

THE SELECTED WORKS OF JÁNOS KORNAI ARE PUBLISHED IN 10 VOLUMES

FOREWORD

We are delighted and honoured to continue our previous practice of publishing the English-language version of Kornai's latest study, appearing as an introductory chapter to Volume III of his Life's Work Series.¹ This requires some explanation.

Throughout his academic career, Kornai has been making a consistent effort to bring out everything (simultaneously, if possible) in Hungarian and in English. As a result, all works now republished in Hungarian are also accessible in English, thanks to the earlier publications. The introductions, freshly written for the individual volumes of the Life's Work Series, are – in the good sense of the word – improvisations. They reflect the author's current views on one or another research question, and they also contain an assessment of or reflections on the analyses produced by him, some of which were written over half a century ago. *Acta Oeconomica* is committed to helping the English-speaking community gaining easy access to these introductory papers because we are convinced that Kornai's life work will itself become a scholarly subject.

The series, published by the bilingual Hungarian–Slovak publishing house (Kalligram), does not follow a chronological order. The three volumes printed to date focus on different research subjects that interested Professor Kornai through his (still uncompleted) scholarly path. The latest volume contains a large selection of writings, starting from the world famous *Overcentralization* book, written in 1956, extending to a recent paper from the year 2012, in which Kornai gives a devastating critique of the economic centralisation policy of the present Hungarian government. The second central subject of this volume is the critique of the market-socialism idea in all its pre-1990 forms.

As we did last year, Kornai's study is followed by a paper, which is entirely devoted to *Anti-equilibrium*, one of his major books, which is scheduled for republication in the Life's Work series in 2014.

The Editors

¹ See *Acta Oeconomica*, 62(3): 365–384, where the introductory chapter to Volume II can be found.

CENTRALIZATION AND MARKET REFORM: – AN INTRODUCTORY STUDY TO VOLUME III OF THE LIFE’S WORK SERIES

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Volumes I and II of my selected works were each a reissue of a single lengthy book (first published in 1990 and 1993, respectively). This volume, however, contains several shorter works: one shorter book and several journal articles and book extracts. They differ from each other in many ways, for instance, regarding the dates at which they appeared. They were written in various genres: some are essays intended to influence readers by sheer force of argument, some are discussions backed by plentiful data, tables and graphs, and some are abstract analyses based on mathematical modeling. What they share is the *subject* they examine. Phrasing the title of the volume called for brevity and an expressiveness that would attract attention. The title chosen is justified in focusing attention on the two phenomena of centralization and market reform. This introduction, however, offers a chance to describe the subject-matter of Volume III more accurately and fully.

THE SUBJECT OF THE VOLUME

If I were to ignore the brevity requirement of a title, I would summarize the subject of this volume as *Alternative Economic Mechanisms – Hungarian Experiences and Theoretical Examinations*. This hefty title would hardly do, as readers would find it far from self-evident what was meant by an economic mechanism.

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The expression *economic mechanism* can be understood in many ways. The interpretation applied in this volume was used by economists in Hungary over several decades from the mid-1950s onward, in debates on criticism and reform of the operation of the socialist economy. Similar issues were debated in other socialist countries as well, in Central Europe, the Soviet Union, and China, but to my knowledge, the expression “economic mechanism” first arose in Hungary and was most frequently employed here by economists. The expression was then carried over into politics and government.¹ No explanation of the term was needed while those debates were still going on, but it is no longer self-explanatory to many readers today. I cannot give a concise definition; the cluster of phenomena incorporated into the concept has left it too blurred. Let me instead describe in a language understandable today which phenomena undoubtedly belong in the cluster:

- The set of instruments by which state influence is exerted over the economy.
- The institutions affecting the economy’s operation and the structure of relations among them.
- The information structure: what kind of information is flowing, where from and where to, and with what effects.
- The incentives for individuals and organizations in the economy: who decides on them and what effects they have.
- The procedures for effecting selection of individuals and organizations.
- Processes of coordination, adjustment, and regulation.

In the period of preparation for Hungary’s 1968 reform, the qualified expression *New Economic Mechanism* (NEM) became current, also among foreign specialists in Soviet and East European affairs. However, it would not be correct to restrict a description of this Western discourse to those who use the phrase “economic mechanism”. There was a distinct group in the academic world and in the economic departments of universities who specialized in comparing the Soviet Union, China, and other socialist countries, including the questions raised in this volume. They reported on the intellectual struggles to the east of the Iron Curtain and expressed their own views on the issues. This debate was about a society and

¹ Summaries of the debates on the economic mechanism in Hungary appear in Szamuely – Csaba (1998) and Kovács (1990, 1992). Szamuely contends that the expression ‘economic mechanism’ was used first by experts (Fekete, Kopátsy and Móré) working for the Imre Nagy government on a draft economic policy program at the end of 1954 (Szamuely – Csaba 1998, p. 31). It took courage at the time the debate was emerging to surmise, and still more to write, that the socialist system might also operate under another economic mechanism than the one that happened to be coordinating the economic processes at the time.

an economy that was ruled by the communist party – about the socialist system – regardless of where the participants were based.

One important research program, which arose out of a quite different professional environment and other factors in the United States and found followers in other Western countries, bears the name *mechanism design*. This overlap in expressions tempts me to mention this line of study despite some important differences. The pioneers of mechanism design were theorists. *Theorist* must here be understood in the sense used in a typical American economics department, as one who constructs theoretical statements valid within the world of some mathematical model, and proves that they are logically sound by mathematical means. The Nobel Prize in 2007 went to the pioneer of mechanism design, Leonid Hurwicz, and two of its other outstanding exponents, Eric Maskin and Roger B. Myers. In his Prize Lecture, Maskin (2007) outlined the task of the research program as follows:

“Much theoretical work, of course, focuses on *existing* economic institutions. The theorist wants to explain or forecast the economic or social outcomes that these institutions generate. But in mechanism design theory the direction of inquiry is reversed. We begin by identifying our desired outcome or *social goal*. We then ask whether or not an appropriate institution (mechanism) could be designed to attain that goal.”

In fact there is strong kinship between the assumptions of the two types of research program. Both seek to set “the rules of the game” to attain specific socio-economic aims. But though the assumptions overlap almost completely in the subject-matter of the research, the differences in other respects lie deep. We, exponents of the “Eastern” strand of mechanism research, may notice with high esteem the exactitude, sharp definitions, and strong proofs of the statements in our Western colleagues’ investigations. They cannot be accused of withdrawing into an ivory tower of pure theory, for their theses offer practical goals. They apply them in practice, if only sporadically, for instance in devising firm rules for auctions. But it must be added that the precision comes at a price. So far, it has only been possible to use the findings of this exciting research trend to solve a very narrow range of problems.² They mainly confined themselves to questions which

² This characterisation does not apply to the work of Leonid Hurwicz, who was always interested in broad, comprehensive questions and a comparison of the “great systems” (capitalism and socialism, decentralization and centralization). He was an assistant under Oscar Lange at the start of his career, so that he had someone from whom to learn to put such comprehensive questions. I return to some features of Hurwicz’s work later in this introduction and in some chapters of this volume. Nor is Hurwicz quite alone in this among mechanism design researchers.

they knew to be susceptible to modeling with the available mathematical apparatus, primarily game theory.³

At its best, the “Eastern” discourse in the socialist countries, notably in Hungary, was much more ambitious. It did not shirk from posing or responding to big questions that bracketed society and the economy as a whole. The participants were braver, often to the point of recklessness, because they had to be content with loosely defined guesses rather than definite aims and definite targets, and with illustrative examples instead of empirical proof. They wanted to show the need for fundamental social transformation and thought in terms of great transformations, using, for want of better, poorer research methods and tools of analysis, which were apparent to them at their level of knowledge and capability at the time. The participants in the two research programs for analyzing the economic mechanism overlapped in their interests, but hardly had any knowledge of each other. Disregarding some exceptional cases, neither trend was much interested in the other.

The works in this volume of the series are obviously manifestations of the “Eastern” research program and reflect its strengths and weaknesses; at the same time, the links with the Western, theoretical mechanism researchers can be definitely discerned in them.

THE TWO PARTS

Scientific researchers do not and cannot aim to reflect the “whole” of reality. Instead they have to choose which parts of reality to analyze, on which to focus, and from which to draw conclusions. There are infinite degrees and forms of abstraction. This volume, in terms of its level of abstraction, falls into two parts.

Part One is connected closely with the *Hungarian experience* and with data from Hungary in the historical period of 1955–1990. Many readers who have read the table of contents and leafed through the book will contend that this is the “empirical” part of the book, as this (and only this) part contains statistical data, tables, and graphs, and it is here that the economic actors have their say. However, this would not be quite accurate: firstly, because all the material in Part Two is likewise inspired by experience, and secondly, because the material in Part One also transcends plain description and presents general propositions. Nonetheless, the title of the first part rightly emphasizes the word *experience*. All its pieces lie close to reality and draw generalizable conclusions from direct impressions.

My collected essays, published under the title *Contradictions and Dilemmas*, appeared in 1983, with a cover design of a test tube containing a map of Hungary.

³ The professional, well-written Hungarian Wikipedia page on mechanism design refers to this research program simply as an extension of game theory.

This is the country granted to me as a laboratory. I have visited and read about many countries and consulted with many foreign colleagues, but my home country remains the one I know best. I tried to comprehend and digest experiences at home, but all the time I was also thinking about what conclusions apply beyond Hungary's borders as well.

The subject-matter of Part One is delimited historically and spatially. Here I have to return to the second half of the title of the present volume: the word *reform*. Reform has been understood differently in every historical period, by every political trend and every school of thought. Even within a line of thinking, its interpretation may change with the historical passage of time.

