# STATICS AND DEVELOPMENT:
# A First Approximation to
# Schumpeter's Evolutionary Vision

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A report from a study on

Schumpeter and the Analysis of Economic Evolution

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# *Preface*

Since the beginning of 1988 I have worked on a project on Schumpeter and the Analysis of (Techno-) Economic Innovation and Evolution. A series of manuscripts for different aspects of this subject have been produced.

Småskrift no. 68, *The Core of Schumpeter's Work*, gives a presentation of some of the main theses underlying my work. The present paper should be read in this perspective even it is is only a slightly version of a chapter from a manuscript on *Schumpeter's Unfinished Innovation*, September 1990. The paper deals with Schumpeter's difficult attempts to develop his evolutionary analysis from the background of the dominant static method of marginalist economics.

The series of papers includes at the moment:

Småskrift no. 68: The Core of Schumpeter's Work, March 1991.

Småskrift no. 69: Reconstructing Theory-Evolution with special respect to Schumpeter, August 1991.

Småskrift no. 70: Schumpeter's Vienna and the Schools of Thought, August 1991.

Småskrift no. 71: Statics and Development: A First Approximation to Schumpeter's Evolutionary Vision, August 1991.

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# *Statics and Development:*
## *A FIRST APPROXIMATION TO SCHUMPETER'S EVOLUTIONARY VISION*

*Unsre Auffassung ist kein Schlagwort,*
*auch nicht das Resultat von ad hoc*
*angestellten Betrachtungen, sondern das Resultat*
*einer Methode, die sich bereits bewährt hat.*
SCHUMPETER (1912, p. 548)

### I

### SCHUMPETER'S THREE STEPS TOWARDS AN ANALYTIC FRAMEWORK

It is now high time to consider the major analytic methods used during Schumpeter's great jump forward in 1905-09 and the analytic results he obtained. Therefore we presuppose his context, his set of possible "sources" and some sort of vision **V**(S-*ECON*) and we concentrate on the next step: the analytic procedure. In the shortest possible formula we may consider it as a three step procedure: First comes a sorting of the propositions of economic theory into two categories, "static" and "dynamic". This operation and its first results are presented in *Essence of Economics* (1908) but further discusssions are found in most of Schumpeter's major works.

Meine Darstellung beruht auf der fundamentalen Scheidung zwischen "Statik" und "Dynamik" der Volkswirtschaft, ein Punkt, dessen Bedeutung nicht genug betont werden kann. Die Methoden der reinen Ökonomie reichen vorläufig nur für die erstere aus, und nur für die erstere gelten ihre wichtigsten Resultate. Die "Dynamik" ist in jeder Beziehung etwas von der "Statik" völlig verschiedenes, methodisch ebenso wie inhaltlich. [...] Wir werden [...] sehen, dass in ihr der Schlüssel zur Lösung vieler Kontroversen und vieler scheinbarer Wiedersprüche liegt [... S, 1908, p. xix]

The second step in Schumpeter's procedure is to bring the two sets of propositions together in an explanation of evolutionary processes behind different problems of economic theory. In *Essence of Economics* we have a preliminary exposition of Schumpeter's theory of interest (1908, pp. 414-430). In the article *Essence of Crises* (1910a) we have a sketch of his theory of business cycles and crises More generally,

[...] es liegt in der Natur der Sache, dass bei jedem Schritte, der wir auf unserm Wege zurücklegten, jeweilig *ein* konkretes Problem im Vordergrunde stand und unser

Interesse dem da zu erzielenden konkrete Resultate, der Erschliessung des Verständnisses einer einzelnen Phänomens galt. Das Wesen der kapitalistischen Wirtschaft, des Unternehmergewinnes, des Zinses, der Krisen, das waren die hauptsächlichsten Einzelprobleme, um die es sich für uns handelte und um derenwillen die dargelegte Auffassungsweise zunächst entwickelt wurde. [S, 1912, p. 463]

These individual studies seem to have become something like an obcession to young Schumpeter until he reached the third step in his analytic procedure: the formulation of a general method and theory on (economic) evolution:

Schritt für Schritt fühlte ich mich weitergedrängt nach selbständiger Neubehandlung immer weitrer theoretischer Probleme, bis mir schliesslich klar wurde, dass es immer ein- und derselbe Grundgedanke war, mit dem ich mich beschäftigte, und dass dieser Grundgedanke einerseits das ganze Gebiet der Theorie betrifft und andererseits die Marksteine theoretischer Erkenntnis nach Richtung des Phänomens der wirtschaftlichen Entwicklung hin weiter hinauszuschieben gestattet. [S, 1912, p. vii]

A possible summing up of this final step would have been a systematic exposition of Schumpeter's most general analytic results. But he abstained from this, both in *Theory of Development* and in later works; he considered

[...] es für zweckmässig, die vorliegende Arbeit [and later ones] nicht zu einem detaillierten Lehrgebäude auszugestalten, sondern, so kurtz und präzis als ich es vermochte, jene wesentlichen Grundlagen zu einem solchen darzustellen, die nicht schon ohneweiters in der Theorie unsrer Tage fertig vorliegen. [S, 1912, pp. vii f]

Even if Schumpeter's procedure is not concluded in a fully equiped theoretical system, there is little doubt as to the main contents of the system he enviseaged. The main reason for this is that he is too modest. The *Theory of Development* is not just a series of case stories illustrating Schumpeter's general analytic framework. There is clearly a succession in the argument where the first chapters on the "circular flow" (the *Kreislauf*) of the "static" state of the economy and on the "dynamic" phenomenon of "economic development" are the most basic. Furthermore, Schumpeter cannot, in last (7th) chapter of the first edition of *Theory of Development,* avoid the temptation of proceeding further in "[...] der Richtung des Problems der wirtschaftlichen Entwicklung als solcher [...]" (S, 1912, p. 463). The idea was to bring forth the point that:

Methodisch wie inhaltlich bildet der bisher vorgeführte Gedankengang eine Einheit; er soll eine in sich geschlossene Auffassungsweise einer Reihe mit einander eng verwandter wirtschaftlicher Erscheinungen darbieten. Um *einen* Gedankengang, *eine* Betrachtungsweise, *eine* Tatsachengruppe hat es sich für uns gehandelt. [S, 1912, p. 463]

This point (and several others) were developed 7th chapter of the first edition of *Theory of Development.* Unfortunately, this chapter was left out of the 2nd German and the English edition. According to the new preface (1912/1926, pp. xiii f), the problem was partly that the readers tended to become too interested in the "Bruchstück von Kultursoziologie" which is included here and probably also in Schumpeter's method taken in isolation from the concrete problems to which it was developed and applied. This meant that many did not catch the more formal economic argument which is the core of the book and even of its last chapter. This neglect of the core argument had

> [...] eine Art von Zustimmung gebracht, die mir genau so fatal ist wie die Ablehnung des Nichtmitkönnens. [S, 1912/1926, p. xiii]

Schumpeter tried to scare the superficial visitors away from his book by a new subtitle: *An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle,* and by a warning that the book is

> [...] völlig unzugänglich ohne eigene, ruhige Arbeit des Lesers an seinem Argument. Wer diese Arbeit mangels theoretischer Schulung nicht leisten kann, oder, weil er es seiner Mühe nicht für wert hält, nicht leisten will, der verliert seine Zeit, wenn er es liest. Insbesondere kann man es nicht "nachschlagen", um festzustellen, was sein Autor über irgendeine einzelne Frage, z. B. die Ursache des Konjunkturzyklus meint: Das Krisenkapitel für sich alein, unselbständiges Glied einer langen Gedankenkette wie es ist, gibt diese Antwort nicht. [S, 1912/1926, p. xiv[1]]

To emphasize the technical aspect of his work on crises, he changed the title of the chapter (ch. 6) from *Das Wesen der Wirtschaftskrisen* to *Der Zyklus der Konjunktur* (S, 1912, p. 414; S, 1912/1926, p. 318).

Schumpeter's warnings are well made but they should not scare us away from in initial look into the most complicated of his problems (that of business cycles) and his general conception of economic evolution when approaching his *opus magnum,* the *Theory of Development.* The reason for this approach is in a way similar to the necessary we sometimes feel to glance at the conclusion of a difficult crime novel in order to be able to follow the ordinary stream of the story. Similarly, it is sometimes productive to know the conclusion of a long mathematical argument before following the stream of definitions, lemmas and theorems. Schumpeter represents an analogous case and he seems to have acknowledged this when writing up his *Business Cycles* in the 1930s. Here the core argument is given in condenced form and then it is developed by means of the problem of the wave-like behaviour of the economy. But the argument of the mature Schumpeter has,

1 After these words follows a short reader's guide to the book.

unfortunately, lost much of the initial freshness and clarity. His work immediately after his major results were obtained seems a better starting point for reconstructive work which will also reveal some of the difficulties met by Schumpeter and explain the cautiousness of his later works.

In the following we will look a little closer into Schumpeter's analytic procedure starting with an overview in the next sections: the division of economic propositions into "static" and "dyamic" (sec. II-III), the Schumpeterian analysis in full action with special respect to business cycles (in ch. 5) and an attempt to formalize his general analytical scheme on (economic) evolution (sec. xx and ch. x).

## II

### THE DIFFICULT CONCEPTS OF "STATICS" AND "DYNAMICS"

The first step in the analytic procedure of young Schumpeter is apparently easy but in reality it is the part of the procedure which is most difficult to understand and reconstruct. The task is simply to divide the propositions of economic theory into two categories, "static" and "dynamic", and this can be easily done if we follow the tradition of mechanics: the "Archimedean" equilibrium theory presented in ch. 2, sec. VII-VIII is "static" since "time" is not involved but, e.g., the theory of the pendulum is "dynamic" since "time" is a central variable. But the application to the statics—dynamics dichotomy in social sciences has several other backgrounds, including that of zoology, and the terms became somewhat arbitrary used to sort different analytic methods, different states of the systems to be studied and even different types of individual behaviour. And young Schumpeter proceeded this sloppy tradition, hoping that the reader would himself see the different concepts denoted by, e.g., "dynamics".[2] But this showed up to be a vain hope and many articles and some Ph.D theses were written (mainly in German) about the subject, especially during the 1920s.[3]

Schumpeter tried himself to clear out the confusion all through his life, and not least in *History of Analysis.*[4]. In the second German and the

2 He was from the very beginning aware of a certain lack of clarity in this terminology: "[…] jeden beiden Gruppen von Problemen, in die unsere Wissenschaft zerfällt, die Namen "Statik" und "Dynamik" gegeben, eine Terminologie, die wir aus Bequemlichkeit beibehalten wollen, obgleich sie meines Erachtens recht unglücklich ist." (S, 1908, p. 182)

3 The (German) controversy over the statics—dynamics dichotomy: xxx

4 The central discussion on static vs dynamic methods, stationary vs evolutionary phenomena etc. is found in S, 1954, pp. 963-7. Further discussions in this book is, e.g., found pp. 416 f (Comte); 417, 563-5 (J. S. Mill); 651 (Marx); 836 f

English edition of *Theory of Development*[5] he even changed the terminology. Thus he wrote in 1934:

> I first used the terms "statics" and "dynamics" for these two structures [of economic phenomena], but have now (in deference to Professor Frisch) definitively ceased to use them in this sense. They have been replaced by others, which are perhaps clumsy. But I keep to the distinction, having repeatedly found it helpful in my current work. This has proved so even beyond the boundaries of economics, in what may be called the theory of cultural evolution, which in important points presents striking analogies with the economic theory of the book [*Theory of Development*]. The distinction itself has met with much adverse criticism. But is it really untrue to life or artificial to keep separate the phenomena incidental to running a firm and the phenomena incidental of creating a new one? [S, 1912/1934, p. xi]

Thus he wants to preserve his basic analytic distinction but makes things clearer through a terminological shift. Instead of talking of his theory of the "static economy" he now talks of the theory of the "circular flow of economic life", by using an expression from the first edition. And instead of his theory of "dynamic phenomena" he talks of the theory of "development". In this way the terms "static" and "dynamic" becomes reserved to be used in Frisch's sense, i.e., in the sense of mechanics. But does this trick really solve the problem? In order to answer this question we will follow Schumpeter's reference to Frisch. The first place where Frisch develops his distinctions is in a 1929 article and shortly after he probably had contact with Schumpeter in relation to the founding of the Econometric Society (Frisch, 1951, p. 8). By applying the tradition of mechanics to economics Frisch (1929[6]) points out that the difference between static and dynamic propositions (laws) is simply a question of wheter the concepts "rate of growth" or "reaction rate" (with respect to time) are used or not. Seen from a somewhat other perspective static modelling may been seen as implying infinitely great reaction rates while dynamic modelling have to give a more complex account of reaction rates since they are of a finite size and relevant to the behaviour during time of the system. In this way

> [...] the distinction between statics and dynamics is a distinction which concerns the method of analysis and not the nature of the phenomena. Thus one can talk about a static or dynamic analysis but not about a static or dynamic phenomenon. The phenomena as such are neither static nor dynamic. However, the phenonema as such can be *stationary* or *evolutionary*. Any phenonemon can be made subject of a static as well as a dynamic analysis. Maybe it is so that certain phenomena is better suited for static analysis than others. But this division of the phenomena does not in any way

(Marshall); 868 f, 907 (J. B. Clark); 892 f; 1018 (Walras); 1142 f (modern economic dynamics) [This note is not nearly finished yet!]

5 See, e.g., S, 1912/1934, pp. xi, 60, 64, 82 f

6 See also Frisch's (1933/1967, pp. 203-5) attempt to give a mechanical analogy of Schumpeterian business cycles and thereby provide a (dubious) understanding of innovations as a factor in maintaining economic oscillations.

coincide with the division in stationary and evolutionary phenomena. [... Furthermore, it is so that] many phenomena which are evolutionary in *microcosmos* is stationary in *macrocosmos.* The single individual is born, lives and dies. But the population may be stationary. The single capital objects are produced, weared and removed. But it may be so that the capital stock as such is stationary. [Frisch, 1929, p. 323[7]]

In addition to these distinctions Frisch also introduces

[...] a difference between what one could call the *analytic* dynamics and the *historic* dynamics. This difference does not have the same nature of principle as the difference between dynamics and statics. Both the analytic and the historic dynamics deals with the changes which takes place in time. *The economic changes in time which is not yet brought into or does not at all let themselves into* sharply formulated theoretical laws may be said to belong to the historic dynamics. [Frisch, 1929, p. 333]

In this way Frisch sketches a classification later developed by Samuelson[8]. The scheme is refered to extensively by Schumpeter (1954, pp. 963 ff[9]) but it has one problem: it does not have a proper place for Schumpeter's own evolutionary *theory.* Schumpeter undelines himself that he is dealing with analytic dynamics of evolutionary phenomena since "[n]o historical evolutionary factors will be indicated [...]" (S, 1912/1934, p. 60). But in Frisch's scheme this brings him in the same chategory as Newton's dynamic mechanics and Samuelson's accellerator-multiplier model of the business cycle. I prefer to put, e.g., Darwin and Schumpeter in a special box (see table 4.1.) where analytic dynamics is applied to evolutionary phenomena which undergo irreversible change due to some sort of mutations in the basic characteristics (genes, routines, etc.) of these phenomena. This seems to be what Schumpeter talks about when he tries to characterize the kind of evolutionary phenomena he is interested in:

[...] what we are about to consider is that kind of change arising from within the system *which so displaces its equilibrium point that the new one cannot be reached from the old one by infinitesimal steps.* Add successively as many mail coaches as you like,

7 In Norwegian: "[...] blir sondringen mellem statikk og dynamikk en sondring som gjelder analysemåten, ikke fenomenenes art. Man kan altså tale om en statisk eller dynamisk analyse, men ikke om et statisk eller dynamisk fenomen. Fenomenene som sådanne er hverken statiske eller dynamiske. Derimot kan fenomenene som sådanne være *stasjonære* eller *evolutoriske.* Ethvert fenomen kan gjøres til gjenstand såvel for en statisk som for en dynamisk analyse. Vistnokk er det så at visse fenomener egner sig bedre for en statisk analyse enn andre. Men denne inndeling av fenomenene faller på ingen måte sammen med inndelingen i stasjonære og evolutoriske fenomener. [...] kan man merke at mange fenomener som er evolutoriske i *mikrokosmos* er stasjonære i *makrokosmos.* De enkelte individer fødes, lever og dør. Og dog kan det hende at befolkningen er stasjonær. De enkelte kapitalgjenstande fremstilled, slites og forsvinner. Og dog kan det hende at kapitalstokken som sådan er stasjonær."

8 See, e.g., Samuelson 1943/1966; 1947/1983; see also Baumol, 1951/1970, pp. 6 ff.

9 Where (p. 663) Schumpeter seems to have forgot that Frisch provided more than the strict definitions of "statisc" and "dynamics".

you will never get a railway thereby. [S, 1912/1934, p. 64[10]]

Even if the words once more mixes methods and phenomena, they seem to indicate evolution with "mutation", case 6 in table 4.1. In this way Schumpeter distinguishes between two types of evolutionary phenomena, the "mutative" just described and the "simple" ones. And, concequently we have a narrow (case 6) and a broad (case 5 and 6) conception of evolutionary phenomena. In his own words:

> The term evolution may be used in a wider and in a narrower sense. In the wider sense it comprises all the phenomena that make an economic process non-stationary. In the narrower sense it comprises these phenomena minus those that may be described in terms of continuous variations of rates within an unchanging framework of institutions, tastes, or technological horizons, and will be included in the concept of growth. [S, 1954, p. 964]

| | | Stationary phenomena | "Evolutionary" phenomena | |
|---|---|---|---|---|
| | | | Simple | Mutative |
| Static analysis | | (1) | (2) | (3) |
| Dynamics | Analytic | (4) | (5) | (6) |
| | Historic | (7) | (8) | (9) |

**Figure 4.1.** A classification of methods and phenomena.

Schumpeter's last remark is a little surprising to a modern reader who may consider economic growth as a special case of economic fluctuations, both of which may also take place "within an unchanging framework". But Schumpeter appears to have had some problems with a scheme like the one described in table 4.1, even if he clearly acknowledged it in his old days. It must be stressed that the scheme was not clear to most other of Schumpeter's contemporaries. But (young) Schumpeter had a preference for sharp dichotomies which made him think primarily of case 1 and case 6. Thus he was inclined to neglect the areas which have been most thoroughly researched in the 30s and in the post-war period, namely case 4 and case 5. He thought that the case of balanced growth was a boring and unrealistic extension through time of static equilibrium.[11] He neglected the subtle problems of the stability

10 Here we see a somewhat inadequate mix of analytic terms and denotations to real phenomena, but the meaning is, in my opinion, clear enough.

