Reflections on Society and Academia:

Cultures Adrift

by

Marcel Herbst

Reflections on Society and Academia: Cultures Adrift
by
Marcel Herbst

This book first published 2018
Cambridge Scholars Publishing
Lady Stephenson Library, Newcastle upon Tyne,
NE6 2PA, UK

British Library Cataloging in Publication Data

A catalogue record for this book is available from
the British Library

ISBN (10): 1-5275-0788-2
ISBN (13): 978-1-5275-0788-3

The book has been composed
in Greta Text (Typotheque), AMS Euler (Knuth and Zapf) and
Lucida Sans Typewriter (Bigelow & Holmes)

Contents

Preface

The following contains selected examples of a lifelong preoccupation with general education. My early focus lay on the fine arts, on chess and socialism; my interests expanded to include mathematics, architecture, and planning; and I evolved gradually into a quantitative social scientists with a thematic priority on higher education management. I can easily claim to have become, in the original sense of the word, a true dilettante.

My professional meandering, guided more by curiosity than initial proficiencies, more by happenstance than by a laid-out plan, proved — in retrospect — fertile; and it shaped my views regarding education, professionalism and status. I do not want to claim that this is the road to take, because it is an arduous journey with an unknown destination; and we tried, therefore, to provide our children with different opportunities. *Bildung*, the old German concept of formation, cultivation or education, had once its roots in philology, philosophy or history, that is, in basic sciences used to understand life as it presented itself to the burgher of the 19th century; but today, these roots have shifted somewhat towards the sciences of the artificial (mathematics, information sciences, et cetera), towards engineering or the natural sciences, and the ba-

sic schism of the "two cultures" evoked by C.P. Snow needs to be bridged. For me, the constant search for the elusive became gratifying way before "trans-disciplinarity" became fashionable, and the exploratory retained its force.

This collection of book reviews and articles mirrors a wider spectrum of concern within the social sciences as well as design — or planning — issues. Review essays and articles are assembled here to allow for an easy — holistic — assessment of publications which cover various themes and were written during the past two decades. In addition, I am including four notes specifically written for this anthology, two dealing with my primary research focus, i.e. academic productivity ("Excellence" and "Productivity"), and the other two addressing aspects of economics ("Growth, Change and Excess") and a discussion on concepts and design ("Form and Content"). I thank the two publishing houses, Springer Science+Business Media (`www.springer.com/gp/`) and the Taylor & Francis Group (`www.tandfonline.com`), for the permission to republish material used previously.

Let me thank also colleagues, editors, friends and family members who had read — or commented on — some of the material contained herein: Andrew Abbott, Roddy Begg, Rachel Ben-David, Markus Christen, François Da Pozzo, Albert Fritschi, Michael Hagner, William S. Huff, Urs Hugentobler, Herb Kells, Alex and Claudine Liatowitsch, Matei Manaila, Christoph Mandl, Mary Louise Mettler, Anne Roulin Perriard, Edna Rosenthal, Terry Russell, Neri Sevenier, Yael Shimoni, Bob Simha, Lydia Snover, Ethan Taub, Martin Trow, Markus von Ins, Katharina von Salis, and Avihu Yona — and, of course, Rachel S., Joshua A. and Rebecca H. Herbst, our children, and my wife Jacqueline for their enduring support.

Zürich and Promontogno November 27, 2017

1

Introduction

One of the first aspects that spring to mind when reading anew these papers and reviews is that they circumvent or ignore the language of the "politically correct". My abhorrence against this contemporary practice appears to have grown stronger as the years went by, and when I watch the various moderators on TV, or the politicians in parliament, expounding their views in politically correct speech, I cannot refrain from constant shudder[1]. It is as if an unknown rash had suddenly befallen mankind, and the M.D.'s and fashion columnists would admonish us to accept the skin eruption as the new standard of beauty. It reminds me of Hans Christian Andersen's tale of *The Emperor's New Clothes* — or of the various fig leaves which were used by artists of times past to cover up the genitalia.

It is not, of course, that I deny the role of language in shap-

[1]Politically correct speech is much more absurd in my mother tongue, German, than in English.

ing our thoughts. Indeed, I think the relationship is strong, and if one is concerned about thought, about concepts, one ought to pay attention to language. Language is a way to express or frame thought. As an expression, it is not that dissimilar to the approach of an operational philosophy [Rapoport, 1965]; and as a frame, it leaves room for interpretation. Frequently, language exposes thought. The language itself is tied to the concepts one wants to convey: there is a symbiosis of style and content. But language can also be used to cover up, to obfuscate, if only inadvertently so, and politically correct speech may have ended up to play this role. Instead of focusing on essential aspects, on fighting inequality, on equal rights and development prospects, on quality, for instance (Chapter 8), a cheap proxy or "signal" (Chapters 13, 17 and 19) — the politically correct language — is often used as a substitute.

Language has its own connotations. Words are normally used to designate something, and they may do so, implicitly or explicitly, in a derogatory way. The way columnists, politicians or administrators may refer to females, Jews, refugees or homosexuals should not be the prime concern; the focus ought to be on their stance: if that is objectionable, we are called to object. On the other hand, to refer — politically correct — to the female form of Jew ("Jewess") is, in most contexts (that is, outside of a discussion on the ordination of female rabbis, for instance), and in particular in connection with the holocaust, sheer — opportunistic — nonsense[2]; and to refrain — again politically correct — from calling Jews Jews[3], and to refer to them as belonging to the "Jewish faith", amounts to an attempt to Christianize a religion with a foundation in law (Chapter 11)[4]. Form and content are frequently

[2] It may even have racist connotations.

[3] "A Newark Jew?" Yes, Philip Roth [2017] (adapted from a speech delivered in 2002) concurs. "But an American Jew? A Jewish American?" No.

[4] This may be part of the proselytizing culture of the Christian church, a possible taking-in of a kindred "faith" and, by this quasi-absorption, an implicit negation of Judaism (including its agnostic variants). There are other forms used to

tied, and we appear to be ill-advised, in most cases, to separate them (Chapters 10 and 20).

Language, in the context of the sciences, has a broader meaning: it is tied to concepts, to models, to theories, to "images" of the referent [Boulding, 1961]. These images are, as the new sociology of knowledge would point out — and in spite of the proper objection to the "fashionable nonsense" of postmodern currents [Sokal and Bricmont, 1998] — , author-specific in that they express the views of those who created, copied, amended or modified the picture (Chapters 3, 16 and 19). Particularly the social sciences can be subsumed under such a conception (Chapters 13, 14 and 15). As in the arts, and specifically in the context of photography, scientific concepts can be viewed within a triangle of relationships [Barthes, 1980]: (i) the scientist as author and the subject matter; (ii) the recipient or reader of the scientist's concept and the subject matter; and (iii) the recipient or reader and the author of the concept. The reception of the first relationship from the point of view of the second amounts to a — critical or not so critical — assessment; and the assessment is predicated, to some extent, by the third relationship, i.e., whether the reader and author belong to the same group (i.e. share the same "paradigmatic" view).

Viewing, interpreting, is one thing; doing, effecting change, is something else. This duality — and possibly ambivalence — covering the descriptive and the normative, the *Vita contemplativa* versus the *Vita activa* (Hannah Arendt), is particularly relevant if one extends the (descriptive) sciences to embrace as well (normatively based) engineering, architecture and design, economics, planning and management, medicine, and information sciences. The ambivalence between that which is and what ought to be is critical, and questionable if the "ought to be" is derived, in a historicist fashion perhaps, from the "what is", or if "what is" and

---

negate Judaism, for instance by referring to the "Jewish origin" or "decent" of people — again in line with the Christian concept to tie a religion to faith.

"what ought to be" become interchangeable. This trap is old, affecting a good part of political economics of the 19th century, but it is still a device with which to catch social scientists and neoclassic economists of today (Chapters 13, 14, 15, 16 and 19).

The doing comes in different modes (Chapters 2 and 16), is motivated by various stimuli (Chapters 4, 7 and 12), and takes place in a range of environments (Chapters 5 and 6). Whereas the philosophy of science has come to dominate a prolific discussion on the descriptive, the philosophy regarding normative matters [Churchman, 1961], so eminently important in a world governed by extended, unchecked markets with their significant external effects, has not kept pace. Doing things has implications which ought to be imagined — affecting, perhaps, the doing (Chapter 19). Acting can be thought of as a cascade of steps that produce, shape or effect something, that form a situation or an artifact. In its distributed, uncoordinated form, acting has direct social significance, producing ill-defined — "wicked" — problem situations [Rittel and Webber, 1973] (Chapter 16). The form that action produces is tied to content. Organizational forms should mirror — or embrace — that which is organized; architecture needs to host; design leads and directs; forms resulting from distributed, uncoordinated activities require anticipation. As the particular language is tied to the concepts one wants to convey, as models and theories in their specific outline are used to transport meaning, so are normative outcomes related to that what is wished: there is a symbiosis of form and content (Chapter 20).

The following notes basically deal with the themes just mentioned. They express views of a distant — and concerned — observer with an eye for the outcast, for the non-selected, the circumvented, the peripheral, for views which stand in contrast to mainstream and fashion. They focus on subject matters that I had to deal with in my later professional life, like higher education management (Chapters 4, 5, 6, 7, 8, 9, 12, 17, 18), but they also

draw on earlier experiences, on planning issues which appear outmoded today, on economics (Chapters 2, 12, 13, 14, 15, 16, 17, 18, 19), or even on general subject matters, e.g. chess and artificial intelligence, Naziism, Judaism, architecture and design (Chapters 3, 10, 11, 20).