What can aptly be called "reform" in the region and period covered by the materials in this volume? The participants in the debate took the political structure and property relations of the socialist system as given, either because they approved of them, or because they took sober cognizance of them as realities that would not change in the foreseeable future. For decades, radical transformation seemed a very distant hope even to those who would welcome a radical change of system – which would include exchanging the one-party system for parliamentary democracy, ending the dominance of state ownership, and allowing a broad scope for private property. "Reform" means a change implemented *within* the socialist system. It can be considered a reform if an economic mechanism based on centralization and aggregate planning instructions is replaced by one which decentralizes the regulation of economic processes, at least in part. "Reform" is meant if bureaucratic coordination declines and market coordination gains a much bigger role. That is why "reform" is qualified by the attribute "market" in the title of the present volume.

However, when the change is not confined to the market mechanism, but involves a radical, dramatic transformation of the political structure and ownership relations, that – in the parlance of the time – would amount to a *change of system*, not just a reform. There was such a change in Hungary in 1989–90. My work on the Hungarian experience continued after 1990, but as editor of this series, I decided to end Volume III at that point. The economic mechanism changed within the frame of the change of system and it continues to change, but my works on the changes of the ensuing 20 years will appear in subsequent volumes. I have allowed one exception. I include at the end of the first part, as a belated echo of the debates in 1985–90, my work *Centralization and the Capitalist Market Economy*, which appeared in 2012.

Part Two of the volume is entitled *Theoretical Examinations*. This section contains analyses conducted with a mathematical apparatus, but also some pieces devoid of mathematical formulae, whose text is entirely in "prose".

I am not one of those who reject mathematical economics with a scowl as being “too abstract” or “sterile”. Very often, there lies a consolatory resort to “sour grapes” behind such superficial rejection: “I can’t follow it, so it must be stupid...”

I am among the economists who did not learn enough mathematics to be able, if required, to construct mathematical models and prove statements, as it is customary in mathematics. So more than once in my career, I allied myself with excellent mathematicians and examined in conjunction with them problems that we felt were both intellectually stimulating and important to economics *from a social scientific point of view*.

I do not belong among those who bestow the rank of “theory” solely on works that employ mathematical means. There is a curious spirit of “aristocracy” prevailing in the economics departments of many Western universities: they only call economists “theorists” if they use mathematical techniques, and it is still bestowed even if the imposing technical instruments bring forth only commonplaces and self-evident statements.

There are many examples in the history of science of a proposition being raised to the rank of “theory” by its level of abstraction, broadly generalizable validity, sharpness of definition, veracity of statement, and logical rigor, not by the presence or absence of mathematical equations in it. Darwin created theory, even if his statements were presented exclusively in everyday language.⁴

Based on this line of thinking, I consider it justified to include some of my “verbal” studies in the theoretical section. The higher level of abstraction and generalization in Part Two can be seen in the fact that they no longer confine themselves to one country (for instance Hungary) and follow phenomena across frontiers. The examination here is of formations, structures and phenomena (abstracting from the specifics of single countries) such as centralized or decentralized coordination, state-owned or privately owned enterprises, and the capitalist or socialist system. So the conclusions from the statements and arguments also aspire to a broad validity.

Some guidance

The volume consists of 22 chapters. In fact the word chapter should be in quotation marks because the 22 chapters include a complete book, as well as chapters,

⁴ It is another matter that once Darwin had devised his theory, other researchers could rephrase it in mathematical language too. These days, the Darwinian theory of evolution and further developments of it are modelled in various forms. The temporal order of applying different theoretical apparatuses has been similar to many other important themes during the history of scientific discoveries.

appendices, reference-lists drawn from various volumes, and articles from journals or from daily newspapers. The title of each chapter, along with the names of co-authors or translators and the original place and date of publication, appears on a separate title page at the beginning of each.

The writings in Part One – or groups of several writings with a logical connection between them – follow each other in order of appearance. The consecutive order begins again in Part Two. I expect that most readers will be guided by their momentary interest to one chapter or another. However, those who read or leaf right through the entire volume will encounter the main stages in my intellectual career and receive a picture of the changes in my thinking and outlook accompanying my professional development. Furthermore, they may learn much about the circumstances surrounding my ideas, the political and economic changes in Hungarian society that accompanied them. Similar impressions could be obtained from my autobiography, *By Force of Thought* (2007a). They too were presented with two parallel narratives: the intellectual journey of a Hungarian research economist and the contemporaneous story of the Hungarian and international environment that shaped, encouraged, and defined his individual destiny. The autobiography devoted separate chapters to works of mine reproduced here in full. So I would recommend readers following my activity with special attention to follow up one or other chapter of this volume by reading the relevant section of the autobiography. (I give some page references to it in this Introduction.) But I only expect such special attention in a few cases, and I have risked repeating myself by including in the Introduction some remarks found in the autobiography as well.

Notes to the chapters of the book

The remaining parts of this Introduction are divided according to chapters, but readers should not expect here abstracts of their contents, such as can be found at the beginning of the journal articles. I simply add side-notes to each chapter: sometimes how it arose, sometimes some still timely idea in it and sometimes my present-day comments on what I wrote at the time.

PART ONE: HUNGARIAN EXPERIENCES

1. *Overcentralization in Economic Administration. A Critical Analysis Based on Experience in Hungarian Light Industry* (1959).⁵ I did the research on which the

⁵ Every study reproduced in the Hungarian volume is available in English. The bibliographical data of the sources of each study can be found in a list following the text of the study and before

book was based in 1955–56 and presented it in summer 1956 as my dissertation for the candidacy degree of the Hungarian Academy of Sciences.⁶ There were already thick storm clouds over Hungarian political life at the time. The open debate on a candidacy dissertation usually attracted a couple of dozen people: relatives, friends and colleagues. On this occasion, there was a crowd of some 200. Word had gone round that the dissertation had political content and made strong criticisms of the existing economic order.

Works written in that period's spirit of compulsory "political economy" were wont to blur the distinction between positive examination, designed as a true account of reality, and normative proposals for altering that reality. Authors sought to express in some way that the economy would function properly if everything were ordered in line with their ideas. The features they proposed as a *desirable* mode of operation they called a "law". One product of that distorted logic was the "law of planned, proportionate development", declared to be among the cardinal laws of the socialist economy in the officially endorsed textbook inspired by Stalin. That was the intellectual scene on which *Overcentralization* appeared, with a diametrically opposite approach. It set as its task something self-evident to researchers who had escaped brainwashing: to examine *what actually pertains* in practice.

This volume and my first book of 55 years earlier place the same phenomenon to the fore: centralization. Under socialism, the central component of the economic mechanism is the plan instruction. The fulfillment of the instruction is enforced by incentives, bonuses and punishments. The perhaps most telling chapter's title was "Some useful and harmful tendencies which result from the joint effects of plan instructions and incentives". The concept of a tendency belongs to the realm of positive analysis. Given certain factors (plan instructions and incentives), there will often emerge an observable and in many cases even quantitatively measurable regularity even amidst random fluctuations. This understanding and use of the word tendency and the outlook of researchers promoting its use put it worlds away from the propaganda concept that the exponents of "political economy" called "laws".

Let me quote a few of the tendencies discussed in *Overcentralization*, of which close and distant relations can be found in the operative regularities of the world today.

the references. The numerals used in the overview of the chapters are identical with the numerals applied in the list of bibliographical data.

⁶ For younger readers unfamiliar with the earlier degree system, some explanation is needed. The candidacy degree compared roughly in rank with a PhD of today. It was awarded mainly to researchers beginning an academic career after various examinations and the defense of a book-length dissertation.

The leadership of a state-owned socialist enterprise made a fetish of the plan indicator that was chosen as most important in the system of material incentives and in official propaganda.⁷ This role was played in 1955–56 by the figure for *total production value*, which had to be met 100 percent or slightly exceeded, and literally *at any price*. The firm would be willing to increase costs, reduce quality, or leave its buyers dissatisfied, so long as it met the plan.

This observation remains valid. Forced growth – making a fetish of the growth rate – was a general phenomenon to which demands of harmonious growth were subordinate. The fetish for Romania's communist dictator Nicolae Ceausescu was the country's foreign debt, to which he subordinated everything. The price of that forced rate of debt reduction was paid by the Romanian people, who suffered power cuts despite rich energy resources and severe shortages of food. The fetish in Europe today is the state budget deficit as a proportion of GDP. That is the indicator on which international agencies, national governments, the media, and political discourse focus.

Making a fetish of a single indicator causes grave damage. It disorients economic leaders at all levels, causing them to reach poor decisions and give distorted information to the public. A country's economic situation is at least as complex as the state of health of a hospital's patients, for example. We know that a patient's pulse rate is a very important indicator of state of health and one of the first things a doctor examines if there is trouble. But who would draw any sensible conclusion from the information that the average pulse rate of patients in Hospital A was three points higher than of those in Hospital B? In Hungary's case, a half-point fall in the proportion of budget deficit to GDP may be a sign that the efficiency of production has made a healthy improvement, but it may also mean that accumulated assets have been pumped over to cover current budget costs.

Another damaging tendency analyzed in *Overcentralization* was for plan bargaining and the consequent distortion of information. It was in the firm's interest to have a loose plan indicator that was easier to meet. It was worth wailing that the previous plan had also been too tight and there was no realistic chance of improving performance, even if the leaders knew that this was untrue. But their superiors were not born yesterday either and they would calculate in advance with the subordinate informant's falsifying the prospects.

This problem remains pertinent also today in all centralized, hierarchical organizations, where bargaining occurs between leaders of superior and subordinate organizations. If the former assigns a task, the latter tries to reduce it; if the former

⁷ The book cited an article by Péter Erdős as a theoretical antecedent (1956).

allocates resources, the latter tries to increase his share and the sign before the false information is reversed.⁸

The book shows leaders of socialist enterprises willing to sacrifice many favorable chances of future development in order to present a brighter momentary picture to their superiors. Today repeatedly loses the battle against tomorrow. As a sincere believer in the superiority of socialism, this flabbergasted me at the time. The official ideology of the day was that capitalists are selfish and short-sighted, ever willing to sacrifice the future to maximum present profits. It was disillusioning to find that this phenomenon had not vanished along with private property and the profit motive.