11 The critique of the theory of organic, equilibrium growth was already developed in 1912. The problem was, of course, that if one read "[...] Marshalls grosses Werk, so muss man auf den ersten Blick den Eindruck haben, dass unsere [Schumpeter's] Auffassung von der starren Konstanz der statischen Wirtschaft einfach falsch sei. Marshall selbst sagt, dass es sich beim ökonomischen Gleichgewichte nicht um ein Phänomen ad instar [in accordance with] des mechanischen, sondern eher des biologischen Gleichgewichtes handle. Dass kann nur heissen, das das Grundphänomen der Wirtschaft in einem steten Entfalten in wohlbalancierten Proportionen, nicht im Balancieren festgegebener Kräfte liege." (S, 1912, p. 474)

properties of the general equilibrium state of the economic system. And he neglected even more the possibilities of explaining, e.g., the business cycles through "time lags" in the regulatory signals within an economic system with given parameters (of technology, tastes etc.). In my opinion, he did not really understand the modern concept of "dynamic system analysis", even when he met it. This can, e.g., be seen when he in the preface of the Japanese translation of *Theory of Development* (S, 1937, p. 162) notices that "[n]ew techniques have been worked out or adapted from other fields." Apparently, these techniques made it possible to describe "[...] a vast variety of wavelike movements in economic life which may be used to explain cycles without any reference to the principle of innovation." But Schumpeter is not able to give an adequate description of the difference between his own study and beginnings of the modern analysis of "dynamic systems". Instead we read:

> [...] I believe that these new tools of analysis will greatly enhance our power of dealing with the patterns of reality and that they will render service also to the process described in this book. But it should be observed that the results due to these new methods [...] do not constitute an alternative theory of the business cycle or the process of economic change in general. They describe repercussions and propagations without saying anything about the forces or causes that set them into motion. [... T]hey do not touch the question whether the force actually at work is correctly described by the principle of innovation or not. [S, 1937/1951, pp. 162 f]

This sounds all right but it is terribly unprecise and not totally correct. Time lags can, of course, explain business cycles if the parameters of the economic system are constant. To take an example from another area: If we place some rabits and a few wolves on a deserted island, there is little chance to avoid radical but systematic fluctuations in the two populations, unless one of them (or both) disappears. In certain years we have many rabbits and a few wolves. However, the latter becomes more numerous because of a low death rate which is obtained at the expence of the rabbits. In the end "prosperity"

> Schumpeter argued further that this idea "[...] als Erklärung der Entwicklung unzureichend ist. Nicht tiefe Gründe zeigt sie uns, sondern teils Oberflächen-, teils Begleit-, teils Folgeerscheinungen." (*ibid.,* p. 475) The old Schumpeter recognized the origin of the boom in growth theory which started in late 30s and the 40s: "[...] Marshall [...] gave the lead, followed by many and especially by Cassel, for an extension of the idea [of the stationary state as a methodological fiction] to the case of balanced progress, that is, to the case of a society in which population and wealth grow at about the same rate and in which "methods of production and the conditions of trade change but little; and, above all, where the character of man himself is a constant quantity" — a conception which has acquired additional interest in our own day owing to its bearing upon the problems of full employment in the models of a stagnating but also of an expanding economy. This extension of the concept of stationarity should have separated out neatly the phenomena of evolution in the narrow [Schumpeterian] sense of the term, and so it did. But with all the leaders of the period this meant setting these phenomena aside rather than constructing a comprehensive theory of them." (S, 1954, p. 966)

is over for the wolves and "depression" aggrevates until there is once more a relative plenty of rabbits. These observations show that population dynamics (case 5 and 8) can develop quite a long way without taking into account the possible mutations in the genes of the two populations. But this fact does not make superfluous a neo-Darwinian analysis of the mutative evolutionary possibilities in this stylized rabbit—wolf interaction[12] (case 6 and 9). The same can be said of Frisch's and Samuelson's economic cycle studies versus Schumpeter's studies of mutative economic evolution. But in the case of the economic system the rate of mutation and the instability and imitability of the "parameters" of the actors's behaviour are many times greater than in the case of biological systems. For this reason the former type of analysis looses while the latter increases in importance.

In other words, it is of crucial importance that we make precise what Schumpeter missed, namely a clear formulation of the distinction between case 5 and 6 in figure 4.1. Since dynamic system analysis has become much more wide-spread than in the days when Frisch presuaded Schumpeter to make a terminological retreat, a further example of this kind of thinking is given in app. C for readers who would like to have a glimpse of this area. In "desperate brevity" this appendix gives an informal presentation of the concepts of dynamic systems, such as closed system, feedback, conservation, automatic control, equilibrium, steady state, stability, optimal control, catastrophe, difference equation, differential equation, chaos, and mathematical modelling in all its difficulties. Modern discussions are often full of such concepts and one author, Goodwin (1988), believes that there are important relationships between the study of dynamic systems and Schumpeter's mutative evolutionary scheme. Therefore, Schumpeter's relation to mathematics become less paradoxical since it did not provide relevant tools for him:

> One needs the Keynesian approach to formulate a convincing model of the stocks cycle. He [Schumpeter] patiently listened to a series of lectures I [Goodwin] gave on Keynesian-type cycle theories, but he would have none of it. Now, half a century later, I better understand why. To begin with they were aggregative, global formulations, which he rightly rejected, since they quite failed to take adequate account of the continuing, innovational re-structuring of the productive economy. Furthermore the whole class of models of that type are unacceptable because they are linear. He perhaps sensed without clearly perceiving this fatal flaw, since his mathematical aptitute was so limited that he barely understood linear dynamic system, let alone nonlinear ones. [Goodwin, 1988, p. 6]

[12] This is an example of the very general predator-prey model presented in many contexts. The theme is developed in a whole book with seemingly deep implications by Peschel and Mende (1986).

This may explain some of Schumpeter's lack of understanding of the new mathematical tools which was noted above. But Goorwin goes further when he, in a somewhat speculative mood, points out that Schumpeter in a sense may be ahead of rather than behind these new techniques:

> As everyone knows, economic time series are always highly erratic. The logistic, which is obviously the most appropriate formulation of an innovation, provides the simplest and most direct formulation of the entire gamut of erratic, even chaotic, behaviour of a dynamical system. Thus economists may in the future come to thank Schumpeter for introducing them to the weird and wonderful world of chaos, at present one of the more active fields on mathematics. [Goodwin, 1988, p. 13]

For the present such possible relationships must be pushed into the background and we will simply proceed to distinguish between simple evolution with given behavioural parameters — which is the standard theme of dynamic system analysis — and the mutative evolution — which is a major theme of Schumpeter's studies.

But our distinctions are still not suffecient to characterize the contribution of Schumpeter. This is indicated by the fact that the theories of Schumpeter and Darwin are placed in the same category even if Schumpeter would probably have protested sharply against the analogy between the two areas and the two theories (cf. S, 1954, pp. 444-446) and even more of analogies to ordinary organic growth (S, 1912, pp. 414, 466). One of the problems involved in this connection is the flexible role of expectations and planning in economic activities which has no simple counterpart in biological processes. Thus we may distinguish between mutative evolutionary phenomena with and without a complex introduction of the "expected future" into present-day decision-making. The systematic treatment of expectations in economic theory developed after Keynes and the Stockholm School, but it already has a central role in Schumpeter's thinking about innovative actions.[13]

In the preceeding remarks we once more see the central and difficult role of the conception of "time" and "history" in the different scientific studies. In reality we are approaching one of the most subtle of the difficulties and relating the formal structures of thought and the facts of real life which were dealt with in general terms in ch. 2. Here we have no chance of reconstructing "historic time" *an sich* and any suggestions for this sort of really historic, analytic work (see, e.g., Robinson, xx/1975) may easily become misleading. The distinction

13 The theme of formation of expectations in Keynes's and Schumpeter's theories is treated in Rieter, 1985.

between "analytic time" and "historic time" must always be upheld. Thus we stay in "analytic time" even if we proceed to gradually more complex dynamic analysis (with mutations in behaviour and with expectations).[14] Also in these cases

> [i]t should be pointed out explicitly that, as defined, dynamic theory in itself has nothing to do with historical analysis: its time subscripts do not refer to historical time [...] and its sequences are theoretical and not historical or, as we may also put it, it uses theoretical and not historical datings. [S, 1954, p. 965]

But even if Schumpeter's dynamic theory is not historical, it does not involve the same time concept as is used in theory of economic dynamics with fixed behavioural assemptions. In the latter case we have "rational expectations" (to use a "modern" expression) in the sense that the actors under the assumption of full information can travel into the future in their minds and on this background make their decisions today (they can also make travels of the mind into the past, but this is of no economic relevance). In the case of mutative evolution there is, on the contrary, a radical difference between past, present and future. The past is history and can partly be reconstructed in the mind but the future is open for many developments. And, therefore, the present decision-making is a real problem which divides the economic actors into groups which may be represented by two "ideal types".

First, we have the "static calculators"[15] who act according to a calculation of the long-run equilibrium situation of the economy or, more realistically, according to the principle: "same procedure as last year". Second, we have the "innovative revolutionaries"[16] who act according to the principle: "we create the future and make a profit out of it". Some members of the latter group may just be cranks. But it is Schumpeter's thesis that (at least) the capitalist economic system is constructed in a way which in certain situations gives the laurels to the innovators. *Ex post* it may appear as if they acted rationally. But *ex ante* it is impossible to judge their decisions objectively. From the old norms and from the viewpoint of the (majority) of "static calculators" their decisions are wrong or "un-hedonic" or "irrational".

The problem is that two systems of expectations of values/prices are confronting each other. On the one hand, we have the "static

14 And even the "historic dynamics" of table 4.1 deals in a way with reconstructed time. But in the present context we stick to the problems of more formal analytical work.

15 This expression is my own caracterization of Schumpeter's idea. I have, however, found expressions like, e.g., the "homo oeconomicus — der hedonischen Rechenmaschine", S, 1908, p. 86.

16 [Find one of the several relevant quotations.]

calculators" in a simplified version of our discussion may be seen as expecting that the present value system will also be the system of the future. On the other hand, we have the innovators who have a (vague) idea of a "system of future values", i.e.

> [...] die Wertschätzungen, die die Güter erhalten, wenn man sie in Zusammenhange mit neuen, vorteilhafteren Kombinationen wertet, deren Reasisierung von ihrem Besitze abhängig ist. [S, 1912, pp. 168 f]

Through the actions of the innovators on grounds of their mental expeditions into the future the present is to some extent shaped, and this includes the value and price system, e.g., because of the demand of the innovators. Their "possible futures" becomes part of present-day reality:

> Die Zukunft wirkt also machtvoll in das Wertsystem der Gegenwart hinein, so unkörperlich ihre Macht ist. Wie weit die Herrschaft ihres Wertsystems geht, ist quaestio facti [an empirical question]. In einer fortschrittlichen Volkswirtschaft, in der jedermann Neues sich entwickeln sieht und noch mehr davon hört, wird ein viel weiterer Kreis mit Zukunftwerten rechnen und besonders im Preiskampf von ihnen Vorteil zu ziehen suchen, als bloss der unsrer Männer der Tat [the innovators]. [S, 1912, pp. 169 f]

It is thus in the present that our two types of "rationality" confronts each other: the backward looking "rationality" of the non-innovators and the forward looking "rationality" of the innovators. The one group may be supposed to be satisfied with a "decision-support system" based non-mutative assumptions, in the stylized story of Schumpeter on the static analysis of (basically) stationary economic phenomena (case 1) or, to be a little more modern, on a dynamic analysis of simple evolutionary phenomena. Such a decision-support is clearly for "mere managers". The other group is thriving on mutations and may be supposed to take into account a Schumpeter-like type of evolution. But this kind of evolution becomes radically unpredictable when performed on a large scale and in long time perspectives. Therefore, the innovators or "innovative entrepreneurs" are dependent upon some sort of stability, i.e., on the assumption that a majority of the agents stick to their present-day values.

We will return to the subtle dialectics between stability and innovation. Here it is more relevant to sum up the results we have already obtained. Basically we see that what was initially to Schumpeter two boxes into which the propositions of economic theory should be sorted ("statics" and "dynamics") is in reality a much more complex sorting frame. In order not to make things too complicated we may give the word to Schumpeter to hear his preliminary (1926 and 1934)

summing up of the issues dealt with here. He concludes that his

> [...] position may be characterised by three corrosponding pairs of opposites. First, by the opposition of two real processes: the circular flow or the tendency towards equilibrium on the one hand, a change in the channels of economic routine or a spontaneous change in the economic data arising from witin the economic system on the other. Secondly, by the opposition of two theoretical *apparatuses:* statics and dynamics. Thirdly, by the opposition of two types of conduct, which, following reality, we can picture as two types of individuals: mere managers and entrepreneurs. [S, 1912/1934, pp. 82 f]

In table 4.2 I have transformed this summary into a picture of Schumpeter's refined sorting frame. In the headings of the columns I have placed the all-encompassing terms of the young Schumpeter: "**statics**" and "**dynamics**". There is no doubt that he in the beginning thought that there was something like a one-to-one relationship between the types of processes, methods and conducts in the way depicted by the table. But later he may have felt that this arrangement integrated his scheme of thinking into something which resembled a Gordic knot. Therefore, the old Schumpeter would probably have removed the headings from the colums and pointed out that, e.g., the static method could be used to study certain aspects of the innovative entrepreneurial behaviour. Furthermore, he would have had difficulties in arguing that the question of how innovative behaviour becomes suppressed under the conditions of the circular flow can be dismissed as a contradiction in terms.

| | | **"Statics"** | **"Dynamics"** |
|---|---|---|---|
| Two real economic processes | In relation to routines | The circular flow of the economy within given economic routines | Change in the "channels" of economic routines |
| | In relation to equilib-rium | The tendency towards equilibrium | The spontaneus change in economic data/ parameters (from within the system) |
| Two theoretical apparata/m ethods | | Schumpeterian "statics" and comparative statics | Schumpeterian "dynamics", specially designed to study mutative evolutionary phenomena |
| Two kinds of conduct | As actor types | (Mere) managers | (Innovative) entrepreneurs |
| | As decision-makers[17] | Hedonistic calculators (routinized bounded rationality) | Innovative "gamblers" (innovative bounded rationality) |

**Table 4.2.** Schumpeter's scheme of dichotomic analysis.

17 Unfortunately, Schumpeter does not give names to the types of conduct, only to the the types of individuals. I have chosen first to give intuitive names with some relation to Schumpeter and then to give names in relation to Simon (1982). The latter names will be explained and used mainly in the chapters on the modern theories of innovation and evolution.

In the stylized tabular form certain further problems in Schumpeter's sorting scheme are maybe a little more evident that in the verbose presentations in *Theory of Development,* especially clearer than in the attempts of summing up in the later omitted last chapter of the first edition. The major problem is probably whether the different characterizations of the "real" phenomena (economic processes and types of conduct) are really pointing a common core or whether they are pointing a a cluster of diverse things. This question will be confronted several times later but it is relevant to point out at present that there is a basic difference between the characterization of the non-innovative processes as routine-based and as tending towards equilibrium. Of course the two views may be brought to coincide if the economic system is already in a stationary state and is not exogeneously brought avay from this state. In this way the localized routine-decisions do not endanger the global equilibrium of the system. But the modern study of dynamic systems teaches us that this situation is rare and that a fine-tuned equilibrium path of the system is quite difficult to obtain. The problem is not even solved by referring to general meta-routines which tells how the individual routines should be changed in order to equilibrate the system — such meta-routines are quite difficult to specify.

This discussion is especially important since Schumpeter's concepts of innovation are defined in contradistinction with his concepts of non-innovation. Thus we may have a glimpse of two different types of innovation. In relation to the (localized) routine concept we may define innovation as non-routinized behaviour (which in the long run is transformed into new routines by means of the statizising behaviour). This definition is certainly much broader than the definition Schumpeter had in mind. The reason is that he wants to integrate it with another definition, namely innovation as non-interdependent, non-derived behaviour. The tendency towards equilibrium is clearly a consequence of interdependent and derived behaviour (which, however, may involve the breaking of routines). The spontaneous and non-derived changes in the economic system may point in many different directions. But the same may be the cese for non-spontaneous and derived changes: If we consider the economic system as based on a hierarchy of routines, we may easily enviseage the construction of rules which let the actors derive decisions at one level which are routine-breaking at another hierarchical level. This type of multi-level hierarchical system seems to emerge into Schumpeter's

thinking through his discussion of the (semi-) permanent innovative behaviour of "big business" in *Capitalism* and elsewhere and the related phenomena which were called "Schumpeter Mark II" by Almarin Phillips. But even in "Schumpeter Mark I" of the *Theory of Development* some extra thought in this direction may blur the nice dichotomy between "hedonistic calculators" and "innovative gamblers".

## III

## THE TWO BASIC TYPES OF BEHAVIOUR

Schumpeter found his "hedonistic calculators" in marginalist economic theory in close relation to the assumption of utility maximization. By means of such a conception it is possible to study

> [...] wie das wirtschaftliche Handeln der Menschen aussieht, wenn sie aus gegebenen Verhältnissen unter dem Gesichtspunkte der bestmöglichen Befriedigung ihrer Bedürfnisse die Konsequenzen ziehen. [S, 1912, p. 104]

This idea is most systematically developed in the work of Walras. Here the exchange process does not stop before all the actors of the economy have obtained the bundle of commodities which maximizes their utility under the given conditions. How this behavioural "law" can be formulated in a reconstructed Walrasian scheme is shown in app. B of the present chapter. We will return to a discussion of Schumpeter's relation to this system later.

What is for the moment of interest is that there is absolute no role for an elite in the Walrasian scheme. If we include into the scheme the process of eliquibrizing through groping/*tâtonnement* (algorithm 1a and 1b of app. B) there is room for adaptive behaviour but even this would disappear if a stable equilibrium was ever obtained and no exogeneous disturbances occurred. Under such conditions the hedonically calculating actors would come out with the same result day after day, year after year. Notwithstanding all Schumpeter's deep admiration for Walras's intellectual performance in creating a (more or less) formalized static economic system, it was by means of a radical confrontation with this picture that young Schumpeter developed his own position. In other words, Schumperter had to fight for a role of the "elite" in economic theory and his interest in the distinction between "statics" and "dynamics" is largely explained by his wish to understand the phenomenon of "elites" in relation to economic affairs.

In principle you can put mass and elite behaviour on into the same framework of marginalist calculus:

*Jede* Handlung lässt sich unter des Wertschema bringen und wenn wir uns, der Bequemlichkeit halber, der psychologischen Ausdrucksweise bedienen wollen, können wir sagen, dass *jede* Handlung, und so auch jede wirtschaftliche, Wertungsvongänge voraussetzt, die in ihrer Art so präzise sind wie die des Stockbrokers. [S, 1908, p. 551]

But this is a purely formal procedure which helps to hide the characteristic difference between "mass" and "elite" behaviour. The difference is best understood as one of different roles in the process of radical socio-economic change. But there may also be psychological difference of much relevance for the outsome of the different decision-making processes. Schumpeter makes his point with some relation to Nietsche:

Wille zur Macht, Freude an der Anstrengung und ähnliche Dinge machen es notwendig, zwischen einem eudämonistischen [happiness-searching] oder hedonistischen [pleasure-searching] und einem energischen oder voluntaristischen Egoismus zu unterscheiden [... 1908, p. 85]

This distinction is not much developed in *Essence of Economics* (where he actually tries to avoid hypotheses on such subjects) but it becomes central to his *Theory of Development*. Especially in the first edition he gives much room for a discussion of both types of behaviour which are put into a direct relation to the concepts "statics" and "dynamics". After considerations of the many possibilities of misunderstanding such the different labels he jumps to the naming of the two types of actors and behavioural rules:

Der eine Typus soll als "statisch" der andre als "dynamisch" bezeichnet werden. Und mit dieser Bezeichnung soll uns eine andre gleichbedeutend sein, nämlich "hedonisch" und "energisch". Wir sprechen nicht nur von hedonischen oder statischen und von energischen oder dynamischen Typen des *Handels,* sondern auch von hedonischen oder statischen und von energischen oder dynamischen *Individuen,* wobei wir unter der erstern jene verstehen, an denen wir *lediglich* hedonisch-statisches Handeln wahrnehmen, under den letztern jene, die wir *auch* dynamisch-energisch handeln sehen. [S, 1912, p. 128]

In order not to mix up things, I prefer to call the two types of individuals members of the "mass" and the "elite", respectively. In principle this gives us four possible combinations between behavioural and individual types as is shown in table 4.3.

| | "Mass" | "Elite" |
|---|---|---|
| "Hedonic" behaviour | (1) | (3) |
| "Energetic" behaviour | (2) | (4) |

**Table 4.3.** Two types of behaviour and two types of actors.

We have already met the two types of actors, the "mass people" and the "elite". But when trying to characterize the types of behaviour

related to these stylized types Schumpeter uses notions which may not be simple to understand to a modern reader. To the "mass" is ascribed a "hedonic" behaviour and to the "elite" at least the possibility of an "energetic" behaviour. These combinations are indicated in table 4.1. as case (1) and case (4). Furthermore, it is clear that the lack of "energetic" types of behaviour is used as a defining characteristicon of the "mass", i.e., in Schumpeter's conceptual world case (2) is non-existing. However, the "elite" is defined through the occurrence of "energetic" deeds while case (3) of "hedonic" behaviour by members of the "elite" is not excluded.