2

Strategic Planning

By his own account, Henry Mintzberg [1973] was "a bashful academic who, in the late 1960s, [...] ventured out [...] to observe what real, live managers [...] really do" [p. 99]. He concluded that

> [...] with few exceptions managerial activities [...] concerned specific rather than general issues. During working hours it was rare to see a chief executive participating in abstract discussion or carrying out general planning [...] Clearly, the classic view of the manager as planner is not in accord with reality.

During subsequent years, Henry Mintzberg published on matters pertaining to management, strategy formation and planning and has assumed the position that his cited descriptive observation is of general normative validity. To buttress this view, he published his "Rise and Fall of Strategic Planning" [Mintzberg, 1994].

[0]Book review of *The Rise and Fall of Strategic Planning* [Mintzberg, 1994], published in *Tertiary Education and Management* [Herbst, 1998].

Mintzberg is very critical of planning. He assembles a whole array of reasons why planning doesn't pay, reasons he culls from opponents and proponents of planning alike. In assembling these reasons, or this "evidence", as he calls it, he doesn't pay great attention to the context in which planning is or is not applied. If planning is not applied in a particular context, he reads this to mean that planning has not been suitable; if planning was successfully applied, he questions the causality of the planning activity. He uncritically cites authors who call planning 'imbecilic' (because everything can change tomorrow), 'useless', 'harmful' (in its proper functioning), having 'negative impact', being 'backward' oriented, etc. In over 300 of the 400 pages of his book he bashes the field of planning while offering his consoling thoughts only in his last chapter. "What is it about planning", he asks, "that causes us to close down our minds, to block our perceptions? Are we that afraid of uncertainty? Or that enamored of our own formal powers of reason?" [p. 188].

Clearly, Mintzberg sees planning as an antithesis to creative management. He chides the inflexibility of plans and planning; he criticizes planning's alleged inclination to be incremental rather than strategic or its supposed concern with means, not ends; he discounts the role of deeper, quantitative or structured analysis. His anecdotal evidence on the failure of planning is frequently hard to refute because planning — like other human endeavors as well — does fail. What we lack, however, is a clearer notion on the systematic of failure. Does planning fail because it purports to be strategic? Does it fail in all contexts? Are there activities we can substitute for planning? Why would some engage in planning at all?

To illustrate the inappropriateness of a planned approach, Mintzberg uses metaphors as a didactic device. In one example he refers to the game of chess [p. 238] and cites Alexander Kotov [1971], a grandmaster of repute some decades ago: "I tried to play

in a planned fashion, working out a plan right after the opening to take me into the ending, but for all my efforts and deep thought on the subject, I got precisely nowhere [...]". Now I do not want to quarrel with Kotov who was not only a player of rare intuitive powers but of analytical skills as well. Nor do I want to discount the important role of intuition, a great gift of the human mind and an enormous asset in the game of chess. What Mintzberg fails to see, however, is that chess epitomizes planning: if we understand the basic processes of chess, we have learned a great deal about planning and purposive behavior as well.

Mintzberg subsumes his illustrative example of chess under a general discussion of forecasting. He argues that processes which cannot be forecasted well cannot be planned. In chess, the charm of the game is tied to an inherent difficulty to forecast one's opponent's moves. In fact, this difficulty is due to one characteristic of chess: the large number of possible moves of the game. Although chess is a finite game, i.e. a game with a finite number of possible system states, the number of these states is very large. The largeness of possible system states is due to the combinatorial nature — or combinatorial complexity — of the game. This combinatorial complexity is characteristic of many man-made situations we confront in the field of planning and it generates numbers of system states which are easily larger than astronomical [Ashby, 1964] (see Chapter 3).

Despite the fact that chess is combinatorially complex, efforts have been expanded to model chess playing very early in the development of computers and artificial intelligence [Shannon, 1950; Simon, 1991]. The aims were two-fold: to improve chess playing abilities, to be sure; but more important was the aspect of human simulation, the aspect of gaining insight into thought processes underlying purposive behavior. The connection between chess and planning was clearly seen and gave rise to a publication in the late 1960s by a former World Champion of chess, Mikhail M. Botvinnik

[1970], stressing this connection.

I have stated that chess epitomizes planning. In chess — as in other games of this nature — a player tries to see a few moves ahead to evaluate his options. This evaluation will be based on a general strategy or on a general game plan. On the basis of this, he will eventually select his next move. If the player's evaluation has been sufficiently deep, he will generally not be surprised by the move of his opponent and he will follow or modify his game plan according to how the game unfolds. A player who fails to look sufficiently far ahead is subject to surprises. He will stumble into all sorts of traps and might lose immediately; in the derogatory words of the members of a chess club he is a *patzer*.

In a second example, Mintzberg presents car driving as a metaphor to illustrate the supposed unsuitability of the planning approach. He cites a planning proponent: "The faster one drives, then the further one's headlights must throw their beams" [Godet, 1987], a sensible rule for anyone accustomed to night driving. He then proceeds to discount this rule: "[A] problem with planning [...] is precisely this: it can look into the future only in the way headlights look down a road [...] So planning [...] cannot do much more than extrapolate the known trends of the present" [p. 182]. Does this imply we should drive differently? I hope not. Does it imply we should not engage in planning, not in forecasting? Not at all. In fact, there are many activities where our foresight is somehow synchronized with the speed with which we move, lest we might meet disaster or have to confront costly backtracking. Take the example of climbing a mountain: we have a notion of the general direction and select our immediate steps to correspond with an approach path we are able to see; and as we move — and as we are confronted with new information — , we will modify our approach, to bypass the crevasses that come into sight or to cross the river at a more appropriate location. Medical diagnosis and treatment might serve as another example.

The problem with Mintzberg is that he has a very restricted view of planning and plan making. In his version of planning many of the essential ingredients of planning as I see it are excluded: intelligence, creativity, adaptiveness and flexibility, etc. He appears to negate the fact that planning is an old human activity: it is part of many professions, practiced over a range of planning horizons, and very much in demand today. Because he is so negative about planning, he is — despite perhaps, or because of his very verbose approach — unable to provide a reasonable definition of what planning is. Although Mintzberg cites a number of classic thinkers on planning, C. West Churchman, for instance, or Russel L. Ackoff, he does not properly cover their very extensive body of discourse and fails to present their argument.

One basic flaw of Mintzberg's view is his insistence to exclude strategy formation from his concept of planning. He claims to rely here on empirical evidence. Reporting on a study he did on an airline, he concludes that "[in that context] formal planning [...] did not constitute strategy making but in fact positively discouraged it, impeding strategic thinking and strategic change" [p. 112]. Depending on the form of planning chosen, this may indeed have been the case. But in many instances, strategy formation forms the very core of planning. Planning is being initiated because the problems we want to solve are ill-structured, the aims to be pursued are vague, and the means at our disposal are far from clear. Planning is being used as a structuring device, as a process which moves in successive steps from an initial problem situation to a solution [Quade and Boucher, 1968]; in that way, planning is being used to find strategies (see Chapter 16).

Mintzberg also fails to pay proper attention to the context within which strategic planning is or is not applied. It's one thing to claim that in many of today's businesses more extended planning approaches are frequently ill-advised: CEO's are familiar with the markets their companies operate in, they are famil-

iar with their own product palette and production systems and, hence, there is no need to engage in broader planning approaches. Smaller companies might find their niche almost irrespective of what they produce, provided their products are of high quality and cost-effective. If the market demands a change in the product line or a change in the production system, these changes in demands will be readily recognized and the proper measures implemented. It is another thing, however, to provide the reader with the impression that the formerly sketched approach has generic value: that it is equally valid for other types of businesses — or even for the public sphere.

In the case of larger companies, and particularly those with a narrow spectrum of products, the situation is commonly different: product development is costly and the production itself is very capital intensive, making proper planning — and risk assessment — almost inevitable. Today's automobile manufacturers may serve as an example. Other industries require planning for different reasons. Think of utility companies in the telecommunication or energy fields:

> When you design any system, you must do long-range planning, including determining what demands on the system will be, how often extraordinary high demands will occur; and how long they will last. You must also think about the possibility that your estimates of these quantities might be wrong, and plan to monitor them and re-examine your predictions from time to time. And then you must design the system so that when demand does exceed capacity (as it surely must unless you are willing to supply unreasonable amounts of equipment which will almost never be used), it will fail gracefully [Machol, 1997].

Finally, there are the many activities in the public domain which rely on planning. We could not properly harness the water resources of the major river systems of the various continents, unless we engaged in planning; we could not be thinking of constructing new trans-alpine rail transit routes; we could not devise

new social security schemes or public health plans; we could not hope to clean the waters of the Mediterranean Sea; we could not fight air pollution, nor global warming; et cetera. And we couldn't do a range of the smaller projects on our agenda either: we couldn't pass new zoning ordinances or model cities programs; we couldn't repair our vast network of public roads; we would have difficulties reorganizing hospitals and schools; and we would be unable to preserve many of our cultural and natural resources.

Let us turn now to Mintzberg's consoling thoughts presented in the last chapter of his book. Here, he identifies activities which he associates with his view of planning, and he points out specific roles for planners. Under planning, he subsumes three primary activities: coupling intuition with analysis, the programming of strategies, and communicating plans. While I would regard the three activities as being necessary for most forms of planning, I wouldn't see them as being sufficient. He specifically excludes, once again, strategy formation from planning:

> Organizations engage in formal planning, not to create strategies but to program the strategies they already have, that is, to elaborate and operationalize their consequences formally [p. 333].