Hungary returned to the capitalist system over two decades ago. It is not surprising to find many private firms still striving to stabilize their situation in a similar way. Furthermore, the well-intentioned advocates of "welfare economics" are pressing for stronger state intervention. It is sad to find the government actively encouraging instead of combating this harmful tendency, making changes in taxation, the pension system, health care, and education that ease momentary woes at the expense of long-lasting future development.

There had been word in the Hungarian specialist literature of the day about the various single damaging tendencies explored in my book. My contribution was primarily to point out their *concurrent* presence and emphasize the tendency form in which they appeared. The book pointed out that they could be ended or eased only if the *combination* of generating circumstances, the economic mechanism was changed. I had not yet started to use the expression "system paradigm", but on rereading my work half a century later, it became apparent that this approach, so characteristic of my later work as well, was already taking shape in me and developing to some extent.

I have to add that when I was writing *Overcentralization* in 1955–56, I was still convinced that the great problems could be overcome without modifying the political structure or property relations of the socialist system, by retaining the foundations of the system but transforming its economic mechanism in a radical way. Most of the book consists of positive description and analysis; no detailed program of reform is outlined. The concluding pages sound optimistic. I criticized the insufficiently comprehensive, superficial corrective measures.

"We need a unified system of comprehensive reforms... It will succeed in the end because the need for what requires to be accomplished has been ripened by the passage of time and has been placed on our agenda by the course of economic and social development."

⁸ A well-known character invented by Frigyes Karinthy, a Hungarian writer, Dr. Ugyanaz ("Dr. Same-thing"), simulates illnesses when he is examined for the draft, and claims perfect health when he has a medical check-up for his health insurance.

In a later publication of mine, reproduced as Chapter 6 in this volume, I drew a portrait of a “naive reformer”. There too I gave my 1955–56 self as an example. (Among those mentioned later were the Hungarian, Polish, and Soviet “reform economists”, calling Mikhail Gorbachev, the last in time, the ultimate “naive reformer”, who carried out the world historical change of course.) *Overcentralization*, republished in this volume, is the main product of the “naive reformer” stage in my intellectual development.

2. *Overcentralization in Economic Administration – Preface to the second edition* (1990). The second edition, which followed the first after 33 years, gives a more detailed account of the antecedents and circumstances of the research on which the book rested. The introduction added a few remarks on the research methods. When preparing the original book, I knew next to nothing about how academic researchers gather material. I used my earlier experience as a journalist, and in addition I knew something of the work done between the wars by the Hungarian sociologists known as the “village researchers”. Having obtained and analyzed numerical data for the field examined, I turned as my main source to discussion with people involved in the light industry, whom I questioned singly and in groups: “How are enterprise plans prepared? How do they negotiate with superior authorities? What moral and financial incentives influence them?” I had similar talks with the staff of the relevant ministry and the National Planning Office who kept in touch with enterprise managers. I arrived instinctively at an idea that is quite self-evident in fact: the largest body of information on the mental processes in people’s heads is possessed by the people themselves. The task is simply to get them to speak frankly.

I know now, of course, that there is a tried methodology for doing so, used by sociologists, anthropologists, and ethnographers. There are some economists, not too many of them, who have specialized in this too.⁹ Our profession has produced a library of literature on pricing, but only in the last 10 or 20 years have a few researchers or research groups directly questioned relevant decision-makers in the big enterprises that really decide prices on how the process actually takes place. Then real intellectual excitement is generated by comparing the actual pricing process with the theory of how it should proceed. (See, for instance, Blinder et al. 1998.)

⁹ I recently had the good fortune to meet Professor Mitchell Y. Abolafia at a conference, who has spent decades as an “ethnographic” economist-cum-sociologist, working among brokers on the stock and bond markets (two separate tribes!) or central bank officials. See the lecture Abolafia (2012) and other publications of his. Direct observation leads researchers to important and interesting conclusions.

Hungarian exponents of economics and economic sociology can be proud that they have been contributing for decades to a line of research in whose methodology "living", direct observation plays such a key part, along with the "ethnographic" methods and case studies based on thorough, personal interviews. The school is hallmarked by such people as Márton Tardos and István Kemény of the older generation, and Mihály Laki, Júlia Szalai, and Pál Juhász among those still active (Laki 2011, pp. 7–11).

3. *Overcentralization in Economic Administration – Notes on the books' previous and subsequent history* (1990). Books have destinies of their own, as the saying goes. That of *Overcentralization* had its vicissitudes, as the Appendix to the second edition points out. First, I paid a high price for having written and published it: I was dismissed from my post at the Academy of Sciences and branded in the communist party press as an ideological trail-blazer for the "counter-revolution" (i. e. the 1956 revolution), which left me officially open to the dangers of persecution. True, but at the same time, the book won me renown among my fellow citizens, and the English translation published by Oxford University Press, based on the manuscript smuggled out of the country, drew the attention of some Western colleagues to my work. The book gained me enemies and friends.

4. *Efficiency and the Principles of Socialist Ethics* (1980). I would like to draw readers' attention to the dates of publication. In Part One – containing my main writings dealing with Hungarian experiences with the economic mechanism – there is an interval of 23 years between my first work (*Overcentralization*) and the next paper on this subject-matter. I had not lost my tongue. The second half of this volume and subsequent volumes in the series will contain many works of mine written between 1956 and 1980. I remained an active researcher, but I refrained from expounding on the reform of the economic mechanism. My autobiography covers in detail the turn my work took, but let me add a few words here as well.

The author of *Overcentralization* was a "naive reformer". In 1955–56, I still sincerely believed that the system could be reformed by changing the narrowly defined "economic mechanism" and substituting decentralized market coordination for most of the regulatory functions of over-centralized bureaucratic coordination. My naive hopes were destroyed by the crushing of the 1956 revolution and merciless subsequent reprisals and ideological cleansing. I do not claim that Soviet tanks had hardly entered the country on November 4 before I came up with well-founded arguments, on November 5, against reforming the system from within. What arose in me straight away was an aversion to collaborating. I refrained from taking part in the workings of the "reform committee" suddenly cobbled together by the Kádár regime, or in the elaboration of its materials or in the

debates. I sought new fields of research, preferably themes that could be pursued in peace with a clear conscience, even amid the personal persecutions and tough research conditions of the time. What I turned to was the application of mathematical methods in economics. Some of these researches of mine were connected with economic planning, while others – on a strongly abstract plane – were in fact still concerned with my favorite subject of old: problems of the economic mechanism. I will return to the latter when commenting on the Second Part of the volume.

This period of more than a decade sufficed for my position on Hungarian reform of the mechanism to crystallize. There were two ideas and two kinds of feeling in my head at once. One was of sympathy with the reformers. As the genuine believers in reform returned to the scene in the 1960s and began to activate, I “rooted” for them, hoping that their work would be as successful as possible. The other thought and feeling could be described as one of disillusionment, unbelief, and uncertainty. What they were recommending, and carrying out in part, was full of inconsistencies. It was useful because it improved the living conditions of many people and livened up public thinking. But it was also harmful because it roused false hopes and illusions.

Chapter 4 (and similarly Chapters 5 and 6) reflect the duality in my thoughts and feelings: recognition of the first fruits of reform together with criticism of its inconsistency and incompleteness. Sympathy and irony. Encouragement and doubt, and ever more open pessimism: “This is not going to work...” Such ultimate conclusions could be drawn at the time by readers of those writings of mine.

After a long gap, *Efficiency and the Principles of Socialist Ethics* was the first of my writings to return to the subject of the mechanism. There immediately arrived through intermediaries the first official warning: this was clearly harmful material and I would do better staying in the field of mathematical modeling. Nor was this essay to the liking of those whose “new left” views led to horrified reactions to the profit motive, growing inequality, and appearance of the market in the 1968 economic reform.

I hope present-day readers of the study will notice that its message goes beyond the spatial and temporal bounds of that time. It is not just about the “New Economic Mechanism” that emerged in Hungary in 1968. From almost every part of the political spectrum there emerged (and emerge to this day) politicians and opinion-makers who see little difficulty in matching economic efficiency with the demands of social equality and justice. Not so. There may be found, here and there, measures that have a beneficial effect from both points of view or assist in asserting one kind of requirement without ruining entirely the chances of asserting the other. But that is exceptional. Far more frequent is a painful contradiction: efficiency improves, but in so doing damages social equality and justice. Or in re-

verse: a measure introduced for reasons of ethical principle can only be applied by weakening the incentives that encourage efficiency.

My essay did not simply point to contradictions between the two systems of requirements, between efficiency postulates and ethical postulates. It also implied that it was *impossible* to create an economic mechanism that could satisfy both sets of postulates to the full. I still feel a lack here: I sought, but could not find a mathematician who could help me to phrase this statement exactly and prove rigorously the impossibility theorem.

The essay ends with a metaphor: history has not produced a supermarket on whose shelves the various components of a mechanism that incorporates the advantageous qualities of all systems can be found. Buyers will push their shopping carts round in vain, hoping they might be able to pick from one shelf what they fancy – full employment, say, from the socialist shelf, or ample goods and rapid technical development from the capitalist one – and then go home to put together an “optimum system”. This comparison is often cited and I gladly use it as well in my lectures. Several further chapters of this volume return, from various angles, to this exciting and complex problem of social transformation: to what extent can essentially different systems and mechanisms be combined and mixed?