The somewhat old-fashioned names of the two types of behaviour may be understood intuitively but it may help if we take a look at the psychology and the theory of knowledge around the turn of the century. Schumpeter was clearly well-informed about these areas even if he claims to take the expressions from everyday language:

> Warum wir das "dynamische" Handeln auch als "energisches" bezeichnen, dürfte klar sein. Wir denken dabei an den Kampf mit jenen "Bindungen", den nicht jeder aufnehmen kann. Weshalb wir nicht so sehr auf weitern Gesichtskreis und neue Ideen Gewicht legen, sondern auf die Energie des tatsächlichen Handelns, wird noch begründet werden. Hier sei betont, dass wir den Terminus "energisches Handeln" einfach dem täglichen Sprachgebrauch entnehmen. Wir präzisieren zwar unsern Begriff schärfer, als es das gewöhnliche Leben zu tun pflegt, glauben aber, dass wir nur den Inhalt schärfer herausarbeiten, den schon das letztere mit dem Worte verbindet. Es handelt sich also lediglich um die wissenschaftliche Verwertung eines Populärbegriffes, und die Aufnahme der durch ihn bezeichneten Tatsachen in das gedankliche Bild der Wirklichkeit und um nichts andres — namentlich nicht um eine Anlehnung an einen der Inhalte, die das Wort schon bisher in verschiedenen Wissenszweigen gefunden hat. [S, 1912, p. 128]

Today the talk of "energetic" behaviour is much less part of everyday language than it probably was around the turn of the century when termodynamics as well as electric light were major novelties. For this reason it might be relevant to have a glance of one of the many authors who used the concept of energy in relation to behaviour and knowledge-creation, the German psychologist-philosopher Avenarius (1843-1896) who co-founded empirio-criticism together with Mach. His theory of knowledge and behaviour was "economic" or "pragmatic" and was founded in what Høffding (xx/1943, p. 90) has called a "natural history of problems". In his view there are in many cases there are no problems to the individual placed in a given environment. The reason is that the individual is adapted to its environment or has sufficient "energy" to solve the tasks as they occur. A problem presupposes a tension between the individual and its environment. In the language of the turn-of-the-century, we can say that such a tension is indicating

that a successful coping with the environment implies either a larger or a smaller amount of "energy" than the individual can mobilize. On the other hand we have that the unproblematic situation is implying a certain type of equilibrium. In pseudo-formalized terms Avenarius would say that the *challenge* for the individual created by the environment, **C**, is equal to the "*energy*", **E**, which the individual is able (or willing to) mobilize.

This formulation indicates two types of mismatch between **C** and **E**. First there is the possibility that the environment is demanding a greater amount of labour and adaptive capability than possessed by the individual (**C** > **E**). In this case the given environment appears to be strange to the individual and lots of contradictions, deviations and exeptions occur. In the human world such a problematization can occur simply because of the challenges created by an extension of experience and of the intellectual horizon. In this way we can say that given the "energy" available, a more complex culture implies an increase in the set of problems to the individual and to society as a whole.

Second, we have the case where more "energy" is available than demanded by the environment (**C** < **E**). Under such conditions the individual will, according to Avararius, develop an urge to transcend the given environment. It may take the form of romantic or practical idealism but there are also other possibilities. The situation of unrest will remain until the "energy" is spent or the environment is reshaped according to the desires of the individual. In other words, the individual will show an "over-energetic" or, simply, "energetic" behaviour as indicated by case (4) in table 4.1.

The process of equilibrizing between **C** and **E** may be called the process of deproblematization. Avenarius points out that this deproblematization is often preliminary or even purely individual. New tensions, i.e., new problematizations, will show up. A definitive and universal deproblematization implies that all the preliminary and individual elements of the solution have been revises and re-revised etc. According to Avenarius this result is main optained through a quantitative description at the level of "pure experience".

This discussion of "challenges", "energy" and "problems" is only one of several attempts to use terms of physics and chemistry on social and psychological affairs which were made around the turn-of-the-century, the most notorious being the generalized "energetics" of the chemist-philosopher Ostwald (1853-1932). They have been presented here to give the reader a feeling of some of the (highly confusing) discussions at that

time. I will, of course, make no attempt to place Schumpeter in this manifold against his explicit wished, quoted above. I just take Avenarius as another systematization of everyday language as Schumpeter's and remind the reader that both formulations makes possible the definition of a socio-economic elite which at least in certain relations has a surplus of "energy" and a problem-seeking or even problem-creating type of behaviour.

In this perspective the member of the "mass" could simply be characterized by non-energetic behaviour. But Schumpeter tries to put several other observations into this behavioural type:

> Warum wir das "statische" Handeln auch als "hedonischen" bezeichnen, sei ebenfalls kurz angedeutet. An sich braucht statisches Handeln nicht lediglich auf hedonischen oder eudämonistischen Motiven zu beruhen, ebenso wie hedonische oder eudämonische Motive nicht mit begrifflicher Notwendigkeit zu einem statischen Handeln führen müssen. Aber in Wirklichkeit fallen de facto statisches Handeln und hedonische Motive meist zusammen. Vom hedonischen Standpunkte würde sich ein Kampf mit den Bindungen so gut wie nie empfelen. Hedonische Motive charakterisieren ferner in der Regel solsche Individuen, bei denen auch jene gewisse Schwäche der Entschlüsse vorliegt, die dazu führt, dass man in den alten Bahnen bleibt. [S, 1912, pp. 128 f]

This kind of conceptual mix is, of course, open to much discussion, and Schumpeter decided to reduce radically the discussion of "hedonism" and "energetic" behaviour in the later editions of *Theory of Development.* He was, however, not able to remove one of the basic ideas behind his theoretical system. And we will also preceed somewhat further into Schumpeter's two types of conduct.

## IV

## ON MASSES AND ELITES

In the case of mass behaviour, the ideas of "energetic" and "hedonic" behaviour may help us to understand the fundamental difference between the conceptions of Walras and Schumpeter. On the surface they are very much alike. The reason is not least that any action can be analyzed within a scheme of utility analysis. Both clearly deal with the minimizing of the use of economic resources and maximizing the utility or pleasure from the economic goods obtained. If the expences are described in terms of negative pleasure, we have a formula of hedonic, pleasure-seeking behaviour which may even be extended to "elite" behaviour with such strange preferences as "the will to found a private kingdom", "the will to conquer" and "the joy of creating" (S, 1912/1934, p. 93). In principle such ideas may be integrated into the utility function

and help in determining "rational" behaviour.

But Schumpeter's discussion implies that the attempt to bring anything on the same formula has clearly decreasing returns to scale By allowing for two types of diametrically opposed behaviour one might be able to study phenomena which cannot be treated properly if reduced to a single type of behaviour. For this reason Schumpeter has to critizise Walrasian conceptions, both implicitly and explicitly. The first target is the Walrasian decision model of "hedonic calculators" with extensive (or even infinite) information-access and information-processing power. Schumpeter's conception is different since he cannot ascribe this superpower to the "mass". His hedonic actors have strictly limited information-access and information-processing power. This point is developed in relation to the case of the artisans but it has clearly broader implications:

> Im handwerksmässigen Betriebe tut das Wirtschaftssubjekt wirklich im Wesen nur das, was er gelernt hat, was schon seine Vorgänger taten. Selbst der noch in die statische Theorie fallenden Funktion der Anpassung erweist er sich meist nicht gewachsen. Es folgt nur unbedingter Notwendigkeit, nur solchen Tendenzen, die als Tatsachen vor ihm stehen und ihn vor die Wahl zwischen Untergang und Anpassung stellen, zugleich aber über die Art der nötigen Anpassung keinen Zweifel lassen. Selbst die geäusserten und durch zahlungsfähige Nachfrage gestützten Wünsche des Konsumenten ignoriert der Handwerker mit Vorliebe, wenn sie ihm Ungewohntes zumuten, selbst die kleinste Reform in seinem Betriebe nimmt er nicht vor, wenn er es vermeiden kann. [...] Oft bemüht man sich aus verschiedenen Gründen, diese Tatsachen zu unterdrücken oder zu beschönigen, oft erblickt man in ihnen den Ausdruck besonderer Unfähigkeit der einzelnen Individuen. Aber wir stehen hier einem Verhalten gegenüber, das in der Geschichte der Menschheit die Regel ist. [S, 1912, pp. 110 f]

But even with these restricted powers Schumpeter think the "hedonic calculators" are able to function as such in situations of general equilibrium or maybe near to an easily reconstructible equilibrium. Here they are facing a given and supposedly well-known framework in which even the *fin-du-siècle* artisan is able to function:

> Der Handwerker wirtschaftet innerhalb der gewohnten Bahnen ganz nach den Regeln der "Börsenökonomie". Er strebt den höchsten Preis der Produkte und den niedrigsten der Produktionsmittel an. Er tut nach seinem Lichte auch sonst, was *jedes* Wirtschaftssubjekt tut. Nur gewissen Aufgaben gegenüber versagt er, nähmlich solchen gegenüber, die ausserhalb der erfahrungsgemäss gegebenen Bahn liegen. [S, 1912, p. 111]

But what is the reason why the majority of economic actors will not and cannot act outside the given framework? And, since this framework is partly created by the economic actors themselves, why do they respond to changes in it rather than actively recreating it? In

discussing such questions Schumpeter (1912, pp. 115 ff) takes his point of departure in what he considers to be a stylized fact: the wide-ranging constancy of the economic data. One might consider this constancy as an expression of a rational judgement among the economic actors that the actual economic world of types and quantities of commodities and of methods of production is the best of all possible worlds (given the non-economic preconditions). But this is not correct. There are always lots of possibilities of change which might be to the better:

> Jahrhundertelang kann eine neue Möglichkeit, trozdem dass sie in recht weiten Kreisen bekannt ist, ein unfruchtbares Schattendasein führen, ohne irgendeine Wirkung nach aussen zu haben. [S, 1912, p. 544]

Part of the explanation for this stylized fact is that the resources of the economy is limited and this part is well-researched by marginalist economics. But Schumpeter thinks of other causes when he gives his major explanation of the phenomenon:

> Sie [the causes] liegen in gewissen Widerständen, auf die das wirtschaftliche Handeln immer dann stösst, wenn es aus den gewohnten Bahnen hinauslenken will. [...] Von jenen Widerständen, die die Beschränktheit der vorhandenen Mittel dem Betreten neuer Bahnen entgegensetzt, sprechen wir nicht. Dieselben sind ja klar und werden von der [marginalist] Theorie berüchsichtigt. [...] Aber zwei andre Gruppen von Widerständen sind interessanter und sie wollen wir genauer betrachten. [S, 1912, p. 117 f]

The first type of resistance to changed behaviour is the pressure from the environment, especially the parties to which the actor who is considering a change is related (S, 1912, pp. 118 f). Schumpeter points out that this type of resistence is well know to sociology (around 1900) and furthermore he asks the reader to use his own experience and imagination. What if you changed your own professional behaviour? And what about a peasant in a village? When thinking of such cases one will immediately

> [...] ein klares Bild aller jener Gegenströmungen haben, die im einzelnen darstellen hier zu weit führen würde. Und dieser Druck ist für die Masse durchaus zwingend. Der einzelne, besonders in unserm kulturellen Milieu und hier wiederum in den "freien" Berufen, wird sich von ihm losmachen können. Die Mehrzahl der Wirtschaftssubjekte kann ihn nicht ignorieren. [S, 1912, p. 119]

One may say that such resistance increases the "energy" needed for change of behaviour by people who are firmly placed in the socio-economic structure to a level which brings it outside the range of most people. But some people are less firmly locked into the structure and they have greader possibilities of change. But there is also another type of resistance to change since it is

[…] eine psychische Tatsache, dass es unendlich viel leichter ist, eine scharf ausgetretene Bahn zu begehen, als eine neue einzuschlagen. […] Es erfordert dies eine neue und anders geartete Willensaufwendung, deren nicht jedermann fähig ist, und es involviert die immer ein Risiko von andern und ganz neuen Gefahren. [S, 1912, p. 119 f]

Once more, Schumpeter refers to the everyday experiences of the reader:

Physisch und psychisch sind wir auf eine bestimmte Lebensweise und eine bestimmte Art der Tätigkeit eingerichtet. Wir kennen die Aufgabe, die wir da zu lösen haben, und die Menschen, denen wir dabei begegnen. […] Ein grosser Teil der von uns geistig und physisch zu leistenden Arbeit geht dabei verhältnismässig reibungslos vor sich und kostet und wenig Energie. Er wird ferner mit grosser Sicherheit erledigt, und einem sich plötzlich erhebenden Widerstande begegnen wir mit einer Entschlossenheit, die uns fehlen würde, wenn wir nicht alle Elemente, die dabei in Betracht kommen, genau kennen würden. Wir lenken von selbst an jedem Tage in diese gewohnten Bahnen ein und selbst verhältnismässig ganz unbedeutende Veränderungen kosten Willensanstrengung, erregen Unlust und werden als etwas Ungewohntes, Fremdes betrachtet. [S, 1912, p. 120]

Schumpeter points out that such social and psychological resistances against doing something novel are of special importance in economic life. One may even say that all the restrictions are preconditions of most economic activities. Without them these activities may easily become practically impossible.

Der Umstand, dass eine bestimmte Bahn gewohnt, bekannt und bewährt ist, spricht daher mit sehr grossem Gewicht zugunsten der Beibehaltung derselben. [S, 1912, p. 121]

Thus we see a high degree of constancy in production processes and products even in the case where special social, technical or commercial resistance seems at hand. This conclusion seems to relate to Wieser who in some formulations is even more radical than Schumpeter. Wieser extends the argument to encompass even the value and price system:

A knowledge of values of goods, such as has existed in every economy up till now, is […], in itself, one of the most valuable of possessions. It is almost as valuable as the possession of the goods themselves, inasmuch as it is the key to their use. The sum of thousands of years of experience concerning the sources of supply of goods, and the suitability or otherwise of the conditions of their production, as well as concerning the amount of demand for them, is represented in the figures of value handed down to us. Were a nation to lose all remembrance of these, it would be an enormous economic misfortune. An almost incalculable period of time, an almost incalculable amount of error and loss, would have to be gone through, before the nation could again obtain mastery over the relations of goods formerly expressed, with numerical clearness, for each individual good by means of value. [Wieser, 1889/1971, pp. 212 f]

Here we have quite another picture than in Walras's description of the equilibrizing process of the economy which appears to be an

afternoon's work at a generalized French market place under the supervision a generalized auctioneer. This auctioneer is supposed to start the story of the general equilibrium *ab ovo,* from the egg, from the distant beginnings with Leda's egg rather than *in medias res,* in the middle of the story as Homer does in his *Iliad.* But Wieser and Schumpeter is quite sceptical towards this reconstruction of the economy from scratch which is the essence of the Walras's pictury of the *tatônnement* process, the groping towards equilibrium. Of course we may gain insight into the economic process by assuming

> [...] all this experience to be nonexistent and reconstruct it *ab ovo, as if* the same people, still having the same culture, tastes, technical knowledge and the same initial stocks of consumers' and producers' goods, but unaided by experience, had to find their way towards the goal of the greatest possible economic welfare by conscious and rational effort. [S, 1912/1934, p. 10]

Thus, the equilibrium system

> [...] is built up before our eyes *ab ovo.* This does not mean that its coming into being is genetically explained thereby. Only its existence and functioning are made logically clear by mental dissection. And the experiences and habits of individuals are assumed as existing. How just these productive combinations have come about is not thereby explained. [...] Even though justified as far as it goes, this method of treatment passes over our problem. If the assertion were implied that this is also settled by it, it would be false. [S, 1912/1934, p. 83]

To see the real problem we can consider the experiences of the ordinary manager [*Wirt*]:

> Auf die Erfahrung gestützt, denkt der praktische Wirt gleichsam elliptisch, ebenso wie man, wenn man täglich einen Weg zurücklegt, nicht über denselben nachzudenken braucht. Verlöre er diese Erfahrung, so müsste er sie *tastend,* mit Anstrengung wiederzufinden suchen und nur hierbei würden wir sehen, welcher Art die Gesetze der Vorgänge sind, welche uns in Wirklichkeit gleichsam in Gewohnheit versteinert begegnen. [S, 1912, p. 11]

The problem is that the ordinary manager would not be able to participate in this process but there are other economic actors which, at least sometimes, have a surplus of "energy" which allows them to develop new solutions or trajectories for economic life. Here we are dealing with another type of behaviour which is studied by elite theory. To understand the need for another behavioural type it is important for Schumpeter to point out

> [...] dass es nicht bloss schwieriger ist, Neues zu tun, sondern dass es überhaupt etwas wesentlich andres involviert. Die Schwierigkeiten, denen man dabei begegnet, sind nicht etwa nur graduell von denen verschieden, die er auch in den gewohnten Bahnen zu überwinden gibt, sondern es sind *andre* Schwierigkeiten. [S, 1912, p. 121]

The difference is comparable to go with the stream of a river and

swimming actively against the current. And from this analogy we see that an extra force is necessary in the second case. It is this special force and the unusual actions which makes the "energetic" individuals well-know even if they are relatively few in number.