But when Mintzberg turns to a description of roles of planners, he specifically includes what he has just excluded. He sees planners in the role of "finders of strategy" [p. 361] and, to solve the riddle he posed, he states:

> [My] contention is that many of the most important roles played by planners have nothing to do with planning or even plans per see [p. 361].

Now I grant that planning is a complex activity and that there are various views on planning. I also grant that planning is not easily defined. This is not a unique problem of planning, however. Other activities pose the same problem. Think of medicine, for instance, or management, or science for that matter. In most cases,

we define such an activity not directly, but indirectly, through a description of sub-activities we think are characteristic for the primary activity. These indirect definitions may take the form of scripts which describe vital aspects of a particular professional practice we would like to preserve or initiate. Or we may not normatively define a practice, but descriptively, through a sociological approach. In other words, we use the observed practice to buttress our theories, we use — in contrast to Mintzberg's argument — the observed roles of planners to better understand planning as such. Paraphrasing Churchman [1961] we may then conclude: planning is what planners do.

Why is all this relevant for higher education management? Because in higher education, as in other fields, we adapt approaches originally designed for different purposes. We adapted planning, but also decision-support or budgeting systems, total quality management or reengineering, etc. In fact, some of these approaches are adopted in such an all-encompassing way that not much room is left for alternatives or complements. At the same time, we reject approaches we cherished in the past as being outdated, outmoded. Instead of modifying or adjusting these practices to serve our needs, we replace them — if only by name.

Today, it has become fashionable to be disrespectful of planning. Despite some recent additions to the literature [Peterson et al., 1997], planning is frequently portrayed as a fossil amongst normative approaches: planning appears something of the past. It is being replaced by activities with a more contemporary aura, a more modern ring. And yet we might not know what we lose when we shun planning. Many of the problems we face today we could have easily foreseen, could have easily avoided. Many of the daily tasks which cross our desks may not have become necessary had we been more courageous in looking at things in a more systematic, comprehensive way. Planning is not unlike investment. We should invest in a prudent way, in line with our assets and in

line with our aspirations and the risks involved. We will have to divert resources in order to do it, resources we could use for other things. But if we fail to invest, we will not be able to reap the fruits, will not be able to harvest. If education is a proper investment, planning is as well.

3

Chess and the Brain

Chess is a very old game, hundreds of years old in the form it is played today, with a splendid intellectual history and an extensive literature surrounding it. Chess is a complex, beautiful game that relies on relatively simple rules, and it is the complexity and beauty that makes it so attractive. To master chess, like music, talent and devotion are required.

Chess is a finite game. There are only a finite number of variations possible, and we could, in principle, select a sequence of moves that would lead to the best attainable position, irrespective of what our opponent does. The finiteness of the game assures that this sequence of moves could be known before the game starts, provided that the computation of such moves is feasible, and in that case win, draw or loss would be clear prior to the first move. But be-

[0]Book review of Rasskin-Gutman [2009] published in *European Legacy* [Herbst, 2015a].

cause the number of potential moves within a game is very large, the computation of moves is infeasible and the game retains its charm.

Claude Shannon [1950] had appraised that the number of possible chess positions is of the order of 10^{43} and the number of variations of moves of the order of 10^{120}, i.e. more than the estimated number of elementary particles in the visible universe. If a computer were to evaluate these moves at a pace of one pico-second (i.e. 10^{-12} of a second) per variation, it would require roughly 10^{100} years — much longer than the presumed elapsed time since the Big Bang — to assess the entire decision tree and to choose the first move. This is why chess is a demanding game.

In "Chess Metaphors" Diego Russkin-Gutman explores the interlinking of chess, chess programming, artificial intelligence, and the brain. We know from experience that the brain is very effective, and current research tries to explore why. Until recently we could not conceive of a machine beating a grand master in the game of chess. Indeed, in 1968, the Scottish chess champion David Levy was betting against John McCarthy, the prominent American computer scientist and recipient of the Turing Award and Kyoto Prize, that no computer would be in a position to beat him in chess by 1978. Levy won that bet. However, in 1997, the then reigning World Champion of chess, grand master Gerri Kasparov, was defeated in a six-round match by IBM Supercomputer Deep Blue (by a score of $2\frac{1}{2}$ to $3\frac{1}{2}$ in favor of Deep Blue).

From the early days of computer science, chess has provided a testing ground for artificial intelligence. The hope was that computer programs could somehow be used to emulate mental processes and, in doing so, to explore the working of the brain. Furthermore, Shannon [1950] had the vision that chess programming would help to attack "other problems of a similar nature and of greater significance", such as "performing symbolic (non-numerical) mathematical operations" (implemented in the mean-

time by programs such as Mathematica or Maple), music composers, language translators, or computer generated mathematical proof systems (all available today in various forms of sophistication).

This hope did not materialize for two reasons. First, today's chess playing programs are strong not because they emulate the way chess masters think; they are strong because they exploit the processing power of modern computers and because they have access to vast libraries of chess openings, middle games, and endgames. In fact, modern chess playing programs are basically the same today as when they were originally conceived [Botvinnik, 1970]. As Levy [1976, 137] pointed out, they focus on tactics, not on strategy: "Since 1948, when Shannon wrote his classic paper, there has been very little conceptual progress in computer chess".

The situation during the past 35 years, since Levy's statement, has not changed substantially because computer programs (like Deep Blue) relied on progress in computing speed, not on new visions of programs (according to Moore's Law, we can assume that computing speeds have improved by factors of roughly 10^6 to 10^7). Deep Blue, as Rasskin-Gutman remarks, calculated "more than 200 million moves per second" and could, under the time limits of a tournament, evaluate game positions "up to a depth of sixteen moves": that is far more than what one can expect from a human being. If humans are in a position to do reasonably well against modern chess computers, it is due to some mental abilities that are not emulated by the corresponding programs.

Second, the hope that chess playing programs could "act as wedge in attacking other problems" (referred to above) did not materialize because chess programming turned out to be a dead end: many computer programs evolved in the various fields of artificial intelligence that do not rely on chess programming (in an extended way). However, the basic questions retain their significance, namely (i) why are biological systems so effective, and (ii)

how could one use biology to solve problems?

Let me turn to the first question which I intend to extend, not to answer. As I said, we know from experience that biological systems are very effective. One of the earlier models in this respect is the honeybee. Its brain is very small, roughly $1mm^3$ (or weighing 0.001g), but the bee is in a position to navigate over long distances to harvest nectar, it recognizes high nectar sites and recalls the flowers it has already visited and, upon returning, it is in a position to tell the story to the members of its hive [Sejnowski and Churchland, 1992]; furthermore, bees appear to be in a position to engage in a form of collective decision-making [Imhoof and Lieckfeld, 2012]. Modern science, computer technology, and neuro-morphic engineering are nowhere near in duplicating that feat: biological systems are much more effective (with regard to energy use and weight efficiency in relation to computing power) by a long stretch. This is why neuroinformatics is such an explorative and challenging field.

Brains are very attuned to pattern recognition, to data-filtering, to the ability to generalize, and (today's) computers are not. Brains, after a certain learning phase, can almost instantaneously 'grasp' patterns (of sound or images), classify objects or 'see' analogies, and modern science knows almost nothing about how such perception works. Humans can normally match photographic pictures taken during childhood or adolescence of a person with the adult they encounter; art historians are in a position to identify individual works of art they have never seen before; monkeys quickly learn to distinguish between novel food and non-food; and chess masters can often correctly assess a position on the board without much conscious calculations. We are aware of these human or mammalian abilities, and we count on them in our daily lives, but we do not know that much about their inner working.

Brains, human brains, store and process information in much greater numbers than the few dozen billion neurons they are com-

posed of. How can this be? We barely know. However, one answer may have to do with combinatorial complexity: combinatorics can generate large numbers, very large numbers. How large? Ross W. Ashby [1964], the cybernetician, illustrated this in the following way: "Suppose we have a square block of lamps, for displaying visual patterns, measuring 20 by 20 lamps, and suppose that each lamp is either off or on". How many patterns can be generated in this fashion? "... 2^{400} pictures — about 10^{120}". Recall that we encountered the finite number 10^{120} before, in the context of assessing the number of variations of moves in the game of chess, but we have found that such numbers are — in the words of Ashby — not "physically achievable". The QR (quick response) code, a matrix barcode, developed originally for the Japanese automotive industry in the 1990s, does exploit the vastness of such an arrangement. If system states of such immense potential variety can be generated with a binary machine containing merely 400 switches (i.e. lamps), it should be clear that a (human) brain is, for all practical purposes, limitless; at least we can say that the number of neurons alone cannot form a limiting factor.

However, brains are more than just an assembly of neurons; they also contain synapses, linking nerve cells; and neurons process information in an analogous — not a binary — fashion. The two additional information processing layers that separate the brain from today's computer, the synapses and analogous information processing, vastly expand the already vast combinatorial complexity of the brain; and they appear to be critical to suggest the stupendous performance of the brain *vis-à-vis* the computer.

Finally, I shall try to extend the second question mentioned above, regarding the problem of how to use — or mimic — biology to solve problems. Shannon (and others) looked into the converse direction, from problem-solving to biology, and Russkin-Gutman, a biologist, follows Shannon's notions. His enchantment with chess, we presume, may have prevented him to focus on his own

fields, biology, as a problem-solving engine. He still believes in the old approach:

> The founders of artificial intelligence believed in the computability of the intellect and learning and used chess as a testing ground for modeling the mind"; and "[t]he machine has finally triumphed over human chess ... [p. 162].

But this vision, as I have pointed out, did not prove productive (at least thus far): chess programming did not elucidate the working of the brain; and whether the machine has indeed triumphed over humans in chess is debatable. More interesting, but unexplored in Russkin-Gutmann's "Chess Metaphors", is the problem-solving route rooted in biology, e.g. why are biological systems so effective? or what are the features of a (simple) biological computer?