5. *Comments on the Present State and Prospects of the Hungarian Economic Reform* (1983) and 6. *The Hungarian Reform Process: Visions, Hopes, and Reality* (1986). I discuss these two chapters together because they each provide a different snapshot of the same process. Both attempt, in complementary ways, to draw general lessons from the Hungarian reform. Both reflect, as described in my comments on Chapter 4, a duality in my relation to the reform taking place: sympathy and encouragement on the one hand, criticism, dissociation, concern, and pessimism on the other. The title of the 1986 paper sought to set real experiences with the Hungarian reform against the underlying hopes that the socialist system could be patched up and reformed.

Analysts at the time underlined mainly how it had emerged that the economy had remained viable even after the mechanism of plan directives had been basically withdrawn. I also emphasized this strongly in my two pieces, but added a few further observations less often made in literature on the reform.

There had been an increase in the dependence of state-owned enterprises on the market (horizontal dependence), but the abolition of the command system had not ended dependence on the bureaucracy (vertical dependence). This state of affairs I called *dual dependence*. The bureaucracy continued to decide vital issues, such as entry onto the market or exit from it, appointment of top executives, promotion and demotion, much of the pricing, the level of subsidies for enterprises, tax rules “tailored” for their benefit, etc. It is also worth considering today what remains of

that phenomenon of dual dependence. It clearly applies forcefully in state-owned firms, but a sizable proportion of non-state firms also depend heavily on the state. For many, the state is the main customer, the channel of access to EU subsidies, the instigator of regulations or policy moves that affect the firm's prices and wages, etc. Dual dependence was a step forward in the 1970s compared with the vertical dependence that preceded it. Nowadays stronger assertion of vertical dependence is a step backward from the situation in which firms primarily and principally depended on the market.

Reform literature at the time focused mainly on what happened in the state sector: had there really been an increase in the autonomy of the heads of state-owned enterprises? My pieces also dealt with this, but considered the increase in the proportion of the non-state sector as the prime achievement of the reform. This took place in many ways. There could be no word at that time of open privatization of hitherto publicly owned enterprises, but there were ever more small private businesses: household farming became a stronger factor in agriculture; cooperative farms diversified into industrial and service ventures; small gap-filling industrial and service cooperatives appeared in cities; various wholly or partly concealed forms of private ownership spread. I sought to divert attention from the change in *coordination mechanisms* to a deeper process occurring in *ownership relations*.

The conclusion of my 1986 paper put a question very strongly: "Can a reform process in a socialist country go much beyond what has been accomplished in Hungary? Or does contemporary Hungary exhibit more or less the ultimate limit of reform?" I strongly suggested that further deep changes could not be made in socialist countries, *within* the socialist system. We had reached the end of reform of the economic mechanism. And so it proved. Within a very short time, a change of *system* would begin.

7. *Rules of the Game and Social Realities. Comments on Tibor Liska's Concept of Entrepreneurship* (1982). Tibor Liska was one of the most interesting and colorful personalities in Hungarian economics, famous for the originality of his ideas, the way he spoke his mind, and his excellent debating abilities. He contributed in several works to the economic thinking of his time, of which the most attention was attracted by the "Liska model". He became the centre of a veritable "sect", who treated him as a guru and pondered his every word.

It is not possible in this introduction to explain the whole of Liska's complex intellectual edifice. Those who wish to know about it can read a new summary of a father's heritage written by his son (F. Liska 2011), in which further references will be found.

Liska organized a series of debates at the Budapest University of Economics in the early 1980s, at which he dueled with a succession of his colleagues. Chapter 7

contains my contribution to that series. My motive in including the article in this volume is not simply my respect for Liska, but also because it raises some problems I touched upon earlier.

I mentioned the mainly American research program known as *mechanism design*. There the researcher did not take the rules of the game as given, but sought to design the optimum rules for certain social purposes. Liska was a mechanism designer through and through. His model of the world prescribes how individuals can obtain access to their due “social heritage” (a sum of notional money he proposed), what limitations there are on using that, on what grounds that chance can be denied from citizens, etc. I think it is a realistic idea for our American colleagues to devise a rational set of rules for a special detailed process (e. g. a specific auctioning procedure) and offer it for use. But even back then, I considered it unrealistic for an intellectual workshop to “devise” the best economic mechanism, such as the “social inheritance”. Institutional development is basically an evolutionary process. New forms appear and are either adopted or eliminated in social practice. My debate with Liska is part of a more comprehensive line of thought that analyzes the coherence or internal contradictions of social structures, and the attractions and repulsions of elements of the structure. This line of thought is one of the leading motifs of this volume. (See also Chapters 1, 4, 6, 9 and 20.)

8. *Individual Freedom and the Reform of the Socialist Economy* (1988). Hungarian advocates of mechanism reform regularly used economic arguments to defend the changes: enhancing the role of market coordination, they said, would increase the efficiency of production and commerce, improve supplies to the public, and strengthen incentives for participants in the economy. This study, recognizing the rightfulness of the economic arguments, looked at the effects of the reforms from another angle, namely political philosophy and freedom rights. I wrote it in 1987, when the communist one-party system was still in operation in Hungary. I did not want to bandy half-truths, preferring to avoid discussing political change. Even so, I could raise some questions that Hungarian literature on the reform had hitherto eschewed.

This study, like my earlier ones on the reform, put emphasis on the positive description of development. The changes that occurred in Hungary had increased individual freedom by extending rights to property, occupation, and choice of employment. In fact, chronic shortage can be added to the list of phenomena worth a closer examination, as it had severely restricted free choice for buyers. The move toward market coordination had eased or overcome the shortage in many fields and so widened individual freedom of choice. There was a “maximal state” under the totalitarian regime that intervened in private lives in a hundred ways. The economic reform certainly reduced that oppressive state hyperactivity. My piece rec-

commended further reduction in state intervention, while dissociating itself from the libertarian demand for a minimal state.¹⁰

I would like to say a few words about how the study came to be written. Some time in the early 1980s, the distinguished Belgian economist Jacques Drèze initiated the foundation of a European Economics Association, and called on me from the outset to take part in the preparations. I gladly agreed because it offered new opportunities for bridging the gap between “European” academic economists (i.e. those from the West European countries grouped in the European Community) and “Eastern” ones (i.e. from communist countries). Drèze was the association’s first president and I was the second in the following year. Chapter 8 republishes the text of my presidential speech in Copenhagen.

At the time we were working on founding the association, and when I delivered my presidential address, Hungary was still a member of the Warsaw Pact and the CMEA.¹¹ It was not usual in Hungary to stand up publicly in favor of Europeanism. Later, more and more people here discovered a “European” side to themselves, up until the recent past. Now it has become fashionable again to set the idea of Europe at naught. For my part, I have been prepared for decades to support the idea of European cohesion. I do so today and I will do so tomorrow as well.

9. *Centralization and the Capitalist Market Economy* (2012). This piece is not in its rightful place. It should appear in a later volume, along with other works dealing with problems after the change of system, but I was prompted to place it here by the bitterness over the changes of the last years, as a reminder. The troubles brought on by over-centralization, the command economy, rigid hierarchies, and the compulsions of the state Leviathan, thought to be over, just historical memories, have pressed down on us again in Hungary. To understand clearly the similarity between the old and present situations, it is worth reading the writings of 20–50 years ago in conjunction with the articles of only a few months ago.

I mentioned in my comments on Chapter 4, how my researches have been accompanied throughout by the problem of how elements “alien to the system” can coexist with it. Can “panels” characteristic of the socialist or capitalist system be combined at will in any desired proportions with those characteristic of the other? In describing the situation in 2012, we again encounter an irrevocable dilemma: an ill-matched, forced marriage between a hierarchic, bureaucratic party and state structure demanding military discipline, and a disorganized, competitive, fractured, opaque market. *Who will defeat whom?* – as Vladimir Ilyich Lenin once asked.

¹⁰ This is worth noting because in many cases I am branded a “neo-liberal”. Chapter 7 alone suffices to rebut that charge, and even stronger repudiations appear in some pieces that will be included in later volumes of this series of my selected works.

¹¹ Council of Mutual Economic Assistance, the official name of the communist trading block.

PART TWO: THEORETICAL EXAMINATIONS

10. *A Mathematical Investigation of Some Economic Effects of Profit Sharing in Socialist Firms* (1962). I reported a few pages back on how I had turned against the Kádár regime after the trauma of 1956–57, and against the debate on reform rapidly revived by the reorganizing communist party. For it soon emerged that the communist party was not serious about it and the reform remained in hibernation for 10 years. I was looking for a research topic on which I could use the knowledge and contacts I had built up while studying the mechanism at work in light industry. That is how I stumbled on the problems of enterprise profit-sharing, which was being introduced at that time. Meanwhile, I was reading night and day, studying the economics textbooks of Western university students, which included the models for a profit-maximizing firm. I sketched out a model for the Hungarian incentive system, but I lacked the mathematical knowledge to resolve its difficulties. Thanks to luck and to András Bródy, a distinguished Hungarian economist, I met Tamás Lipták, a student of the world-famous Alfréd Rényi, the director of the Mathematics Institute of the Hungarian Academy of Sciences.¹² We began to examine together the problems of profit incentives and pricing in Hungary of those times. The work went on far from smoothly. We had completed a short book-length study and begun to look for a publisher when Lipták was detained. His arrest was not unexpected, as successive mutual friends of ours were being imprisoned around that time. He was accused of taking part in a “conspiracy”. He had obtained the duplicator on which a “counter-revolutionary” pamphlet assessing the 1956 revolution, the Soviet intervention, and the early actions of the Kádár government was printed.

The country’s leading publishing house, the Economics and Law Publishing Enterprise was prepared to bring out the book and the Ministry of Light Industry showed willingness to cover the costs, but on condition that the name of Tamás Lipták, then in prison, did not appear on it. We agreed with Alfréd Rényi that the author line should read like this: “János Kornai, with the cooperation of the Mathematics Research Institute of the Hungarian Academy of Sciences.”