Nicht nur auf allen übrigen Gebieten menschelicher Tätigkeit, auch auf dem der Wirtschaft gibt se Führer, die kraftvoll aus der Masse emporragen, gibt es Persönlichkeiten, die die Regeln ihres Handelns in sich tragen. Der Industriekapitän, der Geldmann unsrer Tage ist niemand fremd. Seine Vorgänger in der Vergangenheit sind nicht schwer anzugeben. Es gibt Individualitäten, die auch auf wirtschaftlichem Gebiete nicht nach statisch-hedonischen Regeln handeln, Individualitäten, deren Tun ein neues Moment in unser Bild der Wirklichkeit bringt. Die praktische Erfahrung kennt sie zwar, aber sie analysiert sie nicht oder doch nur unvollkommen. Das haben wir jetzt zu tun. [S, 1912, p. 131]

And further:

Wir beobachten im täglichen Leben, dass die führenden Persönlichkeiten der Volkswirtschaft und überhaupt alle jene, die im Getriebe der Wirtschaft über die Masse emporragen, in jedem Zeitpunkte bereits über bedeutende Mittel verfügen. Trotzdem sehen wir sie ihre ganze Kraft dem Erwerbe weiterer Gütermengen widmen, sehr oft ohne einem andern Gedanken Raum zu geben. [... But] wir bemerken, dass sich bei solchen Leuten geradezu eine bemerkenswerte Gleichgültigkeit, ja selbst Abneigung, gegen untätigen Genuss zeigt. [...] Die Männer, die die moderne Industrie geschaffen haben, waren "ganze Kerle" und keine Jammergestalten, die sich fortwährend ängstlich fragten, ob jede Anstrengung, der sie sich zu unterziehen hatten, auch einen ausreichenden Genussüberschuss verspreche. Wenig haben sie sich um die hedonischen Früchte ihrer Taten gekümmert. [S, 1912, pp. 135, 136 f]

These formulations are representative of many pages of arguments where Schumpeter is clearly going for an "ideal type" in Weber's sense. But at the same time we cannot avoid the feeling of a kind of "hero worship" (like that of the English author Carlyle) or even social Darwinism[18]. This was already remarked by the first readers and Schumpeter cut down such types of argument to a minimum in later editions of *Theory of Development.*. At the same time he here reflects over

18 Even in the English edition Schumpeter points out that "[...] practically all business people belong here [with a moderate degree of "energetic" characteristics], otherwise they would never have attained their positins; most represent a selection — individually or hereditarily tested." (S, 1912/1934, p. 82). This interest was much stronger in the early days. Thus Schumpeter tells about his early ideas of a racial theory of classes when discussing his *Social Classes in an Ethnically Homogeneour Environment:* "The qualifying phrase, "in an ethnically homogeneous environment," is not meant to deny the significance of racial differences in explaining concrete class formations. On the contrary, my early thinking on the subject followed the paths of the racial theory of classes, as it is found in the works of Gumplowicz, upon which I came while I was still at school. One of the strongest impressions of my apprenticeship came from Haddon, the ethnologist, who, in a course given at the London Schol of Economics late in 1906, demonstrated to us the differing racial types of various classes of Asiatic peoples, with the aid of countless photographs. Nevertheless, this is not the heart of the matter, not the reason why there are social classes." (S, 1927/1951b, pp. 133 f) A survey on biologically inspired social science is found in *History of Analysis* (S, 1954, pp. 773 f, 788-792).

the critique which is related to his strategy of defining a type of (innovative) conduct and then to search for a type of person which have this conduct as its outstanding characteristic.(S, 1912/1934, pp. 81 f). This question was made even more pretinent since Schumpeter in his discussions on economic cycles and crises had made use of what seemed to be an intermediate type ("half-static" businessmen). His answer is, of course, that attributes which may be present to a higher or lower degree (like the ability of "energetic" behaviour) is distributed unevenly. If the population is ordered according to this attribute we will see a normal (bell-shaped) curve. Only a few have the attribute to a very high degree or is totally missing it while the middle half of the population may have it to some (small) degree. If I may rephrase Schumpeter, he argues that we are facing a quite general problem in any type of social science discourse and this gives no reason for dismissing the use of "ideal types" for certain purposes. On the other hand, the exaggeration implied by the "ideal type" does not necessarily imply any worshiping or flattering of the type. It could just as well be considered as a carricuture.

However, such considerations do not remove the extremely central role which Schumpeter ascribes to his "ideal type" and the essentially asymetric relationship between what may still be seen as the "mass" and the "elite". This may psychologically be formulated as a question of the confrontation of expansive and defensive personalities. Both parties may have the same wishes, but ...

> Das Erreichen selbstgesetzter Ziele und das Ins-Auge-fassen neuer gehört ja in viel höherm Masse zu einem gesunden psychischen Leben kräftiger Naturen als einfaches Genussstreben. Die volle Betätigung aller Energien der Persönlichkeit kann jeder als ein Bedürfnis in seinem eigenen Bewusstsein wahrnehmen und im täglichen Leben auch äusserlich beobachten. Schwache kämpfen sich mühsam durch die Erledigung der hergebrachten und wiederkehrenden Aufgaben durch. Der Stärke behält dabei einen Kraftüberschuss — er wird ändern und wagen um des Änderns und Wagens willen, immer neue Pläne durchführen und dann an immer weitere herantreten. Aus einem Gegengrund wird die Tätigkeit als solche bei ihm zum Selbstzweck, ohne dass es eines andern Anstosses bedürfte: Freude am Tun selbst, ohne jedes andre Motiv, ist sicher eine psychische Realität. [S, 1912, p. 145]

This picture of the "energetic" type who has become addicted to action, or action in order to make more action, is not the only possible interpretation. We have, e.g., the alternative formulation of Marx (1867/1956, ch. 24): "Accumulate, accumulate! That is Moses and the prophets!" But in any case, there is a change in motivation:

> Mit den hedonischen Motiven fallen auch — unbeschadet der Allgemeingültigkeit des Wertgedankens — die auf ihnen beruhenden Gesetze des wirtschaftlichen Handelns für unsern Typus weg. Die Erwägungen, die das hedonische Wirtschaftssubjekt leiten, verlieren ihre Bedeutung für das energische. [... V]on

besonderer Wichtigkeit ist die Tatsache für uns, dass es für unsern Mann der Tat keinen angebbaren Ruhepunkt, keine Wirtschaftsweise und keine Grenznutzenniveau gibt, bei der oder bei dem er stehenbleiben würde. Weder Rücksicht auf Anstrengung noch Sättigung seiner hedonischen Bedüftnisse lähmt seine Tatenlust. [S, 1912, pp. 145 f]

Here we clearly have an stylized version of the "energetic" actor type which relates less to Marx's *Capital* than to Max Weber's *The Protestant Ethic and the Spirit of Capitalism.* The similarity with the latter work is seen by the kind of unsatisfiability of this actor type, its psychological (or socio-psychological) character. Furthermore, this result is partly the result of Schumpeter's method of abstraction which has many relations to Weber's "ideal types". If you remove all restrictions from an expansive personality, you are bound to see limitless expansionism. However, the very creations of the "energetic" actor are bound to give negative feed-back to his further creativity. They must be defended and administered and in this way they impose restrictions on the next round of creativity. And, furthermore, we have the decreasing capability of learning which even for the "energetic" type must imply that he becomes locked into his past. Thus Schumpeter saw that the past innovator became

> [...] the prisoner of his materials and methods and could not change over to others at a moment's notice: the materials and methods that he had learned to master in his formative years were the materials and methods that he really understood. [S, 1954, p. 785]

This theme was, as we have seen in ch. 3, a basic one for Schumpeter. But there are even more limitations to "energetic" behaviour which underlines the idealized character of the presentation of the type. Even in his first book Schumpeter argues that:

> Für die weitaus grösste Periode des gewöhnlichen Lebens ist so gut wie jedermann ein solcher langweiliger "Gleichgewichtsmensch". Zu energischem Wollen, zu neuen Bahnen rafft sich jedermann nur in Fällen auf, welche gegenüber den zahllosen Vorkommnissen des Alltages Ausnahnecharakter tragen. [...] Bei einigem Nachdenken wird man sich — vielleicht nicht ohne Überraschung, aber gewiss — darüber klar, dass wir eigentlich nur in verhälltnismässig seltenen Augenblicken wirklich *leben,* sonst aber "mechanisch" den gewohnten Werktag abhaspeln. [S, 1908, 567 f]

It is clear that Schumpeter here makes a possible exeption for extraordinary people but even for them it might be necessary to have relatively unchanging periods "[...] in der die Energie des Einzelnen, wie der Massen Zeit hat, sich sozusagen zum Sprunge zusammenzuballen [...]" (S, 1908, p. 568). First after such periods comes the creation of new trajectories of economic life. This kind of argument seems to imply another decision-model than the one where ordinary actors take routinized "decisions" while extraordinary actors take real decisions of

breaking routines and creating new ones as in case (1) and (4) of table 4.3. From the present perspective, we are in reality dealing with one type of actor which takes two types of decisions. In certain periods the actor makes "mechanical" decision-making while in other periods we see "creative" decision-making and action. According to this conception the above mentioned definition of the "mass" breaks down since its members are in principle able to function in case (1) as well as case (2). But still the relative frequency of case (2) may be very low for a section of the economic actors which we call the"mass" while case (4) may be much more frequent for another section, the "elite".[19]

## V

### CLARK'S RESEARCH PROGRAM FOR A "DYNAMIC" OR "EVOLUTIONARY" ANALYSIS

There can be little doubt that the study of the two types of conduct and the related types of actors has a central role to play in Schumpeter's rethinking of economic theory and in the development of his own analysis of economic evolution. But this role cannot be made clear unless we relate it to "statics" and "dynamics" considered as real economic processes and as methods (table 4.2.). But still there are problems since Schumpeter did not distinguish explicitly between "simple" and "mutative" evolutionary phenomena. Instead he approached the definition indirectly by saying that his inspiration did not come from (the simple evolutionary) phenomena of mechanical systems. This search for the roots of his own thinking may be reflected in many of the discussions in *History of Analysis*. As an example we may take his discussion of Comte, the father of sociology:

> Comte was primarily concerned with social evolution [...] But he fully realized that the idea of evolution does not cover all the problems presented by social organisms. There are also nonevolutionary phenomena or aspects that requiere a different treatment. Therefore he assembled another body of facts and propositions about "social instincts" which act and react upon one another so as to produce by means of an equilibration process the "spontaneous order of society"; and this body of facts and propositions he laid alongside the evolutionary compound, or, as he styled it, the theory of "natural progress". Adopting, as he tells us, the terminology of the zoologist H. de Blainville, he called the former Statics and the latter Dynamics. [S, 1954, pp. 416 f]

19 This discussion of types of behaviours and actors is still not solved. In the modern study of innovation and evolution the Behavioural school (Simon, 1882; Cyert and March, 1963; Nelson and Winter, 1982) has in the main one actor type with two types of behaviour (routine vs. routine-breaking and -creating) while others have two types of actors with different behavioural rules like "conservatives" vs. "gamblers" or (Allen, 1988) "Cartesians" vs. "Stochasts". We will return to this theme in later chapters.

Even if this conception of Comte is still quite far from that of Schumpeter, it may be easier to understand his youthful conception of "statics" and "dynamics" on the background of Comte and a French zoologist than on the background of Archimedean "statics" and Newtonian "dynamics". This is one reason why Schumpeter is interested in creating a link from Blainville—Comte to economics which may emphasize other than mechanical analogies behind his original usage of "statics" and "dynamics". And the link may be Stuart Mill.

> And has [... "statics" and "dynamics"] necessarily anything to do with a "mechanical analogy"? Those who have a taste for delving into the history of terms should rather, if they feel so inclined, speak of a zoological analogy; for the terms static and dynamic were, although in a different sense, introduced into economics by John Stuart Mill. Mill probably had them from Comte, who, in turn, tells us that he borrowed them from the zoologist de Blainville. [S, 1912/1934, p. xi]

This story, which is further developed in *History of Analysis* (p. 417), does not seem quite convincing to me. He even tries to explain away the explicit relation which Mill draws to mathematical physics when he first introduces the notion of "statics" into economics by characterizing the contents of the first parts of his *Principles* as giving a picture "[...] of what, by a happy generalization of a mathematical phrase, has been called the Statics of the subject." (Mill, 1848, p. 243) However, Schumpeter's attempt to draw this line of ideas becomes understandable if we see it as an attempt to understand and explain certain traits in the conception of "statics" and "dynamics" developed by himself. His conception could not be a simple mechanical one which gave no room for "energetic" behaviour. But his reading of other economists may have superimposed a "mutative" evolutionary perspective over waht was basically "mechanistic" world views.

The author whose works gave young Schumpeter a basic introduction to the "statics"—"dynamics" was Clark who probably also is the source of the usage of "statics" as a model of a "stationary" economy[20] (which have already been dealt with in sec. II). Schumpeter became acquainted with the ideas of this author through his involvement in the controversy between Clark and Böhm-Bawerk (ch. 3, sec. VIII-IX) but Clark had also other attractions since he was an Americal with a certain German affiliation; thus he (just like Böhm-Bawerk) had been a student of the historicist Knies of Heidelberg (Clark, 1899/1902, p. ix). But first of all Clark provided Schumpeter with the idea of two real economic processes within the economy and with a related distinction between "static" and "dynamic" forces.

20 S, 1954, p. 966.

Already in the preface to Clark's major work we find formulations which must have caught the interest of young Schumpeter. The problem here is to characterize a central theme in classical economics which is developed along marginalist lines in Clark's work:

> The term *natural,* as used by classical economists in connection with standards of value, wages and interest, was unconsciously employed as an equivalent of the term *static;* and it is such natural or static standards that this volume undertakes to present. It aims to show what rates the market prices of goods, the wages of labor and the interest on capital would conform, if the changes that are going on in the shape of the industrial world and in the character of its activities were to cease. It tries completely to isolate the static forces that act in distribution from the dynamic forces. [Clark, 1899/1902, p. vi]

In other words, "static" analysis tries to concentrate on the "hedonic behaviour" within a given economic set-up in order to understand income distribution. This is done by means of abstracting from "energetic behaviour". There is, however, a major problem of this kind of theory of income distribution:

> Actual society is always dynamic, and the part of it that we are most concerned with is highly so. Change and progress are apparent everywhere, and industrial society is constantly assuming new forms and discharging new functions. Because of this continual evolution the standards of wages and of interest to-day are not what they will be ten years hence. [Clark, 1899/1902, p. vi]

There is still much meaning to a static theory of income distribution since, e.g., the standards of wages found in this manner are

> [...] normal standards to-day. In the midst of all changes there are at work forces that fix rates to which, at any one moment, wages and interest tend to conform. However stormy may be the ocean, there is an ideal level surface projecting itself through the waves, and the actual surface of the turbulent water fluctuates about it. There are, likewise, static standards with which, in the most turbulent markets, actual values, wages and interest tend to coincide.
>
> What would be the rate of wages, if labor and capital were to remain fixed in quantity, if improvements in the mode of production were to stop, if the consolidating of capital were to cease and if the wants of consumers were never to alter? The question assumes, of course, that industry shall go on, and that, notwithstanding a paralysis of the forces of progress, wealth shall continue to be created under the influence of a perfectly unobstructed competition. The values and the rates of wages and interest which, under such conditions, would prevail, are [...] the theoretically "natural" rates which science has been seeking. [Clark, 1899/1902, pp. vi f]

In these words Schumpeter found a programmatic summary of major parts of classical and marginalist economics. The rethinking of especially marginalist economics along these lines are found in *Essence of Economics.* But there is no doubt that Schumpeter was eager to make another study as well: a study where the "forces of progress", the "energetic" types of behaviour were not "paralyzed". This study got

special importance since Clark saw it as a precondition for confronting Böhm-Bawerk. In the preface we thus find a short remark of Clark's:

> The relation that this theory [Clark's] bears to the fascinating one recently published by Ex-minister von Böhm-Bawerk can best be made clear after a later volume on the dynamics of distribution shall have seen the light. [Clark, 1899/1902, pp. viii f]

Through these words Clark proclaims a second volume where the forces of progress is set loose, where the paralyzed Prometheus is unbound! And this development of the theory will allow an evaluation of Böhm-Bawerk's theory of capital and interest! Schumpeter must have been fascinated and he must have rushed to the formulations where he could get a glimpse of the "dynamic" theory:

"Dynamics" represents a new and fruitful realm of investigations:

> It is already clear that the field for new investigation offered by economic dynamics is an indefinitely fruitful one. It [... deals with] essentially new problems, because the prevailing mode of economic study has not heretofore isolated then, brought them clearly into view and afforded the data for solving them. [...] The mere theory of economic dynamics will enlarge by many fold the scope of political economy; it will lift theory to a new plane. The statement of the pure laws of economic change will open, as it were, the vestibule of the science of the future. [Clark, 1899/1902, pp. 35, 76]

"Dynamics" gives an answer to the *Methodenstreit:*

> Economic dynamics has a striking relation to those recent historical economic studies which have been so attractive and fruitful. Progress is the fact that calls for such studies. The present state of the world, it is obvious, differs from the conditions fifty years ago and from those of fifty years hence. Historical economics records and measures such differences, while the theory of economic dynamics accounts for them [...] and furnish a philosophy of economic evolution. [Clark, 1899/1902, pp. 73 f]

"Dynamics" does not throw away the "static" results:

> The forces that would work in a world that should be held in a fixed shape and made to act forever in a fixed manner still operate in the changing world of reality. We can always see them working in connection with other forces, be we have to imagine them working alone. We study them separately, in order that we may understand one part of what is going on in a dynamic society. [Clark, 1899/1902, p. 30]

"Dynamics" may be the realm of the "entrepreneur" since he does not make a profit in the "static" situation (as Walras had already pointed out):

> The prices that conform to the cost of production are, of course, those which give no clear profit to the *entrepreneur.* A business man whose goods sell at such rates will get wages for whatever amount of labor he may perform, and interest for any capital that he may furnish; but he will have nothing more to show in the way of gain. [... A]n invention first gives a profit to *entrepreneurs* and then, in the way that we have described, adds something to wages and interest. [... This profit] is an elusive sum, which *entrepreneurs* grasp but cannot hold. [...] Dynamic science deals with profits in their original state, as normally created by improvements in industry, in the proceeds of

which the *entrepreneurs* have a share; while static science deals with them in their later and permanent state, as they are transmuted into increments of wages and interest. [Clark, 1899/1902, pp. 70, 405, 410]

The research programme of "dynamic" economics is developed in many more directions in Clarks's book which is actually treating quite another area, the "static" laws of income distribution. But the reader can have no doubts about the great visions of Clark when he reads the concluding words in the terms of pioneers who are moving the frontier to the unknown:

As limitless as any other scientific field is the domain of economic dynamics; and, though early results may be modest, the value of any of them will be great enough to reward the hardest labor; while the unreached areas that will open before the explorer's eye, at every step in advance, will lure him to work that for difficulty and for fruitfulness will surpass any which has thus far been undertaken. Yet, whatever movements the dynamic division of economic science may discover and explain, static laws will never cease to be dominant. All real knowledge of the laws of movement depends upon an adequate knowledge of the laws of rest. [Clark, 1899/1902, p. 442]

Such a research program must have been very attractive to young Schumpeter even if he cannot have avoided to notice certain differences *vis-à-vis* his own energing vision. Basically Clark's hints about a dynamic theory of income distribution is based on a continuous conception of progress, even if he mentions the possibility of "[...] an industry in which inventions are made, as it were, by fits and starts." (Clark, 1899/1902, p. 417). But probably Schumpeter reinterpreted Clark's discussion in terms of his own likings until Clark's announced book of economic "dynamics" came out in 1907. This book must have been quite disappointing to Schumpeter[21] but at the same time it must have made clear to him the possibility of developing the theory which Clark could not deliver. Clark opened his new book with the words:

In a work in the "Distribution of Wealth," which was published in 1899, I expressed an intention of offering later to my readers a volume on "Economic Dynamics, or The Laws of Industrial Progress." Though eight years have since passed, that purpose is still unexecuted, and it has become apparent that any adequate treatment of Economic Dynamics will require more than one volume of the size of the present one. In the meanwhile it is possible to offer a brief and provisional statemant of the more general laws of progress. [Clark, 1907/1927, p. v]

This statement may not have been surprising but the problem was that the book in the main presented a rephrasing in weakened form of

21 Even if he is quite good at hiding this feeling in his review of the book: S, 1908b. This cautiousness may reflect his own depts to Clark's earlier work and a certain irritation over the extremely sharp critique of Clark in Veblen's early review in *Quarterly Journal of Economics*. However, the main reason must have been that Schumpeter now understood how difficult it was to create a "dynamic" theory of economics and that Clark was probably too old for the job.