4

Business Schools

The history of universities, and the formation and growth of research universities, first in Europe and then in America, is closely tied to the development of professions. Contrary to common conceptions, professions are no strangers in a world of higher learning. In fact, some of them can be seen as principal hosts, as progenitors, to academic disciplines and sciences, which appear to be central to today's research universities. Theology, law, medicine and education, as professions, had academic cousins or offsprings, and engineering, another class of professions, used some of these sciences and spawned additional fields.

The current core of today's research university, its College of Arts & Sciences (if we use the American model), is surrounded by

[0]Book review of *From Higher Aims to Hired Hands: the Social Transformation of American Business Schools and the Unfulfilled Promise of Management as a Profession* [Khurana, 2007], published in *European Legacy* [Herbst, 2009a].

a range of professional schools in various fields. Not all vocations or occupations are said to be suitable to be included in a university setting, and the notion regarding which occupation is properly taught at the level of a (research) university may differ from nation to nation — or from Europe to the United States. American universities have traditionally been far more practical in outlook than their European counterparts, and occupations are being taught at university level there that are still held outside the confines of a university in Europe. In the case of occupations with a gender bias, such as nursing or social work, the exclusion from university-level studies, still seen in Europe, amounts to an implicit — and presumably unconscious — form of discrimination.

Rakesh Khurana recounts the formation and development of one of these occupations, that of business management, and the corresponding implantation in the form of professional business schools at American colleges and research universities. His aim was to provide "a historically grounded account" of the development of business schools, not a normative blueprint on how to change matters; but his book can also be read, to some extent, as a history of learned professions or higher education institutions. Professions normally find their ways into universities from the outside. They start out as occupations, and as their level of sophistication and skills grows in the course of their development, there is a demand to provide a university-level curriculum or form a separate tertiary education school with such an orientation. In contrast to other fields, learned professions evolve as an upgrading of non-academic occupations, and not as a specialization — or merger — of existing academic fields.

In America, as Khurana shows, business education, as a learned profession, is closely tied to the formation and development of the research university. Johns Hopkins University, the first research university molded to some degree on the Humboldtian model, was founded 1876; and Harvard initiated a university re-

form under President Eliot who took office in 1869. The first university level business school was that of the Wharton School at the University of Pennsylvania, founded in 1881. Up to that time, business education was confined exclusively to high schools — or to trade schools or commercial business colleges, to private (for-profit) institutions. The second university-level business school was that of the University of Chicago (1898), followed by the Tuck School at Dartmouth College (1900) and by other schools such as Harvard Business School (1908) and the Kellog School at Northwestern University (1908). Between 1900 and 1913, according to Khurana, twenty-five business schools or programs were established at American universities.

Research universities as well as business schools were co-requisites of an industrialization that required education and training at various levels, including tertiary education specialization. Business schools were created in the same spirit as research universities, institutes of technology, or engineering schools. As schools training future professionals, business schools were not only focused on implanting the necessary technical skills and know-how in their students, their mission was also to provide them with an ethos, a notion of "calling", that distinguished them from mere technicians or "hired hands" and forged them into professionals with traits such as "objectivity, self-discipline, judgement, and a disinterested commitment to a larger community". Indeed, it was this sense of professionalism that was to distinguish university level business education from that of trade schools or commercial business colleges and defined it as a "learned" profession.

This self-understanding pretty much characterized university-based business education for a good portion of a century. It paralleled the growth of secondary sector industries and the subsequent initial transformation into a tertiary sector industry domination. It finally showed signs of ending, according to Khurana,

in the 1970s. By that time, the United States had extricated itself from Vietnam and the Western world was about to redefine their economies and their notion of capitalism and public service. Agency theory, and specific interpretations thereof, was increasingly adopted by investors and politicians alike, and managerial authority became slowly delegitimized. Managers were no longer asked to act "professionally" in the best interest of the business they were trying to lead, partially because they lost the trust of those who employed them. Instead, an investor capitalism emerged which argued that the aims of business are best served if the interest of shareholders and management are aligned and, by serving their self-interest, managers implicitly serve the interests of the shareholders: they now represented the "antithesis of the professional".

This new culture brought about an explosion of managers' remuneration in the form of shares. It also transformed many business schools by shifting their focus from general management to financial engineering, investment banking, private equity, and hedge fund management. Graduates from MBA programs are no longer trying to apprentice in a junior management function; rather, they join consulting or investment firms in search for large cash. MBA students appear less academically inclined as other students now — and, as Khurana suggests, frequently less proficient as advanced undergraduates. MBA programs are in the process of giving up their professional orientation and appear to be at a loss on how to cope with the situation. In a sense, business programs can be seen as an 'avant guard' to a new, redefined university which is not trying to serve the common good but private interests.

It is to Rakesh Khurana's credit that he, as a faculty member of one of the most prestigious business schools, has written such a scholarly and critical account of business education. What is lacking in emphasis, perhaps, is the quantitative orientation of man-

agement, its academic challenges in fields such as management sciences, operations research, and financial engineering, and its curricular embodiment outside the world of business schools.

5

American Hegemony

After World War II, peace in Europe meant reconstruction. Reconstruction, in turn, meant the skillful reallocation and use of whatever resources were still available. It also meant, in Western Europe, a steady stream of resources crossing the Atlantic as part of the Truman Doctrine and the Marshall Plan. The most urgent material deficits were to be curtailed, to help the suffering population, but there were also loftier goals on the agenda: to recreate or to build democratic societies and structures — and thus to gestate partners of an Atlantic alliance of liberal values that could withstand the dangers of reactionary sentiments and the lures of an Eastern block. As part of this agenda, science and culture were to play their part, and private philanthropies fought along government agencies.

Some of the finest periodicals and institutions were formed

[0]Book review of *American Hegemony and the Postwar Reconstruction of Science in Europe* [Krige, 2006], published in *European Legacy* [Herbst, 2008].

or reformed that way: *Der Monat*, a journal founded by Melvin J. Lasky 1948, or *Minerva*, founded by Edward Shils in 1962, were indirectly funded by the CIA, causing a stir when these connections became known in the mid-1960s; the *Freie Universität Berlin* was able to open their doors 1948 with U.S. help; European scientific laboratories, particularly in the fields of physics and biology, were alimented by a range of sources, including the Rockefeller and Ford foundations; scientists were given stipends and fellowships by NATO; and, most importantly, CERN, the world's largest particle physics center located in Geneva, was established 1954 on the basis of U.S. initiatives and particularly those of Isidor I. Rabi.

John Krige recounts and traces some of these developments in greater detail. His focus is on the natural sciences, and in particular on physics and biology, and there is a certain concentration on French and German science. Then as now, science was seen as a motor of economic development, U.S. science needed strong scientific partners, and economic prosperity in the Western world was judged to be dependent on strong universities and research centers. Krige depicts resource allocation processes which were bound to be sensitive and which proved to be astonishingly resilient and intellectually independent during a time affected by Senator Joseph McCarthy. He also documents a range of failures, e.g.: the miscarriage to form an International Institute for Science and Technology (IIST) in Europe molded on the famed MIT, a project which was firmly rejected at the time by General Charles De Gaulle, but which appears to hold some attractiveness now; and the failed attempts of Philip Morse, the founding president of the Operations Research Society of America (ORSA) in 1952, to spread OR and to use it to foster inter-disciplinary research and technology transfer.

John Krige subsumes his topic of the postwar reconstruction of European science under the notion of an American hegemony, an almost tautological argument. In contrast, the U.S. hegemony

in science, visible today, developed slowly, and it is not the product of ruling: it is partially due to the separate cultures of higher education or scientific inquiry on the two sides of the Atlantic and on the inferiority of the European models, particularly in the face of mass higher education. The various U.S. actors involved in the attempt to rehabilitate European science and graduate education, as Krige shows, were bent on exporting their views of educational institutions and their models of a social setting of scientific inquiry, causing resentment and opposition among the European. But the American hegemony in science after World War II has also other roots, not analyzed by Krige, namely the fact that U.S. scientific organizations and associated periodicals were in place which could act as platforms for the exchange of ideas among scholars around the world, using a new common *lingua franca*, English.

6

MIT at 150

In recent times, research universities appear ever more often on the radar screens of societies and international organizations. They are written about in the feature columns of the daily press, they are entrants to a new form of beauty contests, and they are perceived as engines to economic development and prosperity. Science is no longer confined to the 'ivory tower', and research universities are no locus for a reclusive existence.

While research universities have come to the foreground, their life is imperiled. The Golden 1960s, as they were called (in the U.S.) [Freeland, 1992], are gone. Growing student populations and dwindling resources, at least when spread over expanding higher education systems, are associated with retrenchment, new forms of governance, and a constant scrambling for funds. Quality suffers,

[0]Book review of *Becoming MIT: Moments of Decision* [Kaiser, 2010], published in *European Legacy* [Herbst, 2012a].

credentials take precedence over merits, "to have" appears more important than "to be" (Erich Fromm), "outer-directed" more *en vogue* than "inner-directed" (David Riesman). An ever-growing plethora of publications on both sides of the Atlantic decry the dismal state of universities and higher education systems, but there are not that many insights available which could redirect higher education into less turbulent waters. National governments — and the European Union — 'declare' quality (e.g. the Research Assessment Exercise in the U.K., the Excellence Initiative in Germany) and decree concrete courses of actions (e.g. the Bologna Reform, a joint declaration of European Ministers of Education, or the Lisbon Agenda initiated by the European Council) instead of providing a framework to foster common goals.

