flow.”

> The perpetual agitation of the little waves of the Ocean, which constantly displaces their respective situation, does not prevent them from obeying the same great rhythm of ebb and flow. It is this overall rhythm that brings about the general overproduction. (*Les crises périodiques…,* 1913, II, p. 268, my trans.)

Otherwise, there was little mention of rhythm in these chapters, except in Chapter X which addressed the question of "the theoretical possibility and the meaning of an insufficient demand" (p. 340), and finally considered "the origin of the rhythm of the demand" (p. 341).

> The rhythm of the demand is one of the factors of the movements of prices. But it is a factor whose strength should not be overrated. (*Les crises périodiques…,* 1913, II, p. 351, my trans.)

At the beginning of Book XI, Aftalion warned the reader that he was now to engage in "a second phase" of his reflection. After having demonstrated the causal link between the "cyclic oscillations of production" and "those of prices," one must look, he claimed, into the reasons of the rhythm of production itself: "Why then this alternation between over- and underproduction?" (p. 353)

Chapter I analyzed the "action of prices on production" (p. 353) and Chapter II that of the "capitalist technique [on production]" (p. 356). Chapter III was concerned with "the intensity and possibility of the rhythm of capitalization" (p. 371), a title which was rephrased a little further down as "the possibility of fluctuations in material capitalization" (p. 337), and finally "the possibility of the rhythm of capitalization in value or industrial investments" (p. 378). Chapter IV explored "the causes of the generality of the rhythm of production" (p. 386), and Chapter V "the causes of the international character of the production rhythm" (p. 393).

After this long journey into Aftalion's rhythmic economics, let us recapitulate the most important points. First, Aftalion rebuffed Juglar's explanation of the economic crisis by the only play of speculation and excessive credit, which were to him only consequences of deeper phenomena. Second, he saw its origin and consequently that of the whole business cycle in the gap between the time when a rise in prices attracts investment and the moment when, eventually, the invested capital produce goods, or conversely, between the time when a fall in prices triggers a fall in investment that will then result in a relative contraction of production and, after a certain period of time, trigger recovery.

> The capitalist technique leads, by prolonging the rise in prices during prosperity and their decline during the depression, alternately to excessive or insufficient production of machinery *[outillage]*. It drives the economic organism into the mechanistic succession *[engrenage]* of [phases of] over-capitalization leading to the crisis and phases of under-capitalization bringing back prosperity. (*Les crises périodiques…,* 1913, II, p. 403, my trans.)

What Juglar did not see was that there is a dynamic and endogenous contradiction at the core of the economic activity that makes "the cycles unfold, in a rhythmic way, their alternating phases of prosperity and depression, feverish industrial activity and deplorable unemployment."

> The periodicity of crises is due to the way in which capitalist production tends to return to equilibrium. By a sort of cruel irony, the effort to restore order is the cause of the maintenance of disorder. The desire to adjust production to the desires of consumption, to compensate for the excesses or insufficiency of this production leads to its constant maladaptation to the needs. But disorder takes, if I may say so, a regular pace *[allure]*. The cycles unfold, in a rhythmic way, their alternating phases of prosperity and depression, feverish industrial activity and deplorable unemployment, at the intersection of which the crisis takes place. (*Les crises périodiques…,* 1913, II, p. 411, my trans.)

In short, for Aftalion, there was not a single economic aspect that was not both "fluctuating" and "periodic," and therefore "rhythmic." The whole society, when observed through its economic life, was rhythmic. But as for Juglar, these crises were inevitable and, in the long run, beneficial to the whole "social organism." The periodic crises were only the natural result of the complex interplay of the variations of its functions.

Rhythm as Business Cycles (Mitchell – 1913)

In 1913, the very same year as Albert Aftalion, Wesley Clair Mitchell (1874-1948) published his *Business Cycles*, which was to become canonical for economists in the United States and beyond.

His use of the term rhythm was far less frequent and, sometimes, much less specific than Aftalion's. The first occurrence equated "rhythm" with "pace." According to Werner Sombart (1863-1841), whose theory Mitchell summarized in his introductory chapter,

> the modern crisis, then, following upon a period of prosperity, is substantially the result of the different rhythm of production in organic and inorganic realms. The organic industries dependent upon harvests cannot keep pace with the inorganic when the latter are being rapidly extended by heavy investments of capital. (*Business Cycles*, 1913, p. 16 – same use p. 19, 104)

But this marginal acceptation was maybe due to the translation from the German. Otherwise, Mitchell used "rhythm" or the adjective "rhythmical," in a way that was close to Aftalion's, to emphasize the periodicity of the variations in the economic activity. He mentioned "the rhythmical expansions and contractions" of business activity (p. 91), or its "rhythmical alternations of expansion and contraction" (p. 20, 223).