Clark's earlier statements on economic "dynamics". The main elements were pointed out in Schumpeter's review of the book:

> Prof. Clark geht vom statischen Gleichgewichtszustande aus, in der Tat dem meines Erachtens einzig möglichen Ausgangspunkte, der die folgenden Darstellungen auf eine sichere methodologische Grundlage stellt. Dieser Zustand wird in der Wirklichkeit, wenn er jemals erreicht werden sollte, sofort durch Unsachen gestört werden, welche Clark in die folgenden fünf Gruppen zusammengasst: **1.** Zunahme der Bevölkerung **2.** Zunahme des Kapitales **3.** Veränderungen in den Produktionsmethoden **4.**Änderungen in der Organisation der Produktion **5.** Änderungen in den Bedürfnissen der Wirtschaftssubjekte. [S, 1908b, p. 655]

In Schumpeter's eyes something is clearly missing in this list and the development of it in Clark's book. One may say that a tendency to reduce the theory of economic "dynamics" to a theory of growth based on more or less external factors has become even stronger than before. At the same time the room for "energetic" behaviour which appeared to exist in Clark's earlier formulations seemed to have disappeared:

> Ehe ich das Vorgehen Prof. Clark in bezug auf diese Punkte darlege, möchte ich sagen, dass ich under denselben etwas vermisse. Und zwar ist das das Moment des "effort", des Vorwärtswollen. In diesem, um einen modernen Ausdruch zu gebrauchen, *energetischen* Momente scheint mir — wenigstens haben meine eigenen Studien dazu geführt — *ein,* wenn nicht *der* wesentliche Hebel der wirtschaftlichen Entwicklung zu liegen. Ich kann das nicht näher ausführen, aber mir scheint, dass man ohne dieses Moment den Tatsachen nicht gerecht werden kann. Auch wenn alle jene fünf Elemente konstant blieben, könnte und würde es auf Grund desselben doch eine Entwicklung geben; ja, ich glaube sogar, dass in ihm der wesentliche Unterschied der dynamischen Betrachtungsweise *gegenüber der den hedonischen Gleichgewichtsmenschen voraussetzenden Statik* liegt — und damit auch die Hauptschwierigkeit der ersteren. [S, 1908b, p. 655]

In other words, Clark is definitly not an elite theorist in the Continental sense. However, Clark's book gives to us:

> [...] vor allem eine Übersicht über das Gebiet der Dynamik, in vielen Beziehungen die erste dieser Art. Und die Herausarbeitung der Wahrheit, dass diese Gruppe von Problemen — vielleicht übrigens noch andere — ausserhalb des Rahmens der Statik liegt, deres Methoden und Resultate allein einigermassen gesichert sind, ist das wichtigste, was uns Clarks neues Buch bietet. Das ist eine methologische Erkenntnis von grösster Bedeutung, und sie kann als gesichert gelten. [S, 1908b, p. 659]

This result and the programmatic statements on "dynamic" economics is what Schumpeter takes from Clark. And then perhaps the idea of a two-volume treatment of the "essentials of economic theory". Since the new book clearly revealed that a real treatment of "energetic dynamics" would never be developed by Clark, Schumpeter had to develop it by himself. Clark had clearly indicated that such a volume had to relate to "statics". But a treatment of this topic was not available in German and thus came the idea of a two volume work. The

first volume was *Essence of Economics*. The second volume were planned to be *Theory of Development*. At least this was what Schumpeter told Perroux:

> Il est important de noter, d'après un renseignement fourni par l'auteur [Schumpeter] lui-même, que le dessein de cet ouvrage sur la dynamique économique était concu dès 1908, c'est-à-dire l'année même où le travail sur la statique ètait publiè. Ces dates expliquent les rapports entre les deux oeuvres qui, prises dans leur ensemble, sont, à notre sens et quoi que l'on en ait pu dire, essentiellement complèmentaires. [Perroux, 1935/1965, pp. 17 f]

But when developing the latter volume (and especially its first chapter) it must have become clear to Schumpeter that the "statics" he presented in 1908 was not quite the same that he was now exposing. Furthermore, the two volumes were not addressing the same audience. So Schumpeter's volume on "Economic Dynamics" became a separate book with the introductory words:

> Dieses Buch schliesst sich an ein andres an, das im Jahre 1908 in gleichen Verlag erschein und den Titel trägt: "Wesen und Hauptinhalt der theoretischen Nationalökonomie." Es soll den grössten Teil dessen erfüllen, was ich in dem letztern gelegentlich vorwiegend kritischer Erörterungen versprochen habe. Da Behandlungsart wie Stoff aber wesentlich andre sind, so habe ich es nicht als zweiten Band oder als Fortsetzung bezeichnet, zumal dafür Sorge getragen ist, dass siese Arbeit auch unabhängig von jener andern gelesen werden kann. [S, 1912, p. vii]

Then Schumpeter proceeds to emphasize that he does not disavow his first work even if the reader might get this impression from the changes in goal and method between the two books. But he certainly had learned a lot. Especially we can see that he had become more able in designing a "statics" which vere tailor-suited as a springboard for the analysis of "development" of the "data" of the economy. In this way "statics" became the corner stone of his evolutionary theory while the "statics" of Clark was clearly designed to support his development-free theory (and legitimation) of income distribution.

This shift was overlooked by many who saw Schumpeter's ideas as a simple extension of or misinterpretation of Clark's ideas. Warriner pointed out the mistake and emphasized that the contribution of Schumpeter should be seen in the German context of the *Methodenstreit* between the historical-sociological and the mathematical-deductive schools. In such a context

> [...] the limitations of analysis of the economic system on static assumptions are always emphasised, either because such analysis hardly seems to explain the facts, so much are the laws impeded by "friction", or because these "frictions" are regarded as disturbing, not merely impeding, forces which demand treatment in their own right, by a new method of analysis. [...] From the standpoint of German theorising the significance of Schumpeter's work lies in its apparent success on synthesising the

contributions of the two schools, by means of a new definition of the terms static and dynamic. To treat his insistence on the importance of the static—dynamic distinction as a doctrine based on the Clarkian construction, or a misunderstanding of it, points to a complete misapprehension of the system's logical basis and theoretical significance, which consists precisely in the meaning he attaches to those terms. [Warriner, 1931, pp. 38 f]

The possible misapprehension of Schumpeter's work stems basically from the conception of his "statics". Therefore, it is important to emphasize that in the final version of Schumpeter's "statics"

[...] the whole [economic] system is static, though not necessarily stationary; it changes, but does not itself generate any change. It may grow, by increase of population or expansion of the area of cultivation, but it adapts itself to, and does not develop itself from, the given conditions. For its proper working it is not necessary to assume that there has been no previous capital investment, only that there is no capital in the book-keeping sense, *i.e.* disposable reseouces for investment. Thus his conception avoids the difficulties of the starkly fictitious, purely working society of Marx. The whole force and value of Schumpeter's teaching is concentrated on this new definition of the static state. [Warriner, 1931, p. 41]

The defence of Schumpeter is clearly not formulated according the the terminological standard set by Frisch (see sec. II) but the intensions are clear enough. The point is that Schumpeter did not accept any given definition of "statics". He changed the definition of "statics" to mean "with no self-made change", "with no innovation" and the precise way in which he performed this redefinition is central to the understanding of the whole of his evolutionary system. He even included most of Clark's five "growth factors" (e.g., growth of the labour force and of cultivated land) into his statics, thereby emphasizing that he was not dealing with the study of such factors. More positively he included into "statics" many of the factors which works agaist innovative behaviour. But this point is yet to be developed.

In general we may say that what Schumpeter lacked in Clark was a willingness to leave the mechanistic world of traditional "statics" in order to develop a real understanding of evolutionary phenomena. In this respect he appears to agree with Veblen's (1898, etc.) sharp critique of Clark even if he had a very low judgement of Veblen's ability to contribute to theoretical work. Clark had found out that the mechanical conceptions was not only found in physics. The

[...] mechanistic view, too, was an important element of the economic *Weltbild* of the "classics". They were entirely unaware of how great a part of capitalist reality they thereby suppressed in silence. [S, 1954, p. 572]

In Clark's theory of distribution he tried to bring the mechanistic view to a logical conclusion while at the same time he became clearly aware of the promised land of "dynamics" which was "suppressed in

silence". The pointing out of this fact was the help he gave to Schumpeter. But Clark himself was not able to enter evolutionary "dynamics" and his strategy of first studying "statics" and then proceeding to "dynamics" would not work. On the surface this was exactly what Schumpeter did. But Schumpeter's "statics" was designed after he had had his evolutionary vision and after he had made his first explorations into the realm of "dynamics". In this way "statics" was not a given foundation (as it in a way had been on his *Essence of Economics*). In *Theory of Development* it became part of a general theory of economic evolution including "statics" as well as "dynamics" or "development".

In this recreation of "statics" Schumpeter proceeded and even increased Clark's confusion of "statics" as a method, "statics" as a state and "statics" as a set of behavioural rules. But this is not surprising. Neat logical sorting of propositions and methods comes normally after creative work, not before it. What may later seem to be pure confusion may at the moment of creation be relatively clear on the background of the vision and the tacit theoretical and methodological knowledge of the author. But it this kind of creation is not later sorted out it may be relatively incomprehensible to later researchers and it may even become a kind of Gordic knot to the people who try to apply the ideas under other circumstances. But things will become clearer and easier if we today remember, that Schumpeter's "statics" as presented in *Theory of Development* was the (unfinished) *result* of his youthful research process and not its point of departure.

More generally I may say that any theory of innovation and evolution has to deal with non-innovation and non-development. Actually, a theory of innovation must necessarily start with the definition of its opposite. Even the possible counter-examples which can be found in the modern theory of innovation, to be discussed in a later chapter, are not really avoiding this point.[22] Such studies might use

22 Today you often find researchers embarking directly upon the study of innovative events but such a procedure implies an implicit postulate of economic agents being able to discern between non-innovation and innovation; the problems of definition which the researchers do not confront directly must somehow be solved in business practice. This can, e.g., be seen from an empirical study [reported in D. Archibugi et al., Sources of Innovative Activities and Industrial Organization: A Critical Reappraisal Based on the Italian Experience, Istituto di studi sulla ricerca e documentazione scientifica, Consiglio Nazionale delle Ricerche, Rome, n.d. (mimeo)] which tells us that more than two thirds (69.3%) of 24.000 Italian manufacturing business units with over 20 employees, who have answered a questionaire (out of 35.000 asked), have introduced innovations over the period 1980-1985. This sample of innovations is, of course, extremely heterogeneous (the questionaire distinguishes between product/process/organizational and incremental/major innovation), but so are the residual of non-innovators. However, there is no reason to believe that business firms use a standardized

some help from the definition of non-innovative "fixpoint" as well as from the definition of typical innovative events. And this was exactly what Schumpeter tried to delover through his "statics" and its relation to "dynamics". In such a formal system one has to take into account that the story of an innovation has to end somehow, according to some meanings of the word with an amount of success but, anyhow, logically with the re-establishment of a non-innovative state. In other words, such a theory should include the fact that the innovation becomes (sooner or later) non-innovative. If we repeat this story we come close to saying that a formal theory of innovation is really a theory of evolution; or, better, that the theory of innovation is concerned with the evolutionary mechanism(s) of the formally defined socio-economic system.

The main problem in the definition of non-innovation is often that too much is left over for innovative activities. The situation is somewhat like the dichotomy between linear and non-linear systems being compared by the mathematician S. Ulam with the zoologist who after studying the elephant starts the study of all the rest of creatures by means of the concept of non-elephant animals (Gleick, 1987/1988, p. 68). Normally such a negative concept has very little analytic power unless its constructor of the positive concept has had the negative use of it in mind from the very beginning, as in the case of a painter who is not only interested in the "positive space" of his figures but also lies major weight on the "negative space" of the background of the figures[23]. We may also think of the case of Wittgenstein (1922) who suggests that the major story is not his stated positivist theory of language but what is left in the "negative space" of the non-sayable. Even in such cases of conscious use of the complement to the positively defined elements or system, there is no unanimous acceptance of the relevance of this procedure.

Even more controversial is Schumpeter's initial idea to use the "negative space" defined by marginalist economics as the point of departure for his own evolutionary theory. The reason is, of course, that most of the constructors of equilibrium economics were not very concerned with what they left out of the picture, and they certainly did not think of it as an evolutionary process with discontinuous events. Even Clark's dichotomization of the subject of economics into "statics"

notion of innovation/non-innovation; what in some firms are defined as non-innovation will, no doubt, be considered an innovative act by other firms, and even within a single firm different groups will put the demarcation line differently. [This example should wait until a later chapter]

23 An exploitation of this analogy is found in Hofstadter, 1979/1980, pp. 67 ff.

and "dynamics" cannot be found in many marginalist works. Especially we see that Marshall reacted sharply against it, even in a letter to Clark:

> Je ne peux pas concevoir un état statique qui se rapproche assez du monde réel pour former l'objet d'une étude profitable. Il ne m'appartiendrait pas plus d'écrite un livre sur l'état statique et un autre sur l'état dynamique qu'il me serait possible d'écrite un livre sur un yacht se déplacement à contre-courant à trois milles à l'heure et un autre sur un yacht se déplacement dans des eaux tranquilles à trois milles à l'heure." [Letter from Marshall to Clark, cited by Robbins, 1930, p. 200; cit. after Perroux, 1935/1965, p. 55].

Marshall, Böhm-Bawerk and other marginalists had created an analysis which they thought was open to "dynamic" and "evolutionary" phenomena even if they were not in focus. They naturally reacted against the attempts of Clark and Schumpeter to characterize their works as contributions to "statics" with unfounded excursions into the realm of "dynamics". And they had even greater problems in accepting Schumpeter's modified version of their works as a springboard for an evolutionary theory.

## VI

### WALRAS AS A SPRINGBOARD FOR SCHUMPETER'S EVOLUTIONARY ANALYSIS

The discussion of Clark's and Schumpeter's "statics"—"dynamics" distinctions has prepared us for tackling the difficult question of the relationship between the analyses of Walras and Schumpeter. This question has divided the discussants into two groups: Either Schumpeter is seen as a "Walrasian Austrian" (Schefold, 1986) or he is seen as an "eclectic" who is mixing a theoretical coctail which will never become any more integrated than oil and water (as implied by Rosenberg, 1986, p. 209). But let us hear what Schumpeter himself has to say about the question. A central passage can be found in the preface to the Japanese edition of *Theory of Development:*

> To Walras we owe a concept of the economic system and a theoretical apparatus which for the first time in the history of our science effectively embraced the pure logic of interdependence. But when in my beginnings I studied the Walrasian conception and the Walrasian technique (I wish to emphasize that as an economist I owe more to it than to any other influence), I discovered not only that it is rigorously static in character (this is selfevident and has been again and again stressed by Walras himself) but also that it is applicable only to a stationary process. [S, 1937/1951, p. 159]

In these formulations Schumpeter points out that the "static" method and concepts of Walras are only relevant to a "stationary" process — which by the way is not identical to Schumpeter's "circular flow". Schumpeter discussed this limitation with Walras at their only

real[24] meeting. Here Walras is refered to have admitted the "stationary" character of his work:

> He [Walras] would have said (and, as a matter of fact, he did say it to me the only time that I had the opportunity to converse with him) that of course economic life is essentially passive and merely adapts itself to the natural and social influences which may be acting on it, so that the theory of a stationary process constitutes really the whole of theoretical economics and that as economic theorists we cannot say much about the factors that account for historical change, but must simply register them. Like the classics, he would have made exceptions for increase in population and in savings, but this would only introduce a change in the data of the system and not add any new phenomena. [S, 1937/1951, pp. 159 f]

This viewpoint of Walras gave little ground for mutual understanding since Schumpeter also sticked to his own personal vision and conviction.[25] To the idea of "energetic" behaviour and "mutative" evolutionary processes Walras's conception was not suitable:

> I [Schumpeter] felt very strongly that this was wrong, and that there was a source of energy within the economic system which would of itself disrupt any equilibrium that might be attained. If this is so, then there must be a purely economic theory of economic change which does not merely rely on external factors propelling the economic system from one equilibrium to another. It is such a theory that I have tried to build and I believe now, as I believed then, that it contributes something to the understanding of the struggles and vicissitudes of the capitalist world and explains a number of phenomena, in particular the business cycle, more satisfactory than it is possible to explain them by means of either the Walrasian or the Marshallian apparatus. [S, 1937/1951, p. 160]

From this statement we see (once more) that there is a basic difference between visions of Walras and Schumpeter, and we have some indications that they must have thought of different facts. However, their conflict is also due to differences in the evaluation of the possibilities of creating tools and theories for dealing with diffucult evolutionary phenomena. In other words, the conclusion seems to be: $\mathbf{V}(WALRAS) \neq \mathbf{V}(SCHUMP)$; $\mathbf{F}(WALRAS) \neq \mathbf{F}(SCHUMP)$; $\mathbf{T}(WALRAS) \neq \mathbf{T}(SCHUMP)$.

24 Jaffé (in Walras, 1965, p. 385) records another (?) meeting when Walras had a very weak mind just before he died. The published correspondance between Schumpeter and Walras is rather meager (letter 1709, 1710, 1712 and 1756 in Walras, 1965).

25 Normally, Schumpeter refrained from expressing the differences and only pointed out the similarities between himself and other economists. Such polite and cautious manners has created many false conclusions about Schumpeter's relationships with Walras and, e.g., Böhm-Bawerk. To the careful reader of Schumpeter there is, however, little doubt that we should take quite seriously semingly casual sentences on the subject. For example, we read in the passing after Schumpeter has dealt with Walras's theory of interest: "It is in order for me to observe, neglecting my principle of effacing myself from this book [*History of Analysis*], that the admiration I keep on expressing for the ingenuity, nay, greatness of Walras' analysis, should not be understood to imply agreement in every respect." (S, 1954, p. 1019) When writing in Japanese Schumpeter was much more crude in the pointing out of his views, as we see clearly from the next quotation.

All this may boil down to a question of whether all economic actors are appropriately modelled as "hedonic calculators" and "energetic behaviour" can, consequently, be left out of consideration. Walras says "yes", Schumpeter says "no".

But still Schumpeter claims to owe more to Walrasian technique than to any other influence! This apparent paradox can be resolved in several ways. The most easy solution would be to point out that Schumpeter the Economist and Teacher was doing much else than developing and exposing his evolutionary theory and that Walras was central to his non-evolutionary work. Even if there is much to this explanation, there are deeper questions involved. First of all, Schumpeter probably developed part of his own tools for evolutionary analisis through a study and an reconstruction of Walras. Second, the incompatibility in vision and facts may only have been true in certain areas. Third, Walras set up a standard of formalized thinking which Schumpeter saw as an ideal which helped to structure his own creative mind, even if this fact may be difficult to see to a mathematically minded person like, e.g., Samuelson (1981, pp. 3 f)

Let us thefore give the Walras—Schumpeter relationship another chance. Let us see what kind of inspiration young Schumpeter might have cought from working with Walras's *Elements of Pure Economics*. Our main sources are Schumpeter's first and last book, *Essence of Economics* and *History of Analysis*, but they are in no way complete. Especially, we get little direct information on the role Walras's analysis may have played in the development of Schumpeter's evolutionary analysis. If we read these works in combination with *Theory of Development* we may however obtain central clues on the way young Schumpeter used and transcended Walrasian analysis. First, we will find that Walras to Schumpeter not only represented "statics" but also opened a door to two types of dynamic processes. Second, Walras's formal approach helped to single out two functions of the (individually or corporately lead) business firm: that of the Walrasian administrative "entrepreneur" which Schumpeter preferred to call the "mere manager" and that of the Schumpeterian innovative "entrepreneur". Third, Walras's general equilibrium framework helped Schumpeter to dramatize the consequences of innovative events within the economic system.