There is a certain consensus that higher education in Europe is lagging behind and has not regained its former status. There are strong tendencies to rely on top-down initiated measures to improve higher education and its international competitiveness. In contrast to the U.S., university rankings of dubious quality appear to play a role to identify the various institutions meriting founding on the part of funding councils, or to attract students, or to serve as "beacons" or role models for other institutions. The position within the U.S. is much more self-assured but, luckily enough, also self-critical regarding the current state of affairs and skeptical about future developments. In the U.S., with its highly diversified higher education, competitiveness is inherent, but in the face of scarce resources and increasing student populations, quality is difficult to pursue there as well.

One of the institutions which consistently shows up among the top research universities of the world, and rightly so, is the Massachusetts Institute of Technology (MIT). MIT has long served as a role model. In 1960, the North Atlantic Council proposed — unsuccessfully — an International Institute for Science and Technology (IIST), molded on the famed MIT [Krige, 2006, 180] (see

Chapter 5), to strengthen European science and technology, and in the year 2000 the European Council proposed a European Institute of Technology (EIT) which is now being pursued in virtual form. A focus on a single institution might not give enough clues on how to redirect or reform higher education as such, or might even lead into wrong directions, but it should be still interesting to ponder why MIT is in a position to live up to its role. I shall try to pursue this question in light of the current 150th celebration of MIT's anniversary (in 2011), and on the base of a publication dedicated to that event, *Becoming MIT*.

MIT was founded (in 1861) to serve the region and to nurture a developing industrialization. From the very beginning, it profited from the Morrill Land Grant Act (of 1862) signed by Abraham Lincoln, and from early — critical — State support. MIT was to be a polytechnic institution molded on the French tradition, not a university of the German genre, and it was not the first such institution in the U.S.: West Point (1802) and the Rensselaer Polytechnic (1824) preceded it. At MIT, practical, "hands-on experience through laboratory instruction and experimentation" was to be fostered, and the laboratory experience, found in Germany as well, was seen as a "new education" bringing "theory and practice together" [p. 23]. A similar approach was being pursued by Charles W. Eliot, an MIT chemistry professor, when he took office in 1869 as the 21st President of Harvard University.

In the second half of the 19th century, a range of U.S. — graduate school based — research universities were to be founded, beginning with Johns Hopkins University in 1876. Many of these institutions profited from American students or scholars who had gone to Europe — and in particular to Germany — to collect first-hand experiences in what was perceived then, in the words of Joseph Ben-David [1984/1971], as the "academic center". For MIT, the transition from undergraduate engineering education to a graduate school based research university occurred from 1910 on-

ward, a development which was also characteristic of the California Institute of Technology (founded as Throop College in 1881). In concert with this development, MIT established and strengthened ties to local industries. It became increasingly clear that cutting-edge engineering, and the training of the corresponding managerial workforce, required a stronger foundation in the sciences and the humanities: a major overhaul of the curriculum was called for.

The subsequent decades prior to World War II were characterized by various tugs and rifts between competing factions concerning the proper orientation of the Institute, as Christophe Lécuyer spells out in the third chapter of *Becoming MIT*. Under examination was foremost the balance between institutional autonomy and industry relations, the right to disseminate and publish research findings, and the choice between applied research and pure science — issues which still crop up periodically and have shaped a broad discussion during the most recent decades in various nations. By 1934, however, the major problems had been resolved, at least for the time being, and MIT, which had started out as a polytechnic institution aiming to educate practical engineers, "had become a full-fledged research university with leading research and graduate programs in physics, chemistry, electrical engineering, and chemical engineering" [p. 75].

MIT's current position, presumably, cannot be properly understood without reference to its role during World War II. War had always been, apart from the bloodshed and suffering, contests in technological development and the associated acumen. MIT, together with other higher education institutions of the U.S., was called upon to educate a workforce trained in such "fundamentals [as] æronautical engineering, instrumentation, and meteorology" [p. 89], to develop and deploy the various technologies required to wage war. However, MIT was not only involved in the training of a technical workforce and the associated crash programs. MIT can also be seen to stand at the root of what would later — during

the years of the Vietnam involvement — become known as the "military-industrial-university complex". The Institute started a range of laboratories charged with the development of necessary technologies, among them the Æronautical Laboratory, the Instruments Development Laboratory, the Servomechanism Laboratory, and the Radiation Laboratory.

What is amazing from today's perspective is the exploratory, daring spirit which prevailed during the formation and the early period of these laboratories. The 'labs' were not automatically manned (sic) by experienced engineers or scientists. They were run by exceptionally able faculty, but often staffed by inexperienced — creative, talented and intelligent — students with high stakes regarding their efficacy. This preference for young, talented students appeared to be at least as much a matter of choice on the part of those who ran the labs as it grew out of necessity. The resulting experience, as Deborah Douglas points out in the fourth chapter of *Becoming MIT*, quickly led to an institution-wide recognition of a new pedagogical device or enterprise: "All across MIT, this new [...] model of a university laboratory took hold. These labs blended instruction with real-world problem solving" [p. 91]. "Particularly talented students were immediately tapped to teach as well as work or even lead key projects" [p. 92]. Douglas cites John C. Slater [1975, 212]:

> The laboratory was an extraordinary assemblage of very able and intelligent people who had almost no experience with the problems they were working on. Many of them were very young, pulled out of graduate school. The fact that they could get so far was described later in the war as the 'miracle of the children' [p. 92].

MIT had integrated engineering with the sciences at a much earlier date — half a century earlier or even more — than many corresponding institutes of technology. This integration and, in a sense, fusion took place on the premise that advanced engineering was becoming impossible without sciences at the cutting edge,

and laboratory-based sciences depended on engineering and corresponding devices. The convergence of engineering and sciences was a key element in MIT's successful war contributions. After World War II, MIT was wondering whether it was growing too fast to uphold its own pedagogical concepts and whether, apart from engineering and the sciences, a third element would become necessary. In 1947, MIT appointed a committee under the chairmanship of Warren K. Lewis, a Manhattan Project veteran, to "scrutinize the Institute's operation from top to bottom" [p. 103]. In 1950, on the recommendation of the Lewis Committee, MIT moved forward to implement the third element and a new School of Humanities and Social Sciences was inaugurated.

With this move, MIT again led the way for many peer institutions. While engineering as a normative activity and the sciences as a descriptive endeavor feed on — and support — each other, engineering and the sciences as a pair do not suffice: many problems which pose themselves and which call for solutions, perhaps even most, have a strong anthropogenic component and cannot properly be addressed without recourse to humanities and the social sciences. This comprehensive approach may have contributed to a certain scientocratic attitude which became manifest during the Kennedy administration and the associated Apollo (man-on-the-moon) program; it may have fostered a *Vita activa* as opposed to a *Vita contemplativa* (Hannah Arendt); and it must originally have promoted a certain naive faith in science to control major problems and catastrophic events, including the Vietnam war, a faith which has dissipated since.

Like other colleges and universities in the mid-1960s and the early 1970s, MIT was confronted with student unrest and faculty criticism, protesting against the institution's high dependence on military contracts and the implicit — if not explicit — support of a Vietnam involvement by the U.S. government. Specifically, as Stuart W. Leslie points out in the sixth chapter, the large —

primarily military-sponsored — laboratories were being depreciated, irrespective of their dual-use technologies and civilian applications. Some proposed a conversion of the so-called "special laboratories" to focus on civilian technologies in fields like "air and water pollution, biomedical engineering, and the desalination of seawater" [p. 130], some called for a complete divestment, and some fought to retain the labs with their opportunities to learn "what no textbook could teach" — but advocated a revised national focus.

In the end, one such large lab, the Instrumentation Laboratory, was made independent on the instigation of U.S. President Lyndon B. Johnson, and it could act now, like the spin-off companies which were developing along Route 128 or in the Kendall Square area, as a harbor for MIT graduates. Every era poses its own challenges, and the embracement by a security-conscious government, destined to protect "the free world", to fight the dangers of intercontinental warfare and — during the Bush Administration — the "war on terror", is both financially comforting as it is politically and ethically problematic. The required technical specialities may change — "to surveillance, computer and information security, cryptography, and potentially at least, (anti)biological warfare" [p. 139] — but not the basic issues that were addressed during these early discussions. During the 1980s, MIT successfully withstood the lure of the Strategic Defense Initiative (SDI), and it had greatly reduced its financial dependence on the Department of Defense: the Department of Energy, the National Institutes of Health, and the National Science Foundation had all become more significant sponsors of MIT's research. "[S]maller, flexible, mission oriented laboratories with limited life spans" [p. 129] had taken over.

The last chapters in *Becoming MIT* deal with gender issues. In the mid 1990s, a prominent senior biologist on the faculty of MIT, Nancy Hopkins, had finally come to realize, "after fifteen years of watching how other faculty members were treated", that there ex-

ists a gender bias at MIT's School of Science: "the women were neither valued nor rewarded equally" [p. 187f]. After consultations with colleagues, she and other fifteen women wrote a letter to Dean Birgeneau to decry the matter. An initial committee was formed to study the issue, and in 1997 a confidential 150-page report was delivered. In the same year, a second committee was assembled to continue the work, and in early 1999 MIT officially issued "A Study on the Status of Woman Faculty in Science at MIT" which made headlines in the national press, admitting to "subtle unintentional discrimination" [p. 165]. This was a landmark in the history of the institution and other research universities.