> Finally, Chapter III, looking at the problem from the historical viewpoint, sketches the rhythmical expansions and contractions which business activity has undergone in recent years. Thus the actual courses followed by business cycles, the controlling factors in business activity, and the latest theories about the causes of prosperity, crisis, and depression are all before us. (*Business Cycles*, 1913, p. 91)

The repetition of "the business cycles" formed a rhythm.

> In short, there is small room for doubt that saving, like most of the activities of economic life, is subject to the rhythm of business cycles, slowing down in depression, speeding up in prosperity. (*Business Cycles*, 1913, p. 389)

Significantly, after having devoted the first part of his book to “The Problem [of Business Cycles] and its Settings” (p. 3-88) and the second to “Statistical Data Concerning the Business Cycles of 1890-1911 in the United States, England, France, and Germany” (p. 89-448), Mitchell chose to entitle the third and last part of his work “The Rhythm of Business Activity” (p. 449-599) which began with these lines:

> THE FRAMEWORK OF PART III
>
> The review of recent theories concerning business cycles in Part I of this book and the statistical study of the phenomena of recent cycles in Part II have a common purpose—to provide suggestions and materials for attacking the problem of Part III. This problem is to account for the rhythmical alternations of prosperity, crisis, and depression which occur in the modern business world. (*Business Cycles*, 1913, p. 449)

Based on the statistical data concerning the latest business cycles of 1890-1911 in the four most advanced economies of the time presented in part II, Mitchell developed in the last part of his book a full-fledged theory of “the rhythm of business activity” which he also called theory of “business cycle,” initiating a thread of research that was to last at least for the next 50 years.

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In 1913, Aftalion and Mitchell vigorously introduced the concept of rhythm into neoclassical economics. A number of points are worth noticing here.

1. As Bücher, they no longer used the old medical definition of rhythm as *succession of proportionate time-lengths*. This acceptation now belonged to the past, even in medicine as a matter of fact. But they also rejected Bücher’s use of its poetic or musical metric definition. Whereas it was primarily conceived by Bücher as *succession of beats or blows distributed in equal time intervals*—his favorite examples were the hammering blacksmith or the manual threshing—rhythm became, at the hands of neoclassical economists, *succession of fluctuations*, *oscillations*, *undulations*, *waves*, *or cycles of slightly varying durations*. Concurrently, the adjectives *rhythmic*, *periodic*, *cyclic*, *wave-like* were now indifferently used. In short, in 20th century mainstream economics, the concept of rhythm lost the discreteness and rigor which had characterized its metric definition by Bücher and took its distinctive continuous, oscillating, and slightly irregular form borrowed from physiology, while remaining in line, in the final analysis, with its Platonic definition as “order of movement.”

2. In economics, the neoclassical paradigm easily prevailed over the evolutionist perspective which marred Bücher’s style reconstruction but its victory also meant divorcing economics from history,

ethnography, anthropology, not to mention musicology, poetics, and linguistics. This victory consequently moved the discipline further away from existing alternatives to the metric paradigm and explained why, as far as rhythm was concerned, mainstream economists were to depend, during the whole 20th century, exclusively on models borrowed, during the pre-World-War-I period, from the latest contributions of physiology and life science, and also most probably, given the growing importance of mathematics in economics, from the concept of periodic function, although in a sheer analogical way since economics variations were not entirely regular.

3. I regret not having had the opportunity to study Marxist economists more thoroughly. Since Marx very early theorized on recurring economic *crises* and *cycles*, and believed that they were announcing the final collapse of the capitalist system itself, these concepts always have been part of Marxist economics. However, my first impression is that Marxist thinkers did not use the concept of rhythm until late in the 20th century. Yet, due to the low number of texts I could collect, the question remains open and I hope that it will attract new research.

4. We will see in another volume that the introduction of the concept of rhythm into the neoclassical school of economics in the 1910s met with a huge success which lasted until the 1960s or 1970s, depending on the country. It even penetrated in Germanic countries at the end of the 1920s with Johan Åkerman (1896-1982), Ernst Friedrich Wagemann (1884-1956), Wilhelm Röpke (1899-1966). During the inter-war period, it spread in France with Albert Aftalion, Jean Lescure (1882-1947) and Bertrand Nogaro (1880-1950), and in the United States through Warren M. Persons (1878-1937) and Charles J. Bullock (1869-1941), who founded in 1917, under Mitchell's influence, the Harvard University Committee of Economic Research, which was the first research institution on business cycles to win recognition from the scientific world. The notion of rhythm, in its new sense, was even often used by the late Historical school member, Austrian born, Joseph Schumpeter (1883-1950), who taught at Harvard since 1932 and published in 1939 his world famous *Business cycles: a theoretical, historical, and statistical analysis of the capitalist process*.

Next chapter