As soon as Lipták was released from prison, we set about writing a proper paper in English, much more condensed than the book, which had appeared by then. The rule at that time was that an official permit had to be obtained before a Hungarian author’s work could be published abroad. Since all Hungarian employers had their place in the pyramid of power, everyone had a superior, from whom permission had to be asked. If the superior could not decide, the application was sent

¹² I have written in greater detail about the personality and amazing talents of Tamás Lipták, and about our cooperation, in my obituary (1998) and in my autobiography (2005).

upward until it arrived on the desk of somebody prepared to say yes or no. Tamás and I decided not to go through all that calvary. We put the manuscript in an envelope and sent it by airmail to the editors of *Econometrica*. The reply came not long after: the paper had been accepted for publication without any changes. We had no idea then what an honor this was. Many Hungarian economists have since found that a journal of *Econometrica*'s rank, the top publication in the field of mathematical economics, will be extremely selective, rejecting most of the manuscripts submitted and having the author rewrite those they accept.

If Tamás Lipták were still alive and in possession of his intellectual power, he would probably recommend that we rewrite the article. It might be possible to discuss the incentive effect of the profit rate more elegantly on a theoretical plane. I remember how we struggled with this at the time. Or it might also be that the high-performance computers of today might use a well-designed simulation series to support the argument more convincingly. But even if he were to insist, I would still be against it, because rewriting would go against one of the fundamental principles for editing this series. What I wish to put in present and future readers' hands here are the originally published works in an authentic form.¹³

The study was one of the modest heralds of two later, more influential subjects: principal-agent theory¹⁴ and mechanism design theory, mentioned earlier. The attribute "modest" is apt as it dealt with one narrow, specific question, unlike the later schools, particularly the broader investigations in the research field of principal-agent theory. I see it as a modest attempt because the mathematical apparatus used was rudimentary by comparison with the arsenal available to later researchers. But there is a similarity in the questions asked. What is the effect of the alternative incentive and pricing formulae on the behavior of those it is desired to influence? There is also a similarity because we attempted to answer the question using a mathematical model. In this respect, it was to my knowledge a pioneer undertaking in the socialist region.

It is a strange sensation to look today on this paper of 50 years ago. It conjures up the lone figures of two young men somewhere on the Eastern fringe, primitive tools in their hands, while their luckier Western colleagues were working in large groups, their minds sharpened by lively discussions, and in possession of the most modern instruments.

¹³ The article was translated by Judit Szabó and the content checked by András Simonovits (who had been recommended to me when he graduated, by Tamás Lipták.) They found some misprints and small mistakes. Simonovits came up with some ideas whose inclusion would make the study more convincing. The translation given here corrects some small errors in the original English text. Judit Szabó and András Simonovits kept a register of their proposals and other observations. This can be found on my website (www.kornai-janos.hu) among the information on Volume III of the Kalligram series.

¹⁴ For a brief summary, see Stiglitz (1987).

11. *Two-level Planning* (1965) and 12. *About the Theoretical Interpretation of the Two-level Planning Model – Extracts from the Autobiography By Force of Thought* (2005). I will comment here at once on the study written in 1965 and on the explanations of this study presented in my autobiography 40 years later, as a retrospective self-assessment.

I had been dealing for some years with planning models on an industry level before the ideas in *Two-level Planning* crystallized. The work began in the cotton industry.¹⁵ I initiated a calculation designed to arrive at an investment plan for the sector using linear programming. The following experimental calculation was done in the synthetic fiber manufacturing sector. Lipták also joined in. During the work on sector models, I had an idea: why not join these together and design a joint model on a national economy-wide scale?

The scale of the comprehensive model was intimidating, given the slowness and scant memory of computers in Hungary at the time. The so-called decomposition methods were already known by then, whereby a large programming task could be broken down into smaller tasks and the solution to the large task could be found by an iterative computation procedure.¹⁶ It was clear that we too had to break down the great computation task into smaller components.

I began to think how the National Planning Office, where I often went and whose working methods I understood, was using its own “decomposition” procedure called “plan disaggregation”. The Office broke down the National Plan into branches; the senior staff of the Economics Division, who arrived at the figures, would debate them with the divisions for the branches and then correct the original disaggregation. Finalizing the plan targets called for a series of conversations, debates and bargaining sessions between the upper and lower levels of planning. I thought it would be worth “simulating” the actual practice of socialist planning in a mathematical model. Once I was working there, in that environment, I had to learn how the planners compiled the plan in practice.

I got as far as outlining a first sketch of a two-level model, but then my mathematical skills proved insufficient for devising the algorithm in which the collation and repeated corrections between the upper and lower levels of planning would take place. This is where Lipták entered the modeling process, who arrived at such an algorithm after several months’ cogitation and study of the literature. It is no exaggeration to say that Lipták’s idea was a stroke of genius: he reformulated the

¹⁵ My research in the field of mathematical planning started in the cotton industry because I got a job in the Institute of the Textile Industry after my dismissal from the Institute of Economics of the Hungarian Academy of Sciences.

¹⁶ The best known of these at the time was the Dantzig – Wolfe algorithm.

two-level linear programming model as a game-theory model.¹⁷ One player in this particular game is the centre and the other player is the set of sectors. It has to put forward rules of the game so that the series of moves made converges toward the optimum solution.

It is clear from what has been said that we were *not* prompted to produce the construction described in the study by international theoretical debates on socialism and capitalism, centralization and decentralization. It was *not* the work of Lange or Hayek, *not* that of Arrow or Hurwicz that was on our minds as we worked on the model.¹⁸ We wanted to construct a model of national economic planning for practical purposes, one that could come up with easily comprehended numerical results.

It has happened with others, in the history of science, that in seeking assiduously to solve one problem, they light upon the solution to another, almost as a by-product. We were looking for an effective numerical procedure for resolving a large-scale (by the standards of those days) linear programming task,¹⁹ and our search for an appropriate algorithm devised a theoretical model of central planning. This I began to realize in Cambridge, England, in 1965, when I met the leading figures on the comparative theoretical subject of the “great systems”: Tjalling Koopmans, Leonid Hurwicz, Edmond Malinvaud and, later in California, Kenneth Arrow.²⁰ They enquired about the two-level model with real intellectual excitement. They were not interested in whether the computation was fast or slow, only in the fact that there appeared in the model the National Planning Office, which prescribed from above quantitative output targets and quantitative input quotas for the lower level, and called for reports of efficiency from them. Interesting, they said, for that was exactly the opposite of what should have happened according to the algorithm of Malinvaud (1967). For that was an idealized copy of Lange’s market socialism, where the centre sets equilibrium prices and the lower level maximizes profits at given prices.

¹⁷ The application of game theory to the examination of economics problems went in waves. After the very first, 1944 appearance of the classic work by Neumann and Morgenstern, many economists greeted it warmly, but interest flagged after some years. A new impetus to use the game-theory apparatus in economics research came with a splendid contribution from John F. Nash (1951), the Nash equilibrium. *Two-level Planning* also deserves attention because it appeared at the beginning of the post-Nash “new wave” and can be placed among the first important works of that period.

¹⁸ It is another matter that I had begun to familiarize myself with this literature, but I kept it and digested it in another compartment of my mind.

¹⁹ I have to admit that we did not succeed. The Kornai – Lipták algorithm proved too slow under the IT conditions of the time.

²⁰ Arrow edited a volume of the 20 most important articles to appear in *Econometrica* between its foundation in 1933 and 1965 (Arrow 1971). *Two-level Planning* was among them.

Neither the *Two-level Planning* algorithm, nor other efforts with mathematical planning proved capable of resolving the serious problems of the socialist economy. For decades, its long agonies led researchers experimenting with mathematical planning into a siding. But *Two-level Planning* as a theoretical model can still help theorists and teachers engaged in examining the attributes of systems and co-ordination mechanisms to make comparisons. It might be applied for that purpose precisely because its a “pure”, wholly abstract model of centralized, quantitative planning and therefore it can be contrasted in a graphic way with alternative models: the Arrow – Hurwicz (1960) model of a completely decentralized economy, or the semi-centralized, semi-market Lange – Malinvaud model of market socialism (Malinvaud 1967).

Here I was aiming mainly to provide some information about the origin of the study, and point out briefly where, with today’s eyes, I can place this work in the intellectual history of economics. I put forward my comparison of the systems in more detail in the two extracts from my autobiography that form Chapter 12.

13. *Non-Price Control. Theoretical Background of the Research*; 14. *Vegetative Control. The First Step*; 15. *Control by Norms*; 16. *Stock-signal Model Regulated from a Normal Path*; 17. *Control by Order Signals* and 18. *References* list of the book *Non-Price Control* (1981). The following six chapters are discussed together. All were taken from the volume *Non-price Control* (1981), which I edited with Béla Martos. Unfortunately, limitations of space did not allow the whole book to be republished, but I hope the extracts will give an idea of the main lines of research.

The research program on which the pieces in the book were based had been inspired primarily by my earlier theoretical work. Although I used mathematical formulae to define some concepts in my book *Anti-equilibrium* (1971), my message was expressed fundamentally in words.²¹ “Vegetative control”, “non-price control”, and “stock-signal control” are ideas and expressions that appeared in *Anti-equilibrium*. These appear often in Chapters 13–18 of this book. I wanted to translate as many of these ideas as possible into the language of mathematical models. I was lucky to find in Béla Martos an excellent co-author, who immersed himself in the ideas of *Anti-equilibrium*. His great mathematical and economic knowledge, uncompromising intellectual rigor, and infinite precision are reflected not only in the studies that he wrote or edited, but in the book as a whole. It was the product of real teamwork, in which András Simonovits also took part. He and the two editors were joined as contributors by András Bródy, István Dancs, László Hunyadi, Zsuzsa Kapitány and József Sivák.

²¹ *Anti-equilibrium* will be republished in the present Kalligram series.