Since then, the situation had improved, as Lotte Baylin reports in the eighth chapter: more women are being employed as faculty members, and conditions for advancement and access to resources have brightened. Because of an increased consciousness, matters should improve further as time goes by. Gender issues are important for those being discriminated; they are important for democracies in their fight for equity; and they affect negatively organizations when it is difficult to fill open positions. In the case of a globally recruiting research university of the highest standing, however, gender issues become increasingly important because they are directly linked to an institutional culture which affects quality. If women do not feel welcome and comfortable, it is indicative of an environment which is not fully meritocratic, and all institutional members — as well as science in general — are bound to suffer (see Chapter 8).

Does *Becoming MIT* mention all factors necessary for MIT to play consistently in the top ranks of the major league of research universities? No, it does not. What it does show is that a major university has a history, and that quality improvement is a step-by-step process requiring time. A leading university has its destiny pretty much in its own hands, but it is presumably easier to ruin a good institution within a few years than to improve its stand-

ing. *Becoming MIT* also shows that the blending of hands-on experience with theory, and the special inter-generational form of learning where the young are seen as partners of the experienced, proved fruitful. However, two factors which are common among leading U.S. research universities — and which are not specifically addressed in this collection — are necessary to achieve quality in higher education: good faculty-student ratios, which are not only beneficial in the teaching-learning realm but also essential in fostering a creative research culture [Herbst et al., 2002]; and the focus on researchers (and not on institutions) when research is to be funded.

7

The Paradox of Scientific Authority

The Paradox of Scientific Authority discusses the role of scientific advice in democracies and, in particular, the role of the *Gezondheidsraad*, the health advisory committee of the Netherlands established 1902, covering health care, medical technology, environment, nutrition, and labor conditions. The authors address a seeming paradox, namely the situation where "the status of science [or] scientists seems to be as low as it has ever been" [p. 1] while, at the same time, "the authority of the Gezondheidsraad stands virtually unchallenged in the Netherlands. When the Gezondheidsraad publishes a particular advisory report, this generally means that the discussion on the subject is closed" [p. 8]. The aim of the "book is to contribute

[0]Book review of *The Paradox of Scientific Authority: The Role of Scientific Advice in Democracies* [Bijker et al., 2009], published in *European Legacy* [Herbst, 2011].

to a theory of scientific advising in which this paradox is resolved" [p. 1].

The book is based on a detailed and prolonged study of the *Gezondheidsraad*, first published in Dutch (in 2002), and it reports on a range of case studies dealing with xenotransplantation, antimicrobial growth enhancers, cardioverter-defibrillator, demarcation and treatment of dyslexia, exposure to dioxins, the teratogenicity of vitamin A, and other issues. The *Gezondheidsraad* has an advisory function *vis-à-vis* the government, like the U.S. National Academy of Sciences (NAS) and its associated institutions, but in contrast to NAS studies, which act as scientific background material for policy makers and others, the studies of the *Gezondheidsraad* appear to play the role of a final word, at least until the issues present themselves anew and are taken up again by the government or by the *Gezondheidsraad* itself.

The authors, while professing to ascribe to a modern concept of science and science advising and to "stand on the shoulders of John Dewey and Yaron Ezrahi" [p. 3], try to solve a second demarcation problem: while the classic problem deals with the demarcation of science from non-science, their demarcation problem deals with the question of which problems should be placed in the authoritative hands of an advisory committee like the *Gezondheidsraad* and which problems, on the other hand, require a broader debate. They even think they provide a theory for handling such cases:

> Our theory explains how in some cases issues are settled with purely scientific advice, whereas in other situations conflict erupts and stakeholders' input or even a wider societal debate is necessary to reach some form of closure [p. 165].

As we all know, there are problems that can be solved on scientific grounds alone; these are covered in high school science courses and in the introductory courses of colleges, or worked out as part of the daily routines in laboratories serving a range of

important functions, but these are not the issues a government wants to see "settled". Issues of a public significance are problems that cannot be easily solved, be it because (i) the understanding of a phenomenon is lacking; (ii) there is a debate on what goals to pursue or what values to adhere to; and (iii) there is a debate on how to go from here to there, that is, how to formulate policies or implement plans. Many issues that present themselves in the public sphere are characterized by a fuzziness in all three areas, which is why we tend to perceive them as ill-structured.

To shed light on the first of the three problem areas we usually use 'positive' science to gain a better picture of the prevalence of diseases, social conditions or environmental problems, and form a clearer conception of the network of factors that affect the phenomenon under investigation. The second problem area, strictly speaking, lies outside the framework of science, but we can use the social sciences and the humanities to describe value structures or to raise awareness of these in individuals and groups. The third problem area is the domain of 'normative' science: management, operations research, planning.

Most problems we cannot 'solve' nevertheless will have to be 'settled', at least for the time being. Individuals and societies have to function in an imperfect world, and we are constantly forced to make decisions on the basis of imperfect information and lacking insight. Governments know this, and they turn to scientists for help with the understanding that experts are generally less imperfect (in their field of expertise) than the polity. This is why scientific advisory committees exist, but it does not explain the aforementioned authoritative role of the *Gezondheidsraad*. Presumably, this role has two roots: some issues of a technical nature are gladly left to the experts to tackle, and there is not enough public controversy to warrant a dispute among experts; and, secondly, the *Gezondheidsraad* operates in a society where institutionalized authority is common and where the initial hypothesis concerning

the status of science and scientists — and the corresponding paradox of authority — simply stands on shaky ground.

The "theory of scientific advising" the authors refer to would have to resolve the aforementioned paradox, if it exists, and it would have to solve the associated demarcation problem. In the pursuit of this, Bijker et al. propose a classification scheme of problems and, depending on the classes of such problems, make an *a priori* screening to determine the suitability of issues to be dealt with by the *Gezondheidsraad*. They propose "four different risk-problem characterizations, which [they] call 'simple', 'complex', 'uncertain', and 'ambiguous' " [p. 159–167]. Simple issues "can be left to the in-house experts of the authorities", and complex issues can be handled by the same experts in that "boundary and coordination mechanisms" are applied. In these cases "democracy is better served [...] by scientific advisory institutions that do not have stakeholder representation". With regard to uncertain or ambiguous issues, scientific advice ought to be "embedded in a broader risk governance process" which would include "non-scientific input" as well.

In this way, the authors appear to have solved their self-declared demarcation problem. However, the solution to this depends on a classification scheme that is not above reproach. The four classes referred to above are not generated by a 2×2-table, for instance, or by any other discernible logic, and it is not at all clear how class-membership is determined: no proper criteria are given for that. Furthermore, Bijker et al. — and the *Gezondheidsraad* — appear to think that as long as there is a consensus among committee members on a particular advice, there is no need on the part of the government to question this: the advice can be taken at face value. There is a certain validity in this: expertise can be ascribed but not easily checked. If experts agree with each other, their advice and their judgement appear sound; if experts disagree, their very status is questioned. Hence, the demarcation problem can be

solved — *ex-post* — by looking if a consensus is being reached.

Finally, Bijker et al. present the somewhat misleading picture that the *Gezondheidsraad* functions like other advisory bodies, the NAS [p. 18f], for instance. This is not the case. The NAS is an institution serving, together with a range of competing institutions, a vast, pluralistic society in a pluralistic way. Members and authors of the NAS are recruited from a diversified higher education system or from a variety of research institutions; their findings or advice can be questioned from within or from without the NAS; advise has authority as long as there exists a common consensus regarding the validity of that advise; and there is no paradox to be explained. In today's world, there are few academies or science advisory bodies that claim — or possess — a corresponding authoritarian role as that ascribed to the Dutch *Gezondheidsraad*. Rather than trying to address a non-existing paradox, the authors might have attempted to explain why a democratic society has a predilection for scientocratic tendencies.

8

Gender Equality

Gender issues are generally addressed with three foci in mind: a focus on individuals; a focus on the economy, particularly the labor market; and a focus on quality and productivity in industries, firms, or teams. The focus on individuals is the natural, direct approach to address these issues and is prevalent among people working at the front to improve gender equality. It is an approach of advocacy and permits discussions of various social problems. In contrast, the focus on the economy is not an approach of advocacy as such, and it is not that prominent. The focus is generally chosen when there is a discussion on untapped human resources or talent pools, or when

[0]The note presents a thesis which ties gender equality to quality management (Gender Equality = Quality). The note was originally formulated in preparation of the "2nd European Conference on Gender Equality in Higher Education" (Swiss Federal Institute of Technology in Zürich, September 12-15, 2000), to provide a basis for a panel discussion, but was subsequently not used. It is reissued here in slightly edited form.

there is a misfit between job openings and labor supply. Lastly, the focus on quality and productivity in industries, firms, or teams has become prominent in recent years and centers on the cultural aspects of work and the interplay between the various actors in the world of business.

It is this last focus we would like to dwell on in this note. In particular, I would like to discuss a thesis which states that *the pursuance of quality in the field of higher education demands gender equality*. From this perspective gender equality is a welcome — but necessary — byproduct in pursuing quality. To illustrate the thesis, I shall have to focus first on the notion of quality as far as European institutions of higher education — and in particular research universities — are concerned. This notion of quality is quite conventional and there appears to exist reasonable consensus regarding the general aims of higher education among scholars, administrators and decision-makers. Next, I shall have to address the means by which to achieve quality. Here, the range of opinions is much broader and positions are fragmented by national cultures or political positions. Furthermore, the discrepancy between shared aims on the one hand and disputed means on the other might call into question the consensus on what constitutes quality. Aims are operationalized in terms of means, and these reveal in some detail what the general wording on aims might conceal. In other words, if certain means are lacking, if structures are missing, if policies are deficient, quality might not be within our reach.