A superficial study of Walras's work emphasizes its pure "static" character and makes Schumpeter's relation to it unnecessarily enigmatic. According to this conception Walras's work is simply a complex system of equations which formulates the problem of economic

equilibrium in its full generality. In this way Walras can be seen as having (together with several other authors) transferred the notion of equilibrium from mechanical statics to economics. His point of reference is not the primitive "Archimedean" equilibrium theory, T(*AET*), which we have met in ch. 2. It is rather the then dominating French textbook in mechanical statics of the nineteenth century by Poinsot:

> The true *fons et origo* [source and origin] of Walras' multiequational formulation of general equilibrium was Louis Poinsot's once famous textbook in pure mechanics, *Éléments de statique* (1803), which, as Walras confided to a friend in 1901, he first read at the age of 19 and then kept by him as a companion book throughtout his life. In Poinsot we find virtually the whole formal apparatus that Walras later employed in his *Éléments d'économie politique pure.* Poinsot's *Élements de statique* bristles with systems of simultaneous equations, some of them equilibrium equations proper and others equations of condition (constraints or definitional identities), and contains the postulate that these systems have determinate solutions if they consist in as many independent equations as unknowns. [...] It was Poinsot's model that Léon [Walras] later imitated and adapted to his portrayal of general economic equilibrium. [Jaffé, 1983, pp. 132, 275; cf. Walras, 1965, pp. 148-150]

There is little doubt of this source accounts for many of the strengths and weaknesses of Walras's system. On the weakness side Walras's followers within economics had to point out that an equal number of variables and equations is a necessary but not sufficient condition for the existence and uniqueness of the equilibrium solution. From what we know of Schumpeter's relationship to mathematics (ch. 2, sec. VI; ch. 4, sec. II) we can assume that he could mainly have used this aspect of Walras's work to remark yet another example of the necessity of mathematical training in economics (cf. S, 1954, p. 956, etc.), not as a basis for the development of his own theory. If the problem of equilibrium had been the sole one in Walras's work, Schumpeter would in the end probably have agreed with Rechtenwald (Jaffé et al., 1988, p. 19) that Walras was the architect of "[...] eines schönen, aber unbenutzbaren Gebäudes."

But Walras is also the developer of a (rudimentary) analysis of the equilibrizing forces of the economic system and this analysis must have played an important role in Schumpeter's own thinking. In the language of table 4.1. we may consider this aspect of Walras's work as a "dynamic" analysis of a stylized version of a "simple evolutionary process". The old Schumpeter is a little more cautious in the discussion of it which he made during the last few months of his life[26]. Here he

[26] In *History of Analysis* a whole section (pp. 998-1026) is directly dedicated to "The Walrasian Theory of General Equilibrium" but the following section on "The Production Function" and the appendix with a "Note on the Theory of Utility" (pp. 1026-1073) is to a high degree influences by Schumpeter's last confrontation with Walras. About the timing of Schumpeter's writing of the main section the editor

remarks that the existence of the different types of stocks and inventories in Walras's system

> [...] presupposes a certain past behavior of the people concerned and since their [the stocks's] reproduction presupposes certain expectations, the system — even if perfectly stationary — still depicts a process in time and might therefore be called "implicitly dynamic." If Walras did not feel like this and if we agree with him in calling it static, this is only because of a device that was perhaps justified by the purpose of exhibiting the logical sceleton of economic life but is highly artificial all the same: he tried to build up an equilibrium state *ab ovo* in the manner in which it would be built, if smooth and instantaneous adaptation of all existing goods and processes, to the conditions obtaining at the moment, were feasible. [S, 1954, p. 1002]

Thus, Walras *tried* to solve the pricing problems of the economic system twice:

> [...] first a proof of the existence of an equilibrium solution and second the proof that this solution is the one which the market mechanism under pure competition tends to establish or, slightly more technically, we have [...] two distinct proofs (or attempts at proofs), the one of the *existence* of an equilibrium solution, the other of the tendency toward it. [S, 1954, p. 1002]

In other words, the question is how the system approaches (a unique?) general equilibrium and whether the system will stay in its equilibrium state when it has once been reached. These questions are treated in an ackward manner by Walras. For example, the problem of stability poses itself to Walras as that of "[...] the relation between the mathematical solution of his equations and the process of any actual market [... which] drives the system toward equilibrium and keeps it there." (S, 1954, p. 1008) In an attempt to translate the mathematical algorithm to an economic process Walras talked of groping, *tâtonnement,* which have been much discussed after World War II (Jaffé, 1983, pp.221-266) thereby revealing its unreal character. But it must have been this process-view which to Schumpeter blew life into Walras's semingly sterile system.

The Walrasian process is clearly an adaptive and not a creative one and its central actor is the consumer. But Schumpeter keeps pointing at later parts of Walras's argument where the "entrepreneur" is introduced into his system. It was probably the place where Schumpeter felt that

> (E. B. Schumpeter) points at "[...] the last year (possibly the last few months) of the author's life." (S, 1954, p. 998; see also 1198 f; viii f) This work was by no means a simple excersize as noted in a footnote: "My [Schumpeter's] inability to present an account of either topic [utility and the production function] that would be at the same time brief, elementary, and correct — an inability of which I was never fully aware before I put that appendix [on utility] and this section [on the production function] into their final shapes — had to be stressed because it illustrates so tellingly the conditions in both fields, in which faltering advance was incessantly being undone by mutual misunderstandings [...]" (S, 1954, p. 1027)

the system began to show signs of "life". At least Schumpeter later kept pointing at the chapters ("lessons") of Walras's *Elements* where the "entrepreneur" and his apparently central but paradoxical role in the play is presented[27]. This actor is mentioned after the presentation of the three other actors: the land-owner, the worker and the capitalist. In relation to them the "entrepreneur" is

> [...] a fourth person [...], whose role it is to lease land from the land-owner, hire personal faculties from the labourer, and borrow capital from the capitalist, in order to combine the three productive services in agriculture, industry or trade. [Walras, 1874-7/1954, p. 222]

This actor is not singled out in the role list of many other economists. Instead he is, according to Walras, mixed up the other roles.

> In fact, the different ways in which these roles may be combined give rise to different types of enterprise. However that may be, the roles themselves, even when performed by the same individual, still remain distinct. From a scientific point of view, we must keep these roles separate and avoid both the error of the English economists who identify the entrepreneur with the capitalist and the error of a certain number of French economists who look upon the entrepreneur as a worker charged with the special task of managing a firm. [Walras, 1874-7/1954, p. 222]

If we accept Walras's role list, we see an "entrepreneur" who operates at two distinct (types of) markets where the prices are expressed in terms of a standard commodity, the *numéraire.*[28] At the one market he and his fellow "entrepreneurs" come to buy various productive services while the service-holders (land-owners, workers and capitalists) come to sell them. The market is organized by an (implicit) auctioneer who makes a list of prices and "cries" them out. Each buyer and seller then decides how much to demand or supply of each type of service. If demand and supply for each and every type of service are equal to each other, contracts will be made. If demand and supply are not equal, the party who gets too little will enter into a process of competitive bidding (regulated by the auctioneer) until a set of equilibrium prices is found (see algorithm 1.b. of app. B).

There is also another (type of) market, the products market, where

27 Schumpeter (1954, pp. 999 f) points out *leçons* 17-19 and 35 of Walras's *Éléments* as the ones containing "[...] description of the economic pattern that Walras' equations were to express [... and] his opinion concerning the oscillations that occur around the equilibrium state." It is especially in *leçons* 18-19 that we find the central passages about the Walrasian "entrepreneur" and in *leçon* 35 that we find the discussion of the behaviour of the economic system as a whole (incl. "crises").

28 A lot of expositions and reconstructions of the formal sceleton of Walras's argument can be found in the literature. As a point of reference for several of the discussions a reconstructed is presented in app. B. Another style of shorthand reconstruction is found in, e.g., in Brems, 1986, ch. 5.

the actors have exchanged their roles. Here the "entrepreneurs" appear as sellers while the service-owners appear as buyers. But this is the only change *vis-à-vis* the previous case and also here the market is groping towards equilibrium.

The parallel process on the two markets decides the age-old question within economics concerning the determination of relative prices, or, in Walras's (1874-7/1954, pp. 211 f) typical formulation, why a bottle of wine sells for 5 francs. The classical economists had offered the answer that price of output would equal cost of production: the price is 5 francs because costs of production are 2 francs in rent, 2 francs in wages and 1 franc in interest charges. The Austrian economists had offered the opposite answer that prices of inputs were determined by the price of output via a process of "imputation": 2 francs can be paid in rent, 2 francs in wages and 1 franc in interest because the consumers are willing to pay 5 francs for the wine.

Walras resolved this question by stating that prices of products and services were simultaneously determined. The wine producing "entrepreneur" is operating at the wine market where he has to take his costs into account, but he is also operating at the market for services where he has to take the price that the wine drinkers are willing to pay into account. Similar double roles are played by the service-owners. This system of general interdependence does not allow equilibrium unless both the utilily maximizing behaviour of the service-owners and the profit-maximizing behaviour of the "entrepreneurs" can simultaneously be satisfied.

But this state of equilibrium has, according to Walras, a peculiar characteristic: that the "entrepreneur" — who is driven by the profit motive at the great auctions at the two markets — make neither profit nor loss[29], *"les entrepreneurs ne font ni bénéfice ni perte."* (Walras, 1874-7/1954, p. 225) In other words, the wine "entrepreneur" who as a "hedonoc calculator" has exploited any difference between cost price (of land, labour and capital) and product price (of wine) will in equilibrium see himself in a situation where he does not get paid *as an*

29 According to Schumpeter (1954, 1011), "[...] this is neither a paradox nor a tautology (i.e. it is not the result of a definition) but, *under Walras' assumptions*, an equilibrium condition (or, if you prefer, a provable theorem)." Furthermore: "First, [...] there is nothing absurd or self-contradictory [as postulated by Edgeworth] in holding that the drive for profit is the motive force of the private-enterprise economy and in holding at the same time that profit would be eliminated in perfect equilibrium of pure competition. Second, [...] even if the existence of net surpluses were much more of an established fact than it is, there would be no force in [... relating] an equilibrium proposition of the kind involved to facts culled from an evolutionary reality, which is never in equilibrium and never is, or can be, purely competitive." (*ibid.*, pp. 1049 f).

*"entrepreneur".*

Thus, in a state of equilibrium in production, entrepreneurs [...] make their living not as entrepreneurs, but as land-owners, labourers or capitalists in their own or other businesses. In my [Walras's] opinion, rational bookkeeping requires that an entrepreneur who owns the land which he works or occupies, who participates in the management of his firm and who has his own funds invested in the business, ought to charge to business expense and credit to his own account [the corresponding] rent, wages and interest charges calculated according to the going market prices of productive services. In this way he earns his living without necessarily making any profits or suffering any losses as an entrepreneur. Surely, it must be evident that, if he gets a higher or lower price for his productive services in his own business than he can get elsewhere, then the difference represents a profit or a loss. [Walras, 1874-7/1954, pp. 225 f]

In the first years of the century, this viewpoint was impossible to understand for the leading Austrian economists (as well as for Edgeworth and many others). Therefore, when Schumpeter adopted it. he had to defend himself against sharp attacks which he never was able to forget. One of the reasons was that he was up against totally different conceptions of "the rate of profits" concisting of

[...] a *fricassée* of such things as: earnings of management of all possible kinds [...]; gains from successful risk-taking and uncertainty-bearing [...]; gains from advantages incident to the control of particular factors [...]; chance gains [...;] gains that accrue to a firm *as it grows,* or else, *because it has grown* [...]; an element of monopoly [...] Marshall created a sort of normal rate of profit out of this compound [... which somehow has grown] into the marginal efficiency of Keynes's *General Theory.* [S, 1954, 1049]

Schumpeter would never dream of making scientific judgements about the development of this mixture. Or, in his own words:

[...] nobody [including Walras and Schumpeter] has ever asserted that *this* rate of profit is or tends towards zero. Walras meant something entirely different when he set up his concept of an *entrepreneur ne faisant ni bénéfice ni perte.* [... T]he Marshallian theory, according to which profits have no tendency to vanish, and the Walrasian theory, according to which they do, not only do not contradict one another but, *referred to at the same level* of abstraction, turn out to be identical. [...] Marshall's theory, as he himself presented it, is geared to phenomena of change or growth that static equilibrium excludes; [...] the monopoloid elements that enter Marshall's analysis [...] do violate the assumptions of pure competition; [...] Marshall's profits will in fact [assuming perfect equilibrium in pure competition] vanish as completely as will Walras'. [S, 1954, pp. 1049 f]

One of the reasons why Schumpeter kept on defending Walras's idea of zero profits in the state of equilibrium was undoubtedly that this result played an extremely important role in the development of his own evolutionary theory. The thought-provoking fact is that the apparently central role player of the Walrasian drama *disappears* soon after he has entered the stage of the economic process. This is clearly recognized by

Walras:

> Assuming equilibrium, we may even go so far as to abstract from entrepreneurs and simply consider the productive services as being, in a certain sense, exchanged directly for one another, instead of being exchanged first against products, and then against productive services. [... Walras, 1874-7/1954, p. 225]

This fiction of "direct exchange" of services must make quite a lot of assumptions in order to have, e.g., the bottles of wine delivered. Especially, it presupposes some automatically functioning routine of combining productive services to create wine. At this point Walras stops his speculation. But Schumpeter must have proceeded: If an equilibrium situation (somehow obtained) were to exist forewer, then things would look as if services were directly exchanged against each other. This "stationary state" would presuppose an appropriate amount of wine-yards (and forests with appropriate vintages of oak, etc.). Service prices would, of course, have to be fixed in a way which allowed for the reproduction of inventories, physical capital and even insurance against accidents. But this could, probably, be done in a routine-like manner. And if all this was taken care of, then there would really be no need for "entrepreneurs", just for mere "managers" who get their wages for a simple administration of the productive apparatus.

Schumpeter must have proceeded: If an exogeneous chock removes the economic system from equilibrium, then profits and losses must occur but not due to any action from within the system. And the forces which drive the system back towards equilibrium is really quite routine-like actions of the Walrasian "entrepreneurs" who also in this situation behaves like automatic calculators or administrators. Even the kind of "progress" studied by nearly all economists are easily taken care of by this routine-like behaviour. A steady increase in the population or a steady shifting of the tastes may imply a steady growth of the wine-production and the amount of land occupied by wine-yards. And this trend may partly be counteracted by a steady increase in the degree of "roundaboutness" and in the amount of capital used in the production of wine. All these complex processes must have seemed quite simple to young Schumpeter. At least they did not constitute suitable tasks for "heros" with an "energetic behaviour".

Schumpeter's conclusion must have been that the central role of the "entrepreneur" of Walras's economic drama was only apparent. In reality Walras described a rather boring person or organization, the "manager" or the "firm", who is administering a (more or less) given enterprise. Or, in the words of the old Schumpeter, even if Walras

> [...] did introduce into his mechanism an entrepreneur who was not merely a capitalist, he reduced him, as we saw, to a purely formal role of buyer of productive services and seller of consumer's goods without any initiative — or income — of his own. In order to emphasize this we shall replace the term "entrepreneur" by the impersonal term "firm" [... S, 1954, p. 1011]

The reader should observe that Schumpeter in this way reserves the term "entrepreneur" for something else and, in his eyes, more interesting than related to its Walrasian use.

> Walras' contribution was important though negative. He introduced into his system the figure of the entrepreneur who neither makes nor loses (*entrepreneur ne faisant ni bénéfice ni perte*). And since this system is essentially a static theory [...] he thereby indicated a belief to the effect that entrepreneurs' profits can arise only in conditions that fail to fulfil the requirements of static equilibrium [...] — the proposition from which starts all clear thinking on profits. [S, 1954, p. 893]

Given Schumpeter's search for an agent with "energetic behaviour" and his idea of fulfilling Clark's promise of a "dynamic theory", it is easy to guess the kind of "clear thinking" which Schumpeter developed in relation to Walras's proposition. If the adaptive response of the agents of the Walrasian system is not infinitely quick, then the introduction of new productive combinations into the system is the (internal) source of recreating the vanishing profits. The Schumpeterian "entrepreneur" is the actor which performs this "creative response" to the signals of the system. The goal and the result is

> [...] entrepreneurs' gains [which] will practically always bear some relation to monopolistic pricing. Whatever it is that produces these gains, it must of necessity be something that, for the moment at least, competitors cannot parallel for, if they did, no surplus over costs (including entrepreneurial "wages") could emerge. The successful introduction of a new commodity or brand is perhaps the best illustration of this. Moreover, there are means available to the successful entrepreneur — patents, "strategy," and so on — for prolonging the life of his monopolistic or quasi-monopolistic position and for rendering it more difficult for competitors to close up on him. [S, 1954, pp. 897 f]

While Walras is working with a given and well-defined set of commodity types, $\boldsymbol{J}$, with $\varphi$ elements (see def. 2 of app. B), Schumpeter is simply adding a new commodity type to this set, thereby operating with $\varphi + 1$ elements. This case (1) is clearly implying that the commodity type also have to be introduced in the utility functions of (some of) the individuals, $\boldsymbol{I}$, because otherwize there would be no demand for the production of the commodity. This case is, as Schumpeter points out, the most clear-cut one. He has, however, several other possibilities for an "energetic" change in the Walrasian set-up. Thus he might have introduced (2) a new production function for the production of a given commodity type (cf. point 2.6. of def. 2 of app. B). To have an economic

meaning the change must imply a relative shift between the use of the different services. Another possibility of changing the system is the adding of (3) a "new market", i.e., introducing a commodity type which is already included in the set of commodity types, ***J***, into the utility function of a subset of the individuals, ***I***, which has not previously had the possibility of buying the commodity; he might introduce (4) a new service type to the set of (Walrasian) services, ***K***, thereby increasing their number to $\kappa + 1$ or instead introduce a whole new group of service-owners who have discovered (or conquered) a new source of income (e.g., a mine of raw materials); and he might (5) change the behavioural rule of one or more of the elements of the set of firms, ***F***, by introducing or removing monopolistic behaviour.

What has just been presented is a version of Schumpeter's famous casuistic definition of his concept of "innovation" as "a new combination" which tries to relate it to Walras. That it is no artificial relationship may be grasped by a comparison with Schumpeter's own formulations:

> Development in our [Schumpeter's] sense is then defined by the carrying out of new combinations
>
> This concept covers the following five cases: (1) The introduction of a new good — that is one with which consumers are not yet familiar — or a new quality of a good. (2) The introduction of a new method of production, that is one not yet tested by experience in the branch of manufacture concerned, which need by no means be founded upon a discovery scientifically new, and can also exist in a new way of handling a commodity commercially. (3) The opening of a new market, that is a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before. (4) The conquest of a new source of supply of raw materials or half-manufactures goods, again irrespective of whether this source already exists or whether it has first to be created. (5) The carrying out of the new organisation of any industry, like the creation of a monopoly position (for example through trustification) or the breaking up of a monopoly position. [S, 1912/1934, p. 66; cf. S, 1912/1926, pp. 100 f; not in S, 1912]

These five cases are clearly related to the above definitions in relation to the Walrasian system but there might also be other sources of Schumpeter's cases (e.g., Marshall). We may gather them under the heading of "new combinations" (even if case 5 then demands a special interpretation). This notion presupposes a definition a certain constancy of at least some of the "data" or "parameters" of the system. Let us define a subset of variables and definitions, $\Pi$, which are constant "parameters" and "basic definitions" determining the behaviour of some "stationary" state, $\Sigma$-state, of the system. $\Pi$ may include a definition of product types, production functions, the groups of

buyers/users of the products, the sources produced productive inputs, and the distribution of the "firms" according to different behavioural rules ("organization"). The "parameter-set" $\Pi$ may be changed in several ways. But here we will concentrate on two "ideal types" of "internal" change in the $\Pi$-set. First, we have change of one or more elements of this set due to what may be called the $\gamma$-operator of "continuous" and "induced" change (to be defined later). Second, we have change in one or more elements of the $\Pi$-set due to the $\varepsilon$-operator of "discontinuous" and (in some way) "autonomous" change.