The other inspiration for the program was the discourse taking place among members of the intelligentsia dissatisfied with the prevailing socialist system. It was often remarked angrily that the system does not work. Yet this ostensibly inoperable system had been operating for several decades. The intention was to go beyond the usual vague expressions of disgust and clarify exactly what was being called “viability”.

We – particularly Béla Martos – were inspired by a branch of mathematics that was then advancing rapidly: control theory. This important discipline was employed mainly for examining technical problems mathematically, but also offered scope for use in modeling control processes in the economy. Without aiming at completeness, let me pick out a few ideas from Chapters 13–18:

a) Researchers into the human nervous system distinguish between vegetative (autonomous) control and control of a higher order. The former, e.g., breathing and blood circulation, are automatically operated. The latter controls more complex actions guided by conscious thought. *Anti-equilibrium* adopted this distinction from the sciences of living organisms and applied it to economic control. Vegetative control of the economy covers, for example, simple, oft-repeated actions (such as repeat orders by a firm for an input, under normal circumstances). Vegetative control acts almost of itself, without special incentives, for which a sufficient spur is provided by the desire for the firm’s survival. The apparatus takes rapid, routine decisions not preceded by circumspect consideration of several possible courses.²²

Martos and I managed to design a dynamic mathematical model that well reflects the basic operational principles of vegetative control. We gave an account of our results in an article published in *Econometrica* in 1973. This we fitted into the conceptual and notational system of the Kornai – Martos (1981) book as a newly edited version, republished here as Chapter 14.

b) If you wake a sleeping economist and ask him to say, in model form, how a decision is reached, the first picture that occurs to him or her is the following: the decision-maker maximizes the function of his own self-interest under constraints. Chapter 15 of the book presents another picture.

Habit, routine, tradition, repeated regular practice, social expectations, and other factors will alter the *normal* values of certain behavioral variables. In my works, I named the mean value of the behavioral variable in question fixed by so-

²² The distinction between vegetative and higher control bears a resemblance to a classification that Daniel Kahneman (2011) employs in distinguishing between “fast” and “slow” thinking processes. It would require too long an account to make clear the overlaps and differences between the two theories.

cial practice the *norm* of that variable. If the actual value of the variable departs from the norm, it elicits a reaction from the decision-maker. For instance, say that the manager and buyer of a shop have become used to a certain normal level of stock. If the stock falls below the normal value, they place an order. Of course, there are various specific rules for stocking up: immediate or delayed reaction, continual or discrete, adaptation to large order sizes, etc. What these adaptive patterns share is their eliciting impulse: a stock level lower than the norm.

It can hardly be a doubt that this model shows something essential about the behavior patterns of individuals, communities, and organizations. Note that it avoids the concept of “optimal” and concentrates on what is “normal”. If an organization, in actual practice, simply repeats what it customarily does, it will certainly not be very efficient. It will not be capable of innovating, as innovation calls for a departure from the customary. But it will be able to operate in one way or another. Society compels people in a hundred ways to follow a daily routine, not to stick their necks out, but to act “normally”.

It was not sympathy or self-justification that led me to the idea of control by norm. Life itself had in many respects put me on the side of norm-breakers, rebels, those out of line, those seeking to innovate. I wanted to record soberly the fact that a high proportion of the processes in society are governed by norms.

c) I mentioned under the previous heading the example of controlling based on stock signals. Its twin is control based on order signals. András Simonovits and I worked out the models for two types of control (see Chapters 16 and 17). These models present, in a simplified form, control mechanisms that actually exist in the practice of production and commerce, whose operation can be observed. We were able to confirm that an economy so controlled is viable and even able to grow.

Our aim with this line of inquiry was not to undermine the reputation of the market mechanism that motivates working with price signals and rational calculations of cost and profit, or to spread the illusion that price signals are futile, that an economy gets on fine without them. It is indeed capable of operating exclusively on a basis of non-price signals, but it is incapable of arriving at ways to improve the combination of resources. The incentive to innovate falls away since the price mechanism is what offers innovators a higher price for a good while, and thereby greater profits.

d) Keynes is credited with recognizing the decisive role played by quantitative adaptation on a *macroeconomic* level. I have come across positions on the history of theory in which this is seen as his chief contribution to our understanding of how the economy works. The Kornai – Martos (1981) volume and the extracts from it set out to present the importance of quantitative adaptation on a *microeconomic*

plane as well and to model this mathematically. A major role in the fluctuations of the capitalist economy is played by information about changes in stocks, capacity utilization, and order books, which influence strongly the course of supply and demand.

It is also worth embedding the intellectual structure of Chapters 13–18 in another framework of the history of theory. Walras, followed by Arrow, Debreu and Hurwicz, presented a theoretical model of a viable *decentralized* economy that balances production and consumption by reacting to price and quantity signals (numerical signals of excess supply and excess demand). It can be shown that this state of equilibrium (competitive equilibrium) has further favorable features, notably that it is efficient (Pareto-optimal). To this let it be said that the Kornai–Martos–Simonovits studies likewise present a theoretical model of a *decentralized* economy. This too is viable, but for want of price signals, it can only offer quantitative signals to alter the balance between production and consumption. That it can do, but no more. There is nothing in the realm of this model to guarantee Pareto optimality. The sharp contrast between the two extreme models points to the superiority of a decentralized market mechanism that employs, beside quantity signals, price signals as well.

We are of course comparing here two “pure” theoretical models at a high level of abstraction. Several other criteria must be weighed to arrive at an objective, balanced comparison of systems. But the economists’ profession is used to apply mathematical models to check strongly worded statements. So it seems to the purpose to compare the two contrasting “pure” types of a decentralized economy. There is no sense in the superficial charge that a system which eschews the market mechanism and its price signals is unviable. For better or for worse, it works, but there are serious problems with it, among them (as demonstrated by the comparison of the two “pure” models) that it is incapable of combining the resources efficiently and provides no incentive to innovate.

19. *Bureaucratic and Market Coordination* (1984). This study, which I presented as my Inaugural Lecture on being admitted into the Hungarian Academy of Sciences, preceded my book *The Socialist System* (1992a) by a decade. (The latter has recently been republished in this series of my collected works, as Volume II). Chapter 6 of that book covers coordination mechanisms, and there is much overlap between the two, but the later version is more mature and better finished. It includes some coordination mechanisms not considered in the 1984 study – self-governing coordination and family coordination, both of which play an important part in social coordination in real life. So in this respect, the 1992 version is richer. However, it omits another mechanism that I called in the earlier version printed here “aggressive coordination”. This omission of the comprehensive work

is unfortunate and in retrospect I cannot explain how it happened, for it is a very important form of coordination.²³

Where “civilized” mechanisms fail to coordinate, there appears instead anarchy in various forms, including one where the loudest voices, the most aggressive and merciless begin to take control. For instance, a peaceful line of waiting people is disrupted, fighting breaks out, and somebody begins unasked to “restore order”. Fire breaks out in a crowded hall and everybody tries to flee, but “order” of a kind appears: the cleverest and most violent push to the exits first. One feature of this mechanism is that the crude compulsion and order-giving appear spontaneously – they have yet to be institutionalized. History offers more than one example of how institutions of dictatorial rule appear and consolidate after a time, and the power “above” is later codified in law. There develops a preponderance of bureaucratic coordination (perhaps in an extremist, totalitarian form).

The 1984 version reprinted in this volume presents the author’s position on issues debated at the time of its publication. Readers may find some timely ideas in the polemic. I am reminded of the present day as I read about bureaucracy’s *tendency to reproduce itself*. If a law or a government measure leaves a gap that subordinates can use to their advantage, and this annoys those higher in the hierarchy, they fill the gap with successive new regulations and measures. The bureaucratic elements in the system multiply and extend themselves. Their power is extended to areas not previously regulated. Many officials and other decision-makers have no incentive to abolish bureaucracy because that would weaken their power.

The study mentions the major problem of how far bureaucratic and market coordination can be replaced by ethical coordination. This question arises time and again when many become disillusioned – earlier with socialism and later with capitalism –, and dream of a system in which there would be no more dictation by force of power or by money. I have never tried to play the part of a moral preacher. I will be delighted, of course, if everybody behaved better toward their fellow human beings, but my task as an analyst of social processes is to stake out the possible boundaries of ethical coordination. It is an observation that can be checked against experience: this study emphasizes that ethical coordination fails to play a dominant role in any modern social system.

20. *The Affinity between Ownership Forms and Coordination Mechanisms. Some Experiences of Reform Socialism* (1990b). This study returned to a problem discussed earlier in my book *The Socialist System* and in my study, *Efficiency and the Principles of Socialist Ethics*, which is reprinted as Chapter 4 of this volume: Can

²³ There is a notable literature on aggressive coordination, of which I would like to emphasize the work of Vahabi (2004). His writings analyze the destructive coordination mechanism, which is not the same, but overlaps to a large extent with the “aggressive coordination” that I named.

the alternative ownership forms and coordination mechanisms be combined in any desired proportions? The answer is no. There is affinity between state ownership and bureaucratic coordination, and similarly between private ownership and market coordination. These are strong bonds, while cross-bonding (state ownership + market or private ownership + state bureaucracy) remains necessarily weak and fragile. Historical experience so far has also shown that “third way” pairings remain weak (e. g., cooperative ownership and ethical or self-governing coordination).

Chapter 20 touches on the problems of “market socialism”, Chapter 21 focuses attention on them.

21. *Market Socialism Revisited* (1992b). The term *market socialism* has appeared several times in this Introduction, in relation to other studies. The study republished in Chapter 21 was written as a summing up. There is a long history behind the idea of wedding the fine and humane ideas of socialism with the institutions that could realize those ideas through the efficiency of the market. The notion of market socialism appeared in obscure arguments among theoretical economists at the beginning of the 20th century. They became a focus of attention in the economists’ profession when Oscar Lange and Friedrich A. Hayek had a famous debate on the subject. This debate was “canonized” by the consensus of the economic profession. It became customary presenting to university students when general equilibrium theory is taught or alternative systems different from capitalism are discussed.