What constitutes quality in European higher education, or worded differently, how can we identify quality? To answer this question we will have to look at some output indicators. Not the innards of our institutions are relevant in this context, not the way we teach, research or administer, but what we produce. As educational institutions we form, educate, train and retrain generations of professionals, teachers, research staff and faculty. Today's environment demands that these graduates are not only bright

and well educated in their own field, but also creative, flexible and communicative individuals with emotive depth and broader interests. As institutions focusing on research, we want to deepen our knowledge of various phenomena, extend the boundaries of science and technology, and help in the solution of problems. In order to engage in this research, we require the same talents we try to nurture as educational institutions. We cannot produce clones with the attributes described, but we can educate a diverse spectrum of people that exhibit these attributes as a group: young and older individuals, females and males, natives and people from afar.

Do European institutions produce this output? Not to the extent they could. In comparison to our idealization of quality — and in comparison also to a range of existing institutions in Europe and elsewhere — too many institutions and higher education systems have yet a long distance to go. If we look at the internals of these institutions, at the means by which output is produced, we can identify a range of symptoms of ailments, of deficiencies. The literature on higher education is full of discussions of such phenomena. Deficiencies are primarily characteristic of tertiary education systems under stress, that is, systems which have to cope with lack of funding or retrenchment in the wake of mass higher education, or systems which are not competitive enough for other reasons. However, deficiencies are not simply caused by external factors against which managers or decision-makers in the field of higher education cannot do much; they are more a sign of maladjustment of institutions or entire higher education systems to new environments or new conditions, of inappropriate traditions still prevailing.

Maladjustment in higher education is quite a common phenomenon, but it is not easily recognized because of a lack of a competitive arena for institutions of higher education. Although higher education is seen as a motor of economic prosper-

ity, the relationship between higher education and the respective economies is rather tenuous: we cannot assess higher education by looking at macro-economic indicators alone. But we can compare higher education institutions and engage in benchmarking. If we do this, we will see that the best-run systems and most effective institutions differ in significant ways from the rest. Well-run higher education systems are diversified, not monolithic. They cater to different audiences but provide for student flows between different tiers of — or different institutions or departments within — the system. Their public service mission is dominant and institutions are managed in entrepreneurial ways. Curricula are driven by the needs of students and society, not by disciplinary paradigms. Animation and active learning take preference over know-how transfer and instruction. Research is governed by ability and talent, not by status.

If we look further into the workings of well-run systems or institutions, we shall see that academic traditions play a role, and rightly so. However, well run systems or institutions cherish traditions to the extent that they are functional in securing autonomous and prosperous entities in the field of higher education. Necessary changes may not come easy and they may require discussion over some time. But they are not blocked over prolonged periods and change management is reinforced by adequate organizational structures, budgetary mechanism and quality cultures. Well managed systems or institutions recognize and foster talent; seniors work with juniors in collegiate and mutually supportive ways; competence can be accumulated and careers can be built in a step by step fashion; career changes are tolerated or even encouraged; initiatives are spurred, not suppressed; no rigid disciplinary boundaries prevail and cross-disciplinary activities abound. In education, students are guided to institutions and areas of studies which cater to their particular abilities and interests; a wide spectrum of curricular choices are offered and advising is taken seri-

ously; dysfunctional personal dependencies which unduly bind students or assistants to faculty are minimized; social competence is fostered and teamwork is practiced.

The higher education systems and institutions with the sketched characteristics are not utopian: they do exist now, if only in restricted populations. Our agenda here is not to reform higher education as such, our agenda is gender equality. But we may note the following: systems and institutions with characteristics as sketched pursue quality; furthermore, they implicitly provide an environment of gender equality, a space where each of us can better develop according to societal needs and to her or his respective abilities and intentions. Hence, *quality in higher education* (Q) *implies gender equality* (E)[1]. Conversely, if we pursue our agenda by providing the humus on which gender equality can develop, we shall implicitly improve the quality of higher education institutions. Gender equality issues might serve as a testing ground for quality issues in general, as the trout, metaphorically speaking, to test the quality of the current of higher education: if gender equality gets realized, quality itself shall be attained. Hence, *gender equality* (E) *in higher education implies quality* (Q)[2] and, by implication:

$$\text{Gender Equality} = \text{Quality}^{3}$$

[1] $Q \Rightarrow E$
[2] $E \Rightarrow Q$
[3] $(Q \Rightarrow E \wedge E \Rightarrow Q) \iff E = Q$

9

Adjunct Labor

There is a notion that success is tied to abilities. People succeed in sports because they are faster than others, have more stamina, better ball control. A grand master of chess has a high Elo rating because he can 'read' the game better, knows a broader spectrum of openings, has the ability to calculate the various options open to him, and has a developed killing instinct. A classical violinist of repute knows how to play the pizzicatos of Paganini and the slow movements of a Brahms concerto.

That much we know. What we do not know is how many people are out there with the innate abilities to perform, without performing. And we do not know how many people exist who perform, who are successful, without innate or acquired abilities.

[0]Book review of *Gypsy Scholars, Migrant Teachers and the Global Academic Proletariat: Adjunct Labor in Higher Education* [Teeuwen and Hantke, 2007], published in *European Legacy* [Herbst, 2009c].

How many investors get rich because they are astute, insightful and wise, and how many get rich out of sheer luck? If the second million is easier to acquire than the first, the third easier than the second, then we might end up with just lucky millionaires. How many ambitious people are around to fill our positions, and how many talented people are forced out of the respective social systems, or give up?

In higher education, we somehow assume that the bright and talented end up at the top. But is this so? We know, of course, of the people who succeed. And among those there is a good portion who are not necessarily bright and talented but ambitious, diligent, and mainstream. Those who are bright and talented but not successful we rarely know, and if we know them, we know them, presumably, because they were the lovers or spouses of people who succeeded and whose biographies we had read.

Unsuccessful people we do not know, generally, irrespective of their talent or genius. Furthermore, we assume that society or social systems are not to blame for their lack of success or failure, and that they themselves are responsible for their destinies. From this perspective we look at our schooling and higher education systems: promotion is the survival of the fittest, is social Darwinism, and we normally do not question this. We still live in stratified societies in a sense, in stratified higher education systems that resemble feudal cultures of times past, with their insignia of class membership, prestige and power.

Rudolphus Teeuwen and Steffen Hantke assemble accounts of academics who have not made it, directly at least, to the top stratum of academia, who have not become — or have not easily become — faculty members, perhaps sometime in spite of their talent and training. They belong, or belonged at one time, to the proletariat of academia and serve or served as “adjuncts” as these people are called, as supplementary teachers to be easily disposed of if the circumstances would require that. Some of the “adjuncts”

would remain in these positions indefinitely, sulking or assuming a posture of organized labor, and some would look for their luck abroad, ending up as faculty members of foreign universities in alien nations.

Academics, of course, are not the only group who have to fight for their survival. What distinguishes them from other groups, and what distinguishes the authors assembled by Teeuwen and Hantke, is perhaps their sense of belonging: they see themselves as academics whose environment is academia. Most engineers who do not make it in academia find their way into engineering practice, and the physicists and mathematicians who drop their academic career or are dropped by universities, join an investment bank, a consulting company or a software group. In fact, many talented people and accomplished students do not find academia that desirable, and that their prospect of advancement is limited within academia appears not that important to them.

Seven of the thirteen authors assembled in this volume are modern language teachers, basically of English, and five can be grouped to belong to the humanities; only one author falls outside this norm. Such a spectrum of experiences is not suggestive, let alone representative, of problem symptoms we might associate with "adjuncts". However, as Teeuwen stresses, "it is mostly in the humanities that being an adjunct is so heavy laden with perceptions and actualities of misery, worthlessness, abjection, and failure", and that may account for the selection of authors. The book assembles first-person accounts, oral histories if you will, i.e. perceptions on how people with a decent education and advanced degrees were seeing and assessing their years of "adjunct teachers", and it is one of the few with such a focus: most other publications which address these problems are social science studies, reporting on survey results, and management manuals, trying to coach administrators on how best to cope with the situation.

What can one now learn as a reader? What lessons can one

draw as a higher education administrator, what is to be discovered from the perspective of a part-time teacher? One of the main findings, perhaps, is that adjunct teaching has become an issue, at least from an American perspective: part-time and adjunct teaching was not that common on the North American continent until recently. In Europe, adjunct teaching, in a sense, was — and is — a norm: the Humboldtian university depended on it all along. Postdoctoral scholars with a *venia legendi* waited to be called onto professorial chairs, and most of them waited their entire life. M.D.'s, chemists, engineers, lawyers, etc., working in their private practice or office, would give an occasional course or seminar at their local university. Quite a number of professors assemble a whole crew of senior assistants, some of those permanently employed, who are essential in running the 'chair', preparing lecture courses, devising teaching experiments, supervising undergraduate and graduate students.

Assessing adjunct labor in a global context will have to take account of the various cultural contexts within which higher education is organized. It will also have to distinguish between various perspectives within a cultural context. Adjunct labor can be viewed from a labor organization point of view, in which case the aim is to improve the conditions under which adjunct labor will have to operate. Most accounts found in the volume under discussion have adopted this perspective. Adjunct labor, however, can also be viewed from a performance perspective. In the European context, adjunct labor is directly linked to excessive structural hierarchies which are detrimental to institutional performance; and in the American context, excessive adjunct labor is bound to threaten the quality of higher education. Hence, in both environments it would be best to reduce adjunct labor to a minimum, but one will have to analyze in detail why adjunct labor survives or grows: without a fuller understanding of the mechanisms which keep adjunct labor in place one cannot fight it.