Given Schumpeter's interest for "energetic behaviour", it is clear that he has all the way concentrated on the $\varepsilon$-operator at the expence of the $\gamma$-operator. To Schumpeter this $\varepsilon$-operator is simply the "entrepreneur". The putting of one or more of the possible changes in the $\Pi$-set into economic practice is, according to Schumpeter, an act which takes place "within" the economic system. The actor who performs this deed is Schumpeter's "innovative entrepreneur" which in the following will just be called the "entrepreneur" (while the Walrasian "entrepreneur" will be called a "(mere) manager" or a "firm"). The goal of the "entrepreneur" is clearly Walrasian/Schumpeterian profits which in Marshallian language may be called "supra-normal profits" (or "quasi-rents").

If everything were that simple, there would be no need of a quasi-formal approach including a $\gamma$-operator and an $\varepsilon$-operator. We will, however, soon see that things are not at all simple at the meeting point between the Walrasian world and the Schumpeterian world.

## VII

### COMBINING "STATICS" AND DEVELOPMENT IN SCHUMPETER'S ANALYSIS

We have seen how the Walrasian system provides Schumpeter with a non-innovatory state which helps in formulating rigorously his own recognition and definition(s) of innovation. Furthermore, we have seen that the Walrasian model includes a function or a role which is only partially explored. By reinterpretating Walras's actual presentation of this function as being a description of the function of a "mere manager", Schumpeter has created a profit-seeking actor, the "entrepreneur", who will be squeezed out of the play unless he (and his kind) is able to break with the given "productive combinations" and to introduce "new combinations". Or, to be a bit more formal, a central equilibrium condition of the system is the lack of profits. However, it seems possible

to define a function or an operator which can recreate disequilibrium by changing the "data" of the system by recombining old "data".[30]. We call this the "entrepreneurial function" or the $\varepsilon$-operator, in order to avoid the confusion around the terms "entrepreneur" and "function". The behaviour of this function or operator may be economically motivated by the possible flow of income (profits) created by the "new combination".[31]

The possibilities of profits are clearly dependent upon the behaviour of the rest of the system. If adaptation from the side of the non-innovative "firms" could take place instantly there would of course be no room for profits. But this is not (always) what Walras says. At least when Walras comes to the "Conditions and Consequences of Economic Progress" (i.e., in the fourth edition of *Éléments* from *leçon* 35 onwards) there are many possibilities for the profit-creating functioning of the $\varepsilon$-operator. The reason is that Walras, before he embarks upon the discussion of "progress", deals with the reproduction of "static equilibrium" as a "stationary process". Such a "stationary process" was already crudely described in Quesnay's *tableau économique,* an early version of a closed input-output system which is reproduced year after year. In order to make a similar system (but with a more or less explicit microfoundations) Walras

> [...] suppose the basic data of the economic problem [...] to remain fixed, so as to give us something in economics analogous to what is called a *stable system* [a system in stable equilibrium] in mechanics. Moreover, we shall assume not only that the preliminary phase of groping has been completed with equilibrium established *in principle,* but also that the phase of static equilibrium has actually commenced, so that equilibrium is established *in fact*. [Walras, 1874-7/1954, p. 378]

Here Walras shifts from a methodological study of a "static" equilibrium to an actual occurrence of equilibrium at a certain moment of time. To delevop this view into an analysis of an economic "state" he then adopts

30 Combinatorics show us that even a moderately complex system opens up for a *practically* infinite number of possible "combinations". This perspective comes clearly out in genetics. Let us say, that the nucleotides may form 20 words and let us say that we have DNA strings with a million words. Then the number of possible combinations is $20^{1.000.000}$ or as "infinite" as the universe. Human invention (and innovation) can also be conceived as new combinations of previously existing elements. Thus Bertalanffy (1968, p. 26) points out that "[...] the opportunity for new inventions will increase roughly as a function of the number of possible permutations and combinations of available elements, which means that its increase will be a factorial of the number of elements. Then the rate of acceleration of social change is itself accelerating so that in many cases not a logarithmic but a log-log acceleration will be found in cultural change." We will come back to this possibility of "super-acceleration" of possibilities for change in a later chapter.

31 We have later to check whether the same result can be obtained by means of the $\gamma$-operator.

[…] the hypothesis of a continuous market. Thus, we pass from the static to the dynamic state. For this purpose, we shall now suppose the annual production and consumption, which we had hitherto represented as a constant magnitude, change from instant to instant along with the basic data of the problem. […] Every hour, nay, every minute, portions of these different classes of circulating capital are disappearing and reappearing. Personal capital, capital goods proper and money also disappear and reappear, in a similar manner, but much more slowly. Only landed capital escapes this process of renewal. [Walras, 1874-7/1954, p. 380]

If we stick to the formulations of Walras this state is not strictly stationary, since it changes as a response of the changes in the exogeneously given "data" or "parameters" of the economic system. If these changes of the $\Pi$-set were to come to a halt, the economic process would in the end bring the system into equilibrium.

Such is the continuous market, which is perpetually tending towards equilibrium without ever actually arttaining it, because the market has no other way of approaching equilibrium except by groping, and, before the goal is reached, it has to renew its efforts and start over again, all the basic data of the problem, e.g. the initial quantities possessed, the utilities of goods and services, the technical coefficients, the excess of income over consumption, the working capital requirements, etc. having changed in the meantime. [Walras, 1874-7/1954, p. 380]

Here Schumpeter must have asked why the "data" are always changing. Walras's explanation (external factors) is only one explanation. Even if these external factors were to come to a halt, there would still be what I have called the $\varepsilon$-operator to create disturbance (and even the $\gamma$-operator is smoothly changing the $\Pi$-set). Schumpeter must have thought that the $\varepsilon$-operator was an important and probably the most important reason why the system did not settle down. This operator also made Schumpeter sceptical towards Walras's analogy between the disequilibrized economy and the waves of a lake. The wind is an exogeneous disturbing factor while there is an endogeneous element of the economic system which is able to create disequilibrium. This internal element must have seemed especially relevant to Schumpeter to explain prosperity and crisis, instead of just describing them as Walras did:

It can happen and frequently does happen in the real world, that under some circumstances a selling price will remain for long periods of time above cost of production and continue to rise in spite of increases in output, while under other circumstances, a fall in price, following upon this rise, will suddenly bring the selling price below cost of production and force entrepreneurs to reverse their production policies. For, just as a lake is, at times, stirred to its very depths by a storm, so also the market is sometimes thrown into violent confusion by *crises*, which are sudden and general disturbances of equilibrium. [Walras, 1874-7/1954, pp. 380 f]

These lines of Walras must have seen as an appropriate testing ground for Schumpeter's idea of an "internal", "creative" and "energetic"

factor or operator of the economic system. Is it possible to explain the relatively long-term surplusses and the sudden intrusion of losses (and liquidations) by means of the $\varepsilon$-operator? This was one of the major questions for young Schumpeter.

When dealing with, e.g., the crisis problem Schumpeter is clearly shifting the focus from the individual agents and micro-operators to the behavious of the system as a whole. We have already seen how he makes a distinction between "static" and "dynamic" processes in and states of the economic system. The names are, of course, to be taken in the sense of young Schumpeter and since there are radical differences between the ordinary meaning and Schumpeter's, the reader should try to forget any intuition about the words "static" and "dynamic". It might be helpful to replace the names of the two states with $\Sigma$-state and $\Delta$-state, as we shall do in sec. VIII, but Schumpeter uses the words somewhat ambigously so we cannot just transform the language of the quotations. Instead we will look a little closer at his formulations. It is especially important to reconsider his analysis of the "static" state, the $\Sigma$-state, which forms the foundation for his further arguments.

The "static state" of the following quotation seems like a "stationary state" of the economy, but the hypothetical form of the description and the emphasis on only approximate constancy should warn us against premature judgements just as we have already seen in the case of Walras's *tableau économique.* There is, however, no doubt that with this $\Sigma$-state we are facing a radicalized version of the Walrasian picture of the economic system as a whole:

> Jenen Zustand der Volkswirtschaft, der eintreten würde, wenn die Daten derselben sich nicht wesentlich veränderten, nennen wir statisch. In einem solchen Zustande bewegt sich die Produktions- und Verteilungsprozess in stets denselben Bahnen. Die Nachfrage nach allen Gütern ist bekannt und bleibt im wesentlichen unverändert, der Vorrat an Produktionsmitteln auch. Jede Arbeitsstunde und jede Bodenleistung würde in einer solchen Volkswirtschaft jahraus jahrein gleichsam denselben Weg zurücklegen, von ihrer produktiven Aufwendung angefangen bis zu dem endlichen Konsumtionsakt. Und jedes Geldstück würde jahraus jahrein einen eben solchen ihm gleichsam durch lange Erfahrung prädestinierten Weg zurücklegen, nur in entgegengesetzter Richtung. Jahraus jahrein würde in einer solchen Volkswirtschaft wesentlich dasselbe geschehen. Die tatsächlichen Werte aller Güter Würden um stets denselben standard oszillieren, der das Ziel, der Regulator und der letzte Erklärungsgrund aller Vorgänge wäre, die wir in der Welt der Güter wahrnemen würden. [S, 1910a, p. 271]

The world described here the need for flexibility and rapid response is removed and tradition has overtaken the role of rational decision-making. This is so even in the case of the reproduction of physical capital:

Die grossen Massen der Produktionsmittel bleiben ohne jeden äusseren Zwang in ihrer Verwendungen. Dem entspricht ein Fehlen grosser Wertverluste und grosser Wertgewinne. Im statischen Zustande gibt es namentlich keinen Unternehmergewinn. Und das wird ohneweiters verständlich, wenn man überlegt, wie sehr darin die Persönlichkeit der Unternehmers zurücktreten müsste. Von selbst bieten die gewohnten Lieferenten seiner Produktionsmittel *die* Mengen derselben an, die auf Grund langer Erfahrung sich festgestellt haben, von selbst treten die gewohnten Käufer seiner Produkte an ihn heran, um die gewohnten Mengen derselben zu den gewohnten Preisen zu übernehmen. Machte er dabei einen Gewinn, dem keine Kosten gegenüberständen, so läge für *ihn* oder für *sie* ein Grund vor, das gewohnte Verhalten zu ändern. [S, 1910a, p. 272]

This argument reflects clearly Schumpeter's further speculation along Walrasian lines. But the flexible "hedonic calculator" is replaced by a type of decision-makers with much less capacity for collecting information and using it in "hedonic calculations". This aspect of the argument cannot come from Walras but, as we have seen, from Wieser and Schumpeter himself. However, the important part of this definition of the $\Sigma$-state is not so much the constancy of behaviour as its determination from the parameters of the economy, and this point is purely Walrasian. This is the starting point of the "static" economic theory which (under many restrictive assumptions) is able to show rigidly

[...] dass es under gegebenden Bedingungen der Volkswirtschaft stets einen jeweils besten Zustand gibt, der die under diesen Bedingungen grösstmögliche Bedürfnisbefriedigung der Wirtschaftssubjekte herbeiführt und dass sich dieser Zustand herzustellen und, wenn hergestellt, zu erhalten strebt. Und es ist jener Zustand, der in einer statischen Wirtschaft dauernd vorherrschen würde. [S, 1910a, p. 274]

After the hypothetical form of the discussion of the $\Sigma$-state, the question naturally is raised (as we have already seen in Walras's case):

Ist jener statische Gleichgewichtszustand einfach eine Abstraktion? [...] Nein, [...] er ist nicht einfach Geschöpf des Theoretikers, sondern vielmehr der begrifflich scharfe Ausdruck eines Zustandes der Volkswirtschaft, der sich under gewisser Voraussetzungen wirklich herstellen würde. [...] Als ein *Resultat* also können wir die Sätze aussprechen: In jeder Volkswirtschaft zeigt sich in jedem Zeitpunkte eine Tendenz nach einem eindeutig bestimmten Gleichgewichtszustande. [S, 1910a, pp. 275 f]

This tendency is created by what may be lumped together as the "statizising" factors or the $\sigma$-operator. If this $\sigma$-operator was the sole one operating in the system, then the tendency would set itself through (if exogeneous chocks did not occur). But these is also an $\varepsilon$-operator.[32]

32 And we postulate a smoothly functioning "parameter" change through the $\gamma$-operator. How this operator supports either the $\varepsilon$-operator or the $\sigma$-operator will be discussed later.

But is this operator sufficient to create a shift in the overall state of the economy which Schumpeter is interested in when discussing prosperity and crisis? Young Schumpeter clearly thought the answer is yes but we will be more cautious and instead talk of a development-creating operator, the $\delta$-operator (which may consist of or include the $\varepsilon$-operator), which transfers the system to its $\Delta$-state and helps to uphold this state. With both types of operators working in the real economy we cannot do with Walras's picture taken alone:

> Vielmehr enthält diese Wirklichkeit selbst zwei verschiedene und deutlich unterscheidbare Phänomene: Das der statischen Wirtschaft und das der wirtschaftlichen Entwicklung. [S, 1910a, p. 277]

When discussing "development" Schumpeter mostly sees it as a set of processes (*Vorgänge*) but it is also (implicitly) discussed as a state of the economic system, the $\Delta$-state (of creative disequilibrium). We will come back to this. Here we will take the process view, i.e. when talking of "development"

> [w]ir begreifen darunter die Gesamtheit der Vorgänge, die es mit sich bringen, dass sich dass Bild jeder Volkswirtschaft im Laufe der Zeit von Grund aus ändert. Und wir fragen nicht nach individuellen Ursachen dieser Veränderungen [...], sondern nach den diesen Veränderungen eigenen allgemeinen Merkmalen, wir fragen nach dem Mechanismus der Entwicklung überhaupt. [S, 1910a, p. 277]

Here Schumpeter is not interested in exogeneous parameter change or in the gradual growth of capital and labour.(*ibid.*, pp. 279 f). With "pure economic development" he understands:

> Dass die Volkswirtschaft stets neuer Bahnen einschlägt, dass die vorhandenen Güter in jedem Zeitpunkte aus jenen statischen Bahnen, die wir einleitend erwähnten, abgelenkt und neuen Verwendungen zugeführt werden — darin und nicht in einer Folge von statischen Veränderungen innerhalb statischen Bahnen liegt der Kern des Phänomens der wirtschaftlichen Entwirklung. [...] Auch innerhalb eines bestimmten Kulturniveaus gibt er tausendfällige Möglichkeiten, die technische und kommerzielle Seite des gewohnten Arrangements zu verbessern. Man kann die stets vorhandenen Vorschläge der Technikers berücksichtigen, man kann neue Güter oder neue Qualitäten von Gütern erzeugen, man kann neue Märkte oder neue Käufer- und Verkäuferklassen aufsuchen. Der [Ideal] Typus für solche neue Kombinationen ist die Gründung einer neuen Unternehmung. [S, 1910a, pp. 280 f]

Here we have the $\varepsilon$-operator in its proper context. The $\Sigma$-state provides it with the elements to be recombined. There are always lots of possibilities for new recombinations (cf. the Bertalanffy-quotation in the note above). The preliminary result of the $\varepsilon$-operator is often the establishment (*Gründung*) of a new enterprise, and this form of putting through a "new combination" exhibits in a partucularly clear way the functioning of the $\varepsilon$-operator. We have thus clearly come to the

crossroads where Walras and Schumpeter depart from each other (see below). But still they have common ground since in order to discern sharply the phenonema of "development" it is, according to Schumpeter, necessary to take as a point of departure the $\Sigma$-state and thus avoid to mix things up.

> Das wäre aber der Fall, wenn wir gleich an eine in voller Entwicklung begriffene Volkswirtschaft herantreten würden. Doch nicht nur *wir* machen das so in der Theorie, auch im tätsächlichen Geschehen gibt es etwas Ähnliches. Im jeden Zeitpunkte gravitiert die Wirtschaft nach einem bestimmten Grenznutzenniveau. Wohl wird er nicht völlig verwirklicht. Aber es bildet dessenungeachtet eine ideelle Basis für alle Vorgänge und auch für eine Entwicklung, die gerade in diesem Zeitpunkte einsetzt. [S, 1910a, p. 277]

Once more we have a formulation which appears to be quite close to Walras (*leçon* 35) but then transcends him. The means of transcendence is, of course, the $\varepsilon$-operator which introduces a "new combination" into the $\Pi$-set. It is in no way an example of a redefinition of the $\Sigma$-state by means of "automatic behaviour". There is

> [...] ein wesentlicher Unterschied zwischen der Durchführung des gewohnten Wirtschaftsprozesses und der Durchführung neuer Kombinationen, zwischen der alljährlichen Realisierung der gewohnten Werte und der Realisierung neuer. [...] Was wir [...] weitaus den meisten Wirtschaftssubjekten nich zutrauen können, ohne in eklatanten Wiederspruch zur Wirklichkeit zu geraten, ist, dass sie umfassende Kenntnis der neuen Möglichkeiten haben und neue Kombinationen mit Energie durchführen, dass sie nach neuen Methoden der Produktion forschen, neue Bezugsquellen aufsuchen, neue Absatzgebiete schaffen. Nichtgewohnte Bahnen existieren für sie nicht. [S, 1910a, pp. 281 f]

However, the potentially available "new combinations" are considered in the plans of a few economic actors:

> Jenes Wertsystem, das ihnen [the new combinations] entspricht, existiert nur im Bewusstsein einer Minorität und auch innerhalb derselben in ungleicher Vollständigkeit und Klarheit. Eben das nötigt uns, statt ein in steter Entwicklung begriffenes Wert- und Preissystem der Volkswirtschaft anzuerkennen, einem tätsächlich realisierten statische Wertsysteme ein anderes genemüberzustellen, das zunächst nur für manche Wirtschaftssubjekte Realität hat und noch keinen Einfluss auf das Preissystem ausübt. [S, 1910a, p. 282]

Thus we have described two ideal types of economic actors, the "static" actors and "non-static" actors. The problem of the latter group is, e.g., that

> [...] während die Produkte der statischen Wirtschaften eine bereits erfahrungsgemäss erprobte Nachfrage vorfinden, so müssen sich die Produkte der dynamischen Wirtschaften erst eine solche schaffen. [S, 1910a, p. 283]

Thus:

> In der dynamischen Wirtschaft findet die Führerrolle ihren Raum, die in der

statischen ganz zurücktritt. Nur in der ersteren tritt die Person der Unternehmers aktiv und schaffend hervor. Nur in ihr gibt es Preisdifferenzen zwischen Produkt und Produktivgütern. [S, 1910a, p. 283]

Schumpeter has once more led us to the micro level where the $\varepsilon$-operator is functioning. But the purpose of the discussion is clearly to understand the state-transformation of the system as a whole. The major help which the Walrasian system gives to young Schumpeter is to make possible the coupling between innovative micro-behaviour and system behaviour. But this micro to macro bridge is made under quite strict assumptions which Schumpeter himself helps to change. His problem is, therefore, how the act of a "minority", and sometime even of "a minority of one", becomes relevant to the system as a whole, why the systems as a whole does not just "grow" but are transformed through a radical disturbance of static equilibrium, why "progress"

[...] keine Aufwärtsbewegung der gesamten Volkswirtschaft als solcher ist, sondern dass die Volkswirtschaft durch die Tat einer Minorität in neue Bahnen gelenkt wird. [S, 1910a, pp. 283 f]

These problems will be treated as a question of the relationship between the $\varepsilon$-operator and the $\delta$-operator. But the reaction from the "static actors", the $\sigma$-operator, is also a central part in the evolutionary process. Thus, even if the $\sigma$-operator brings back the system from its $\Delta$-state to its $\Sigma$-state it has nevertheless an important role to play:

Jene "Gegenbewegungen" hemmen die Entwicklung nicht bloss, sie machen *dieser* Entwicklung ein Ende. Eine Menge von Werten wird vernichtet, die Grundbedingungen und Voraussetzungen der Pläne der leitenden Männer der Volkswirtschaft verändert. Die Volkswirtschaft bedarf einer Ralliierung, bevor es wieder vorwärtsgehen kann, ihr Wertsystem einer Reorganisation. [S, 1910a, p. 286]

The process of reorganization and liquidation points towards a new state of "static equilibrium" and has, therefore, been called a process of "statization". The $\sigma$-operator which performs this job is quite complex:

Dass auf jede Periode von Neugründungen ein *"Prozess der Statisierung"* derselben folge, — wenn der Ausdruck erlaubt ist — der zunächst in einer Konsolidierung der Unternehmergewinnes zu statischen Erträgen und in der Aufnahme eines regelmässigen Betriebes dieser Unternehmungen besteht, der sich in statischen Bahnen bewegt. [... Furthermore:] Infolge der Entwicklung, nämlich infolge des Auftretehs von Nachfrage nach Produktionsmitteln zu den neuen Zwecken, steigen die Produktionskosten der statischen Produzenten. Und da er ex hypothesi [according to an assumption] ohne Gewinn produzierte, so produziert er nun mit Verlust. [S, 1910a, p. 303; cf. S. 1912, p. 437]

The $\sigma$-operator is more important to study than the $\Sigma$-state:

Was uns daher in Wirklichkeit zunächst in die Augen fallen muss, ist nicht etwa ein quasi statischer Zustand, sondern eben jener Prozess der Herbeiführung desselben, der Ausgleichung, der "Statisierung". Wohl müsste desselbe schliesslich einen

statischen Zustand herbeiführen, aber in der Wirklichkeit fliessen die Statisierung und die Vorboten neuer Entwicklung zusammen [... S, 1910a, p. 312]

In this quotation Schumpeter clearly relates to Walras's argument in his *leçon* 35. Schumpeter proceeds by describing the different tasks or consequences of the $\sigma$-operator:

[1] Den Strömungen der Überführung der neuen Kombination in ein neues statisches System der Wirtschaft, [2] der Wiederherstellung des gestörtes Gleichgewichtes der statischen Wirtschaften, [3] der Rückwirkungen der letzteren Bewegung auf die neuen Unternehmungen und [4] der Wirkungen der sukzessive durchgeführten neuen Kombinationen aufeinander. [...]