Much has occurred since the Lange–Hayek debate. In those days, only initial, not too reliable reports had reached the West about the workings of the Soviet economy. As the century ended, there were masses of experience and reliable observations available. There appeared new waves of the debate, in which economists working within the area of the socialist system were prominent. It was time to “revisit” the old field of debate, and augment the old arguments and counter-arguments with new ones. The socialist system was creaking and crumbling. It turned out that the experiments in applying in practice the idea of market socialism (or some altered version of that idea) had not worked. I felt the time had come to say so in so many words.

This study of mine sought to go beyond the 1930s state of “market socialism” and broaden the analysis by examining the semi-successful, semi-failed experiences of the economic reforms. Lange and Hayek had argued mainly about the behavior of the economic institutions, the information used by actors in the economy, and the incentives that motivated them. But the problem could not be clarified satisfactorily without an understanding of the political structure and power relations as well.

I thought at the beginning of the 1990s that the end had come for the concept of market socialism. What could still be said had been said; there would be no further need to waste breath on it. I was wrong. The idea is resuscitated time and again; it was revived in terms of content, even if new words were added to the dictionary used for expressing it. According to the new ideology “on behalf of the nation” a strong state must build up a sizable state sector again. Let the market operate, but let the state rein it back with a strong hand, keeping an eagle eye out, intervening in its operation at every turn, if it fails to behave rightly, according to the tastes of the bureaucracy.

Readers embarking on Chapter 21 should not see in it a document of a closed period of intellectual history, but notice how timely its observations are today.

22. *Market Socialism? A Socialist Market Economy?* (2007b). The previous chapter, *Market Socialism Revisited*, took a statement form, “full stop” at the end of the sentence, as if the story were over. Here, there is a question mark after “market socialism”. Is it not finished after all?

It is not finished. I delivered this paper at an international conference in Hong Kong in 2005, in the presence of economists from China and Vietnam. They knew well what I was talking about. To this day, their countries’ official ideologies and propaganda call the prevalent systems there socialism, as they have done for decades. The modest purpose of my lecture was to clarify terms: I did not seek to impose my conceptual framework on others, but to identify the commonest interpretations placed on the two concepts of *market* and *socialism*.

I am still influenced by some lines of János Neumann that I read: “What seems to be exceedingly difficult in economics is the definition of categories ... it is always in the conceptual area that the lack of exactness lies.” This third volume of my *Selected Works* and the previous and forthcoming ones are and will be full of attempts to clarify concepts. I often feel I am tilting like Don Quixote at the windmills of conceptual confusion. There was certainly no change in the official propaganda parlance of China or Vietnam as a result of my lecture. Most of my academic colleagues stick by their own vocabulary, which they change with more difficulty than the thought concept behind them.

Nonetheless I continue – there are still plenty of windmills around me.

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JÁNOS KORNAI'S *ANTI-EQUILIBRIUM*, A HARBINGER OF EVOLUTIONARY ECONOMICS*

Peter MIHALYI

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Anti-Equilibrium (1971) was well ahead of its time in emphasising that (i) economics should draw from biology, rather than physics, as its methodological underpinning; (ii) evolutionary logic requires a different type of decision-making in simple, routine matters, as opposed to large and important decisions; (iii) the most important production processes are non-linear, with increasing returns to scale being the rule, rather than the exception in modern capitalist economies and – in conclusion – that there is no such thing as general equilibrium. In modern societies, goods and services are either in shortage (Socialism) or in a state of oversupply (Capitalism). It is either a buyers' market or sellers' market.

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THE RECEPTION OF *ANTI-EQUILIBRIUM*

As we can read in the memoirs of János Kornai, “*Anti-Equilibrium* is not merely an item on my list of publications. It was the most ambitious enterprise of my career as a researcher” (2006, p. 197). Nevertheless, it is clear from the retrospective assessment of the book's reception, that it could not make the kind of international

* The article is based on a presentation at the January 2013 conference to celebrate János Kornai's 85th birthday.

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impact that the author and many of its enthusiastic readers expected both in Hungary and outside of the country. The intriguing question is, why?

The book itself came into being in four years, between 1967 and 1971. The circumstances were favourable. When it was half-ready – in the form of a longer essay – the Hungarian manuscript was immediately translated into English, and the same happened with the final manuscript, the book version of *Anti-equilibrium*. During his career, Kornai spent decades lecturing at prestigious American universities (Yale, Princeton and finally at Harvard), he was elected member of several distinguished academic institutions and many of his students are now professors at internationally outstanding economic faculties. Therefore, we cannot claim that the intellectual breakthrough was prevented by the language barrier or the geographical isolation of the author.

Today, true enough, we can find *Anti-equilibrium* on the bookshelves of every major university library. When the book was first published, numerous warm reviews and many polemical articles were published in leading academic journals. The book is still often referred to even today.¹ However, in spite of all the acclaim and supporting views, the mainstream is still committed to the economic model that Kornai had so fundamentally criticised. In other words, the mother tongue of mainstream economics is still the general equilibrium theory, as it was originally created by Walras (1874), Arrow-Debreu (1954) and Debreu (1959). The paradigm change that Kornai had expressively hoped for did not materialise. Today, in 2013, the neoclassical vision is still being taught at the leading universities of the world, and in Hungary, too. We still tell our students that market participants are always rational, and since markets operate under the conditions of perfect competition, the forces of supply and demand eventually always lead to equilibrium. *Anti-equilibrium* asserted just the opposite throughout its 440 pages. The author had made a tantalising effort to explain and to prove that the neoclassical contentions are in stark contrast with reality, and *therefore* the conclusions derived from these contentions are incorrect. Still, it seems that the traditional model of economics was capable of expanding its boundaries to the extent that today even diametrically opposing theories (e.g. imperfect competition, bounded rationality) are somehow admitted into this building.

All this is very surprising and annoying because many new schools of economic thinking, several leading representatives of our discipline have come out on more than one occasion with knowledgeable criticism against the mainstream since the publication of *Anti-equilibrium* without making any reference or tribute to Kornai.² As a matter of fact, these authors expressed the very same type of criti-

¹ After narrowing the search for the calendar year 2012 only, Google Scholar gave four foreign references to the book. (Date of search: 9 June 2013.)

² E.g. Mankiw (1990), Woodford (1999) and Blanchard (2000).

cism, with which Kornai ended his book, back in 1971: "*Now is the time to begin the synthesis on bases that are broader than general equilibrium theory and more in agreements with facts.*" (p. 376) Let me illustrate this with the example of two prominent American economists, whose words I will quote from a voluminous monograph on economic modelling, which I will comment on in more detail a little bit later, below. The first quote is from Joseph Stiglitz, the Nobel Prize winner of 2001, speaking publicly in the middle of the 1990s: "*Anybody looking at these models would say they can't provide a good description of the modern world.*" The second quote is from Alan Greenspan, writing in the early 2000s: "*We really don't know how the economy works... The old models just are not working.*" It is also worth mentioning the critical statements against the mainstream, which were expressed after the 2008 financial crisis.³

As a matter of fact, János Kornai gave his explanation on why *Anti-equilibrium* has become almost forgotten by now, on two occasions at some greater length. One of this can be found in Kornai's memoir, which I have already quoted. The second, earlier comments can be found in an interview he gave to Olivier Blanchard (1999). Both accounts are highly interesting, but this lecture is not the appropriate forum to repeat their contents.

THE APPROACH OF MODELLING: PHYSICS *VERSUS* BIOLOGY

My take-home message Number 1 is that despite everything presented above, the paradigmatically new approaches of *Anti-equilibrium* have by now become cemented into the economic models of several anti-mainstream schools, such as institutional economics, evolutionary economics and behavioural economics. Or to be more specific, I think of triumphant bestsellers like Hodgson (2004), Akerlof – Shiller (2011) and Sunstein – Thaler (2001). Beyond these undoubtedly influential original achievements, it is important to mention the synthesising monograph of Beinhocker (2006). This book is a formidable attempt to construct, from the foundations up, a new 'building' of evolutionary economics using biology as the main reference model. Strange, as it may be, Beinhocker's book, which summarises a highly impressive amount of literature, progresses ahead from chapter to chapter almost entirely according to the logic of Kornai's 1971 book, although neither the name of Kornai, nor the term "anti-equilibrium" are mentioned throughout the 500-page long opus. This is almost incomprehensible because Beinhocker repeatedly quotes his spiritual companion's, Brian W. Arthur's renowned *Science* paper, in which one of the key categories is termed "out-of-equi-

³ See, e.g., the debates among experts within the European Union, succinctly summarised in Kirman's (2010) oft-cited paper.

librium" (Arthur 1999). In his other writings, Arthur comes even closer to Kornai's *Anti-equilibrium*. It would be certainly a meaningful research exercise to review Arthur's entire academic results and to identify the similarities and the differences of his thoughts *vis-à-vis* Kornai's *oeuvre*.⁴

In my opinion, the most original and relevant contention of *Anti-equilibrium* is that economics and economic modelling should be based on the approaches and logic of biology, rather than drawing from the concepts and methods of physics, the usual procedure in the 200-year tradition of neoclassical economics and its mathematical formulation, the general equilibrium theory. Chapter 14 of *Anti-equilibrium* has two very important words in its title, which point the reader in a specific direction: "Adaptation" and "Selection".

"An industrial enterprise adapts to the economic resources available; if land is scarce, it economises on land; if labour is scarce, it economises on the latter" (op. cit. p. 188). It is easy to understand Kornai, but this statement is far from being insignificant or trivial. The most important message of this quote is that Kornai does not see these categories as the results of recent developments. Economic agents always behaved that way; profit maximisation is only one of the possible adaptation mechanisms. Adaptation is not a question of judgment or motivation. A firm, a private entrepreneur or a nation state which is not adapting, will be pushed out from the competitive environment through the selection process.

INSTITUTIONAL AND EVOLUTIONARY ECONOMICS VS. GENERAL EQUILIBRIUM THEORY

1. In Kornai's presentation, the general equilibrium theory is based on 12 postulates. These are summarised in Table 3.1 of *Anti-equilibrium* (p. 29). For the purposes of this lecture, I further simplify these points and reduce their number to three.⁵

- a) General equilibrium models take for granted that the number of economic institutions, the number of products and services they make are constant, and they assume the stability of consumer preferences. In contrast, Kornai's starting point is that agents are coming and going in the economy because of the adaptation process, just as consumers are always changing their buying preferences as they are confronted with newly arriving products on the market. Adaptation is the essential part of all economic transactions, and therefore the changes are hardly predictable, especially the ones which are of fun-

⁴ As a starting point, I would recommend Fontana's (2009) paper.

⁵ I have discussed the other points elsewhere, see Mihályi (2000).

damental importance from the point of view of economic growth (e.g. innovation, company mergers and bankruptcies).

- b) In the conceptual dictionary of the general equilibrium theory, the concepts of utility and optimum appear on the very first page. Their meanings are familiar to every economic student after one semester of microeconomics. The well-known textbook examples about the thirsty wanderer of the desert, the shoemaker and the baker trading with each other on the village market are, of course, still illuminating in many respects. But these concepts are less and less suitable for understanding and describing the functioning of complex institutions such as modern business corporations and the state. These organisations are complex and hierarchical at the same time, and therefore they pursue different and often contradicting goals. The department responsible for technology development is driven by different interests as the sales department of the very same firm. Within a nation-state, the Ministry of Education sets the priorities differently than the Ministry of Finance. Arguably, even employees are not driven solely by a singular objective function: "more and more money for less and less work". In a normally functioning factory, the majority of workers feel a natural inclination to do decent work – even without any special stick or carrot (op. cit. p. 177).
- c) In the framework of the general equilibrium theory, the most important reason to assume the convexity of the production set is the desire to ensure that the mathematical treatment of the model's equation leads to a stable state – i.e. equilibrium. This is tantamount to the assumption of the constant return to scale. In contrast, for Kornai the main point of disagreement is his conviction that the most important investments in an economy are bound to be indivisible. The examples he referred to 40 years ago were already trivial (e.g. a car manufacturing company cannot be viable with a production of 100 cars per year), but the onset of globalisation has since then increasingly underscored the importance of *increasing return to scale*. This is the force behind the process of intra-company concentration, through which doubling the inputs leads to a tripling, quadrupling or even a ten-fold increase of output.⁶

2. In Kornai's book, the differentiation between *routine* and *fundamental decisions* on the one hand, and *vegetative* and *higher-level control* on the other, repeatedly play a pivotal role in the exposition (Sections 9.3, 10.4, 13.4 and 14.6). These are key conceptual categories which are simply not present in the general equilibrium theory. Speaking of consumers, routine decisions include the daily

⁶ This recognition of *Anti-equilibrium* was referred to with full support in Kaldor (1972, 1978 p. 178).

shopping activity; in case of workers, they include the fulfilment of daily routine tasks. On the capital market, buying and selling bonds are the typical examples of this. In contrast, the category of fundamental decisions comprises transactions such as buying a new car, which happens only every 3–5 years in most families, or the purchase of real estate which is decision with a horizon going over decades. In the case of firms, an investment project which will bear fruits only after 3–5 or 10 years is the obvious example of fundamental decisions. Justifying our point does not require to quote Kornai directly – it simply goes without any further proof that the two types of economic decision-making take place according to very different procedures. Since *Anti-equilibrium* appeared many decades ago, this differentiation has become a triviality as a result of the well-publicised results of experimental psychology. This was so relevant for our discipline that the psychologist Daniel Kahneman was awarded the Nobel Prize for economics. In the summary assessment of the findings of such experiments carried out jointly with his decade-long colleague, A. Tversky, Kahneman (2011) introduced a somewhat different terminology than Kornai. His categories are labelled System 1 and System 2 – but the difference between the two is essentially the same as what Kornai had identified much earlier. In the presentation of these two outstanding psychologists, the human brain has one mechanism to make fast, intuitive and often sub-conscious decisions, for example, when pedestrians stop at the red light. In turn, System 2 is responsible for answers and decisions which require some prior, analytical considerations and are therefore bound to be slow and non-automatic decisions. System 2 takes over the decision, when we are asked how much 17×24 is, or one has to decide on founding a family or a firm. The necessity of adaptation makes it indispensable to possess System 1 for each and every living species (from the bacteria to the whales), while System 2 reactions are unique to humans. With somewhat different words, Kornai had presented exactly the same line of argument: “Through primary adaptation the ‘organization’ or the system of several organizations secures its mere existence, its survival, its preservation. With the secondary adaptation it strives to achieve more than mere survival, it attempts to achieve a life in which aspirations, expectations, norms are fulfilled” (p. 189).

3. For János Kornai, as well as for all of his contemporary colleagues in Central and Eastern Europe, living in a centrally planned, socialist economy for decades was a seminal experience. In their capacities as consumers, employees, working as an underling or a boss, they had ample opportunities to experience the basic characteristics of the socialist system: shortage of goods and services, labour shortage, poor quality, queuing, etc. As a counter example, they all knew – either from personal experience or from their readings – how the market economy works: there is an abundance of goods on the market, the production capacities are

never fully utilised, and it is never easy for workers to find a job. In Chapter 19 of *Anti-equilibrium*, Kornai introduced the concepts of *pressure* and *suction*, the ones which were supplemented by the terms of *sellers' market* and *buyers' market* in his other, contemporary academic writings. It is unquestionable that these innovations of *Anti-equilibrium* did find a friendly reception among contemporary peers – in a somewhat similar way, as the other conceptual innovations of Kornai's later work on the shortage economy. Here I am referring to Kornai (1980), where the two major innovative terms were *paternalism* and the *soft budget constraint*. However, these latter concepts were only fully appreciated and embraced by those economists who worked predominantly on the socialist/communist economies. These colleagues fully understood these concepts and used them rigorously in line with Kornai's theory. But for the majority of mainstream economists, the socialist system was merely an accidental historical aberration, which required academic observation – as long as it existed. However, it never occurred to these mainstream economists to interpret the two systems – i.e. capitalism and socialism – as two extreme variants of a common paradigm.

Emphasising the lack of personal experience with the socialist system, which is typically the case among mainstream economists, leads us to the next important point made in *Anti-equilibrium*. Kornai persuasively refuted the assertion according to which market forces, the conflicting interests behind them and the revealed preferences of actors are necessarily symmetrical, which in turn push every market into equilibrium, and this equilibrium is therefore the optimal state at the same time. As Kornai succinctly argued, this is both the starting point and the end-result of the model employed by the general equilibrium theory. Kornai named two countervailing mechanisms which do not permit the arrival of market clearing equilibrium, or, more simply said, the balance of supply and demand. At the macro level, the economy must swing towards one of the extreme positions. Markets are either characterised by shortages or by surpluses. The state of the market is either *suction* or *pressure*.

- a) In the capitalist economy, the *fear* of bankruptcy compels capitalists to be very cautious. They prefer to employ less, rather than more workers, and if an investment project looks less profitable or more risky, they might not even start it. In the socialist economy, where persistent shortages prevail on every market and where all firms are owned by the state, managers are not worried about hiring more workers or launching new investments. Once again, I quote Kahneman (2011), according to whom risk-aversion is one of the most important characteristics of the evolutionarily determined behaviour of humans.

- b) The other reason that the market forces are bound to be asymmetrical is that in the majority of cases, the logic of increasing return to scale does not permit the development of a perfect competition among infinite number of firms. Markets are oligopolistic, not as an exception, as the mainstream school assumes, but as a general state of affairs. At the same time, however, the lack of perfect competition is not a hindrance to new inventions, innovation or the continuous reduction of costs. Just the contrary. The rivalry of giant firms among themselves guarantees that new products are born, the quality improves and the costs are reduced at the macro level. According to Kornai, innovation in a very broad sense is the endogenous feature of the capitalist economy and it is not an external factor, as explained by the general equilibrium theory. In Table 20.3, the author presented a four-page list of revolutionary innovative products which were introduced to the markets during the first 60 years of the 20th century. 90 percent of these innovations were born in capitalist countries, with the bulk of the innovations coming from the most developed countries such as the US, Germany and the UK, where oligopolies dominate the markets (pp. 273–278).

In Kahneman's (2011) train of thought, it is important to understand that the logic of evolution forces humans to be cautious in risky situations. As the proverb says, uncharted waters are always dangerous. In fact, risk-aversion is one of the behavioural building blocks of social stability. This is also very close to what Kornai had asserted. Already in *Anti-equilibrium*, but even more strongly in his later works, Kornai fervently rejected the "third way," the model of market-socialism as it used to be called at that time. In his opinion, both the socialist and the capitalist systems had and have very strong internal socio-political forces, which constantly reinstate the systems into their natural states and prevent the mixing or the convergence of the two systems.

As the Latin proverb says, *habent sua fata libelli* – books have their own destiny. *Anti-equilibrium* did not bring the acclaim its author would have deserved. But let us be optimistic. The coming years and decades may bring surprises to us, the students and admirers of János Kornai. Such an optimism can be underpinned by the closing sentences of Kirman (2012), already referred to above: "(W)e owe it to our students to point out difficulties with the structure and assumptions of our theory. Although we are still far from a paradigm shift, in the longer run the paradigm will inevitably change. We would all do well to remember that current economic thought will one day be taught as history of economic thought." And then, the textbooks of future generations of economists will certainly contain references to Kornai's pioneering book.

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