Überall stellt er [der "Prozess der Statisierung] Gleichheiten und Verhälltnismässigkeiten her, wo die Entwicklung zu Diskrepanzen geführt hat. Er reorganisiert das Wertsystem der Gegenwart wie das der Zukunft. Er hält Gericht über alle Werte und Preise und vergleicht das "Soll" mit sem "Ist". Er readjustiert zuerst alle Werte und Preise von Genussgütern, auf dieser Grundlage dann die der Produktivgüter, und endlich korrigiert er nach dem hieraus folgenden Ergebnisse alle hoffnungs- und rechnungsmässigen Vermögenswerte. [S, 1910a, pp. 312 f]

When looking at this sketch of the process of "statization" or the $\sigma$-operator we are easily led to reconsider Wieser's early impression (ch. 3, sec. VII) of the overwhelming power of the massive forces which lead to the $\Sigma$-state over the minority forces which lead to the $\Delta$-state. A new version of the story of Goliath vs. David. This is probably one of the impressions Schumpeter wanted to create and it is the reason why Oppenheimer discribed the *Theory of Development* as an "economic novel" (Oppenheimer, 1916, p. 222). But the story has also some formal properties which it is now time to sum up.

## VIII

### A FIRST GLANCE AT THE PROBLEM OF PROSPERITY AND CRISIS

We have seen that a sketch of a Schumpeter's analysis of an evolving system involves two states of the system, the $\Sigma$-state and the $\Delta$-state, which are defined by means of a subset of variables, the $\Pi$-set, which are "parameters" and "definitions" determining the behaviour in the "stationary" state, the $\Sigma$-state, but are subject to "internally" determined change. The first state is characterized as "the static equilibrium of the economy". However, it should be remarked that there might be other ways of specifying the $\Sigma$-state as long as the behaviour is determined by the "parameters", the $\Pi$-set. Similarly, the $\Delta$-state is called the state of "development" but the only thing implyed by the definition is that the former "parameters", the $\Pi$-set at some time, $t_0$, is

now in a state of internally generated flux. Let us sum up:

1.1 $A$ is a system of elements of different sorts.
1.2 $\Pi$ is a subset of the variables (and constants and "definitions") of the system.
1.3 $\Sigma$ is a state of the system $A$ in which the behaviour of variables is determined by the (parameter) values of the elements of the subset $\Pi$.
1.4 $\Delta$ is a state of the system $A$ in which the values of the elements of the subset $A$ are not fixed but changing due to factors "internal" to the system and have not yet reached the point where they have set themselves through as new norms.

With these definitions we can characterize two operators which change the state of the system. We need one operator which transfers the system from its $\Sigma$-state to its $\Delta$-state. This operator is not necessarily identical with the $\varepsilon$-operator discussed above since I do not want yet to answer the question whether it is possible for a single "new combination" to change the state of the whole system. For this reason I prefer to call this operator the development operator, $\delta$-operator. The young Schumpeter seemed to think that $\varepsilon$-operator = $\delta$-operator. But later he modified his opinion and we have already seen other possibilities (see later). Furthermore, we need one operator which returns the system from its $\Delta$-state to its $\Sigma$-state. This operator may be called the "statizising" operator, the $\sigma$-operator. Or, a little more formally:

1.5 $\delta$ is an operator which transfers the system $A$ from its $\Sigma$-state to its $\Delta$-state.
1.6 $\sigma$ is an operator which transfers the system $A$ from its $\Delta$-state to its $\Sigma$-state.

On this background we are now prepared to give a very first definition of a system which is depicted by the Schumpeterian evolutionary framework $\mathbf{T}(S\text{-}EVOL)$, i.e., the theory with deals with the $\Sigma$-state and the $\Delta$-state and a succession of shifts between the two. We are, of course, primarily thinking of Schumpeter's theory of economic evolution, $\mathbf{T}(S\text{-}ECON)$, but definition 4.1 is open for pointing out "analogies", i.e. similarities between economic evolution and the evolution of other areas with respect to the formal tools which may be

used to characterize these processes.

**Definition 4.1.** *x* is a *sketch of a system of Schumpeterian evolution* if and only if there is an $A$, $\Pi$, $\Sigma$, $\Delta$, $\delta$ and $\sigma$ so that

(1) $x = (A, \Pi, \Sigma, \Delta, \delta, \sigma)$

(2) (1.1) to (1.6) hold.

Such a system of Schumpeterian evolution can be illustrated by a state-transformation diagram in figure 4.1.

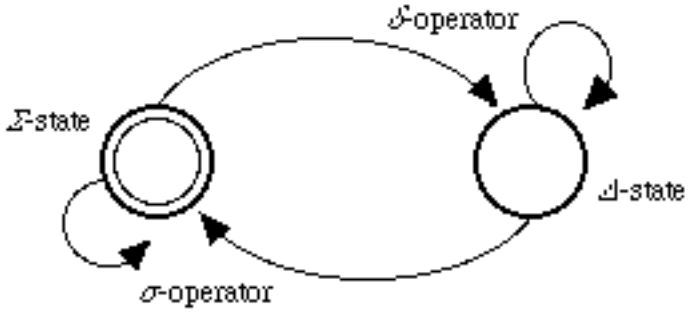


**Figure 4.1.** A sketch of a system of Schumpeterian evolution.

In the figure is indicated a certain asymmetry between the two states of the system.is indicated. The $\Sigma$-state is marked with a double circle indicating that the evolutionary process may, in principle, settle in this state which thus is a (semi-) terminal state. On the other hand, the $\Delta$-state is clearly a non-terminal state of the evolutionary process since (at least) two contradictory modes of regulation are functioning at the same time (see below). Similarly, there is an asymmetry between the two operators since the $\sigma$-operator must return the system to the $\Sigma$-state while the $\delta$-operator may shift the system to the $\Delta$-state.

These and several other questions will be dealt with later. Here it should, however, be remarked that the $\delta$-operator may also be applied to the $\Delta$-state thereby (to some extent) counteracting the influence of the $\sigma$-operator. The $\Delta$-state can only be upheld by succeeding attempts of applying the $\varepsilon$-operator on an economic system which is already in the $\Delta$-state. According to Schumpeter, it becomes at first more and more easy to apply the $\varepsilon$-operator but after a certain point it becomes more and more difficult. The Schumpeterian competition, including "swarming" and "clustering", has such an effect. We will come back to this microfoundation of the $\delta$-operator.

All the time the $\sigma$-operator is at work with the effects listed at the end of the last section. Thus the $\sigma$-operator is more hetegogeneous than the $\delta$-operator. It is in a way a mechanism which involves all the actors

of the system and the normal economic procedures which are functioning all the time. Therefore, it seems relevant to allow the $\sigma$-operator to be applied to the $\Sigma$-state. But if this state has already been established in the strict sense, then the operation with have no effect since the system is already in a well-defined state. However, if the $\Sigma$-state is defined a little more losely, including the "noice" from minor random chocks, then there is more meaning to this "loop". We will deal with these complex questions later.

Another problem with figure 4.1 is that the system never returns to exactly the same $\Sigma$-state after it has been left as a result of the $\delta$-operator. In other words, this operator introduces an element of irreversibility into the process (which is the reason for calling it evolutionary). For this reason the evolutionary process is, perhaps, better illustrated by figure 4.2.

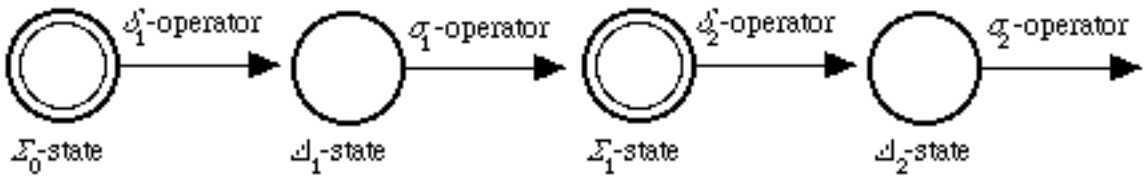


**Figure 4.2.** Schumpeterian evolution as an irreversible process.

The way "history" intrudes into the argument is quite difficult and cannot be treated until the next chapter. A first idea of what is going on may be developed by thinking of a succession of "technological" or "techno-economic" revolutions. The $\Sigma_0$-state is some initial state with a (more or less) well-defined "technological" state-of-the-art widely applied throughout the economic system. The $\delta_1$-operator is the introduction of railroads into the economic system. This creates a turbulent period but sooner or later "railroads" are part of business-as-usual in the $\Sigma_1$-state. There is a marked difference between the "parameters" of $\Pi_0$ and $\Pi_1$, but we have a basis for the operation of the $\delta_2$-operator. In which way we may say that $\delta_1$-operator $\neq$ $\delta_2$-operator is a question to be taken up later. But we have already had a glimpse of Schumpeter's stylized relation to the Historical School. And the reader may already start to guess about how Schumpeter thought that the $\Delta_1$-state might be upheld by succeeding applications of the micro-oriented $\varepsilon$-operator. We will come back to this microfoundation of the $\delta$-operator.

In the above sketching of the formal minimum of a system of Schumpeterian evolution I have already drawn upon one of the first and

major applications of Schumpeter's analytic scheme, the case of "crises" or "business cycles". Schumpeter's first results on this issue was published in 1910 in an article *On the Essence of Economic Crises* of which a part was later included into *Theory of Development.* For this reason the article is not included in any of the collections of Schumpeter's papers but this is in my opinion a mistake. The article is interesting because it includes a summery of his major ideas made in "desperately brief" form, as Schumpeter later liked to express himself (e.g., S, 1954, p. 187). Especially in his conclusion we are confronted with many of the terms of young Schumpeter which were later modified, such as "static", "dynamic", "picture" and "statization". But in the present context it is only an advantage to use words with inappropriate connotations since it forces us to see these concepts as what they really are: arbitrary names; instead we should concentrate on the relationships between the concepts. With these remarks in mind we will follow Schumpeter who is recommending

> [...] den Grundgedanken unserer Ausführungen in die folgenden Thesen zu fassen:
>
> Erstens [*S-thesis 1*]: Die wirtschaftlichen Vorgänge [processes] zerfallen in zwei voneinander verscheidene und auch in praxi deutlich unterschiedbare Klassen: in statische und dynamische.
>
> Zweitens [*S-thesis 2*]: Die letzteren machen die rein wirtschaftliche Entwicklung aus, das heisst jene Veränderungen des Bildes der Wirtschaft, die aus ihr selbst heraus entstehen.
>
> Drittens [*S-thesis 3*]: Die wirtschaftliche Entwicklung ist essentiel eine Störung des statischen Gleichgewichtes der Volkswirtschaft.
>
> Viertens [*S-thesis 4*]: Diese Störung löst eine Reaktion in den statischen Massen der Volkswirtschaft aus, nämlich eine Bewegung nach einem neuen Gleichgewichtszustande hin.
>
> Fünftens [*S-thesis 5*]: Dieser Prozess der Statisierung macht notwendig jeder konkreten Phase der Entwicklung ein Ende und führt eine Reorganisation des Wert- und Preissystems der Volkwirtschaft und eine allgemeine "Liquidation" herbei.
>
> Sechstens [*S-thesis 6*]: Diese Sätze erklären das Phänomen, das populär als der Wechsel von Prosperität und Depression bezeichnet wird.
>
> Siebentens [*S-thesis 7*]: Wärend des Statisierungsprozesses und besonders in dem Augenblicke seines Einsetzens können leicht jene Zusammenbrüche Entstehen, welche wir als Wirtschaftskrisen *κατ εξοχην* [by way of eminence/to a pronounced degree] bezeichnen und die den Prozess zu einem "abnormalen" machen.
>
> Achtens [*S-thesis 8*]: Auch sonst ist die Volkswirtschaft, und zwar auch die

statische, zufälligen Störungen ausgesetzt, die, wenn hinlänglich bedeutend, solche Krisen herbeiführen können.

Neuntens [*S-thesis 9*]: Aber dieselben bieten weiter kein Problem dar, sondern sind ohneweiters verständlich. Sie sind in keiner wichtigen Beziehung ein einheitliches Phänomen, trägen keine tiefer liegenden gemeinsamen Merkmale und ergeben sich nicht aus irgend einer der Volkswirtschaft oder einer besonderen Organisationsform derselben eigenen Notwendigkeit. Ihnen gegenüber ist die herrschende Ansicht, dass Krisen eben eintreten, wenn irgendwo in der Volkswirtschaft eine grössere Störung ausbricht, nicht nur richtig, sondern auch völlig erschöpfend. [S, 1910a, pp. 324 f]

[Use the following discussion to the theses as a means of relating the definition 4.1. to the problem of crises, i.e., start with *S-thesis 6-9.*]

The first five of these theses summarizes Schumpeter's evolutionary scheme without mentioning explicitly innovation and entrepreneurship. The next two theses postulates that this scheme can be used for the explanation of business cycles and crises to the extent they are generated from within the economic system. The final two theses points out that crises may also have exogeneous causes but that this phenomenon is, in Schumpeter's eyes, of no partucular interest to economic theory.

The whole construct is created to understand the phenomenon of pure economic development, i.e., the change in the picture (the model structure) of the economy which comes "from within the economy" (what this means we will see later) (*S-thesis 2*). One may think of a two-state process where what is the parameters of the first state (technology and tastes) become subject to "internal" modification in the second state and in the shift back to the first state. Of these states the first has a cognitive primacy since development is defined basically as a disturbance of static equilibrium (*S-thesis 3*). Furthermore, there are agents which promotes the movement from the $\Delta$-state to the $\Sigma$-state (*S-thesis 4*). The shift is brought about by a "statization" process which reconstructs the value/price-system on the basis of new parameters (*S-thesis 5*).

This is a summing up of Schumpeter's basic scheme. But this scheme shows up to include the outlines of a possible theory of business cycles and crises (*S-thesis 6-7*). However, Schumpeter only relates one event in the sequence of events described by business cycle theory, namely the occurrence of a breakdown (of business expectations?). On the basis of the whole argument in Schumpeter's article we can see that this "event" is really a more complex process. The state of development does not alone come to an end because of the equilibrizing forces but also, e.g., because of a negative feed-back on

itself…

In *S-thesis 8-9* Schumpeter relates to ordinary explanations…

Later, the basic ideas were kept but the mode of presentation was changed a lot…

And then use it on a very preliminary discussion on crises…

xx

Die Krisen sind Wendepunkte der wirtschaftlichen Entwicklung. Und nur soweit sie es sind, wollen wir uns mit ihnen beschäftigen. Auf diese Fälle wollen wir auch den Ausdruck “Krisen” beschränken, alle anderen sollen nur prinzipiel uninteressante Unglücksfälle sein. [S, 1910a, p. 294]

xx

Wir sind vom *Krisenprobleme* ausgegangen, um zu einen andern Probleme zu kommen, das wir als von primärer Bedeutung erkennen, zum *Probleme von Prosperität und Depression.* Warum geht der Zug der Entwicklung nicht stetig seinen Weg, sondern ruckweise, durch die hindurch erst der Weg zu weiterer Prosperität führt? [S, 1910a, p. 295]

xx

Der erste Unternehmer, der den hedonischen Bann bricht, der auf jeder stationären Volkswirtschaft ruht, hat grosse Schwierigkeiten zu überwinden. […] Hundert und tausend psychologische, soziale, wirtschaftliche, rechtliche und politische Hemmungen fallen weg. Viel weniger Fähigkeit und Intelligenz gehört nun dazu, was beim ersten Male eine grosse Tat war. [S, 1910a, p. 298]

Etc. on the micro to macro process! And back!

## IX

### TASKS RELATED TO THE FIRST ANALYTIC APPROXIMATION TO SCHUMPETER’S VISION

Sum up the sorting process in more loose terms. A list of contradictory propositions which should be integrated to a picture of the evolutionary process.

| **"Statics"** | **"Dynamics"** |
|---|---|
| Schumpeter's reinterpretation of Walras et al. | Schumpeter's theory of development |
| Static method on stationary state or adaptive behaviour | "Dynamic" method on the evolutionary state |
| Equilibrium, or movement towards equilibrium | Disequilibrium |
| Continuity, minor changes in parameters | Discontinuity, new "functions" and creative destruction of the old ones |
| Predictability, calculability, small risk | Uncertainty |
| Growth within given structures => stagnation | Dramatic structural transformations |
| "Mass people" | Elite |
| Demand pull, "consumer is king" | Supply/technology push, the innovative entrepreneur "is king" |
| Static income categories (wages, rent, 0-profit, 0-interest) | "dynamic"/evolutionary income categories (profit, interest) |
| manager, worker, land-owner | "entrepreneur" |
| routine money-flow (incl. consumer's credit) | innovative credit (producer's credit for innovation) |
| work within old norms/paradigms | paradigm fight: the essence of capitalism |

**Table 4.4.** Comparison between Schumpeter's conception of the circular flow and the innovative activities.

Discuss how we will proceed in sorting these propositions in the following...

# *References*

*[Unfortunately, the list is not quite complete]*

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