Within the 'alien' higher education systems in which some of the assembled authors work, the employment of adjunct labor, of foreigners, helps institutions to compete in a globalized world while trying to preserve some of the prerogatives of their local senior members. Within Western higher education systems, mass higher education, the limitations of funds, and a drift toward the more lucrative natural sciences and engineering brought about a shift for more adjunct teachers or, to fight the labor intensiveness of teaching, toward a virtual university. This is the demand side of the story. With regard to the supply side, tough as it sounds, adjunct labor should also consider finding jobs outside of academia — to fight this form of exploitation by eluding it.

10

German Intellectuals

Much of what is subsumed in Germany under the term of *Vergangenheitsbewältigung* (to cope with the past) refers to guilt, shame, suppression and deception, and the four are not that easy to separate in the specific case because we find them intertwined in reflections, analyses or vita. The personal coping of Germans has lead the children of perpetrators on various paths, as Dan Bar-On [1991] and others have documented. First generation Nazis may have pursued similar options: for opportunistic reasons or out of a new conviction that the past deed was wrong. Many Germans, perhaps most, had other things to do than to engage in self-reflective activities, but for many intellectuals and academics, the Nazi past is an ongoing — and painful, agonizing — issue.

In his "German Intellectuals and the Nazi Past", A. Dirk Moses

[0]Book review of *German Intellectuals and the Nazi Past* [Moses, 2007], published in *European Legacy* [Herbst, 2009b].

recounts debates regarding *Vergangenheitsbewältigung*, spanning the post-war decades up to the present. He relates debates in great, perhaps even excessive detail, covering twelve chapters. The uninitiated reader will find much interesting information on an ongoing discourse; nevertheless, he is bound to miss a perspective. Moses structures this discourse according to the generation and the position of discussants. Regarding generations, he sets his focus on what we called the *weiße Generation*, and which Moses calls the "forty-fivers" cohort (born early enough to be conscious of the Nazi period, but not old enough to have become implicated); indeed, "the expectation was that [he, i.e. Moses] would be their generational biographer". He focuses mainly on two populations with occasionally oscillating membership, the "redemptive", non-patriotic Germans (like Joschka Fischer or Jürgen Habermas), and the "integrative", patriotic Germans (like Wilhelm Hennis or Martin Walser), but it is doubtful that such a categorization could cover the spectrum of issues that give form of the German dilemma.

Moses' book focuses on Germany as such, seen through the eyes of the intellectuals he refers to: "historians, philosophers, sociologists, political scientists, and educationalists", or writers who appeal to an educated public and whose positions are presented or discussed in the feature pages of the *Frankfurter Allgemeine Zeitung* or other leading German newspapers or magazines. He critically recounts a discussion up to the controversial lecture of Martin Walser in the *Frankfurter Paulskirche* (1998), the implementation of a Holocaust Memorial in Berlin (2005), and the soccer world championship in Germany (2006) with its opportunity to indulge in harmless patriotism by an innocent fourth generation of Germans.

While Moses retraces a German discourse, he does not appear to follow through on his own intentions. In the first chapter of his book, Moses claims to address the issue of *Vergangenheitsbewäl-*

tigung in the aftermath of Daniel Goldhagen's "Hitler's Willing Executioners" [Goldhagen, 1996] not with the vocabulary of guilt & shame, but with the concept of pollution: "There is no doubt", Moses states, "that German children felt polluted, and even saw themselves as victims of their parents". To "feel polluted" is a strong-worded sentiment which may have nourished the German post-1945 debate which Moses addresses, at least partially. But the concept of pollution offers other forms of analysis. To ask to what extent German post-1945 thinking has been "polluted" or, to use more neutral terms, influenced or affected by a Nazi era, is certainly a valid research question.

One of the basic tenets of a sociology of knowledge posits that knowledge is at least partially determined by the environment, by the locus of debate, theory formation and conceptualization. Hence, it ought to be natural to ask to what extent post-1945 science has been influenced or even shaped by 1933-1945 science. Or, more generally, we may ask to what extent a Nazi science has been influenced by thoughts, concepts and institutional arrangements which still affect today's academic world. In this way, one can apply an epidemiological approach to ask how contagious were these thoughts or concepts, how influential were the various "disease carriers", how resistant were the disciplines or academics, and how frequent was the infection in the population of post-1945 academics and intellectuals; 1959 demanded Theodor W. Adorno a kind of "vaccination" against such diseases.

Moses addresses this question, but he is so driven to document an inner-German debate, extending over decades, that he appears to lose sight of his original question. "German Intellectuals and the Nazi Past" does not focus on the epidemiology of ideas or on the concept of "pollution". Institutional aspects as they relate to the role of professional organizations or the reform of higher education are touched, to be sure, but they do not form a central focus of Moses' analysis. 'German' disciplines with a clear Nazi

past still practiced today — e.g. *Raumordnung* (a form of regional planning) or *Volkskunde* (a kind of folklore studies or ethnology) — are not mentioned in spite of existing literature, and disciplines — like sociology — heavily contaminated by Nazi heritage are not critically reviewed. Other fields playing a central role in Nazi Germany — such as anthropology, geography, medicine, engineering, German philology, law — are not critically reviewed. A look at Ernst Klee's lexicon on people of the *Drittes Reich* (Third Empire) will show the many Nazi academics who survived de-Nazification procedures and served to educate future generations of students [Klee, 2003], and many of those lacked the stature and the intellectual abilities to acknowledge that influence.

While there are many excellent publications focusing on the Nazi past of institutions or companies, there are not that many analyses of a possible Nazi legacy in today's world. We normally assume that this has, finally, come to an end. But this might not be so. 'Contaminated" concepts or language will be used by almost anyone now, independent of the political orientation of the person using these words, and naively. The same problem arises with the legacy of the German Democratic Republic (and other dictatorship regimes). Pertinent research questions are raised in this regard in a publication edited by Wilfried Loth and Rusinek [1998], *Verwandlungspolitik*, which Moses cites. If we want to continue the "vaccination" process Adorno speaks of, we have to become conscious not only of the Nazi past but also of its legacy today. And if we want to understand the Nazi phenomenon better, we might have to identify aspects which fostered the development of Nazism and which are still part of today's culture.

A comparative perspective that the author — raised in Australia, pursuing his doctoral studies at Berkeley, and spending many years of study in Germany itself — is predisposed but fails to give would have provided insight that is lacking. To discuss the demands of the German students 1968 regarding representation

in matters of running the university without a comparative analysis is shortsighted if not misleading: the European 68-movement did not have that much in common with the student movement of the U.S. that preceded it, and the demands of the German students were different from those elsewhere. The Free Speech Movement at Berkeley and the anti-Vietnam war teach-ins initiated by faculty at the University of Michigan both started in the fall of 1964, events which we might see to stand at the beginning of a cascade of protest movements which covered many Western nations. These protest movements had a culture of protest — and an anti-Vietnam war vision — in common, but apart from that, the focus of protest was locally determined.

The demands of the German students regarding the role and governance of universities was in line with a labor union vision, so to speak, and the irony is that they helped to cement a highly stratified, authoritarian academic system that is, in Joseph Ben-David's words, "dysfunctional". German assistants are not Assistant Professors, as Moses suggests, in spite of the fact that both have similar credentials: the difference is that the former is in a dependency position, serving a Professor, whereas the second is part of a collegial culture and an academic department, enjoying the academic freedom that allows him or her to act as faculty member and principal investigator. The German university is enchanted by titles (and positions) more than by talent, as Rainer C. Schwinges [2007] et al. have documented, and this has effect on the entire research enterprise and intellectual life of the region. It is very likely that 1968 formed, for the time being, the last chance to reform the German university and German intellectual life in general, and the current official "excellence initiatives", another top-down activity, will not change much regarding these matters.

The problem of today's Germany is not a revival of Nazism by right-wing intellectuals. The problem is to be found in a still insular German culture too remote of an international discourse affect-

ing, in particular, the social sciences and the humanities. This culture, local and hierarchic as it is, is bound to be affected by a brownish shaded science. Luckily, some German scholars of the older and newer generations have been able to free themselves of this heritage. In a recent journal article[1], one of the figures of the post-1945 debate whom Moses cites with frequency, Hermann Lübbe, relates a story regarding Edmund Husserl who was reported to interrupt a student who failed to come to the point by remarking that instead of saying, what he, the student, had read, he should say what he had seen. I am tempted to make the same remark.

[1] Hermann Lübbe, "Zumeist nüchterne Leute", Neue Zürcher Zeitung, 22./23. March, 2008.

11

Judaism and Religion

Judaism has become a complex concept. Gone are the times when a Jew was a Jew was a Jew, at least for the ordinary person not steeped in Judaic studies, theology, history or philosophy; when political correctness did not yet demand today's euphemism like Jewish 'decent' or 'faith' to circumscribe the fact; when anti-Semites and philo-Semites did not unwittingly collude in their respective aims.

Leora Batnitzky has written a *tour d'horizon* on Judaism to account for this complexity. Her major thesis is that Jewish religion as such is a modern concept, introduced in Western Europe against the backdrop of Protestant reformation during the time of the Haskalah (enlightenment). Before that period of emancipation, in biblical times as well as in the diaspora, Judaism and Jewish life was — in spite of various internal conflicts, factions,

[0]Book review essay on *How Judaism Became a Religion* [Batnitzky, 2011], published in *European Legacy* [Herbst, 2016].

crises or, later on, its eventual dispersion and localized cultural variations — pretty much an entity, a wholeness, encompassing religion, culture and nationality (i.e. Israel).

As corollaries to Batnitzky's thesis we may state that Jewish secularism, as well as modern Jewish orthodoxy, are directly tied to Batnitzky's concept of religion: Jewish secularism as a complement to or compensation for what is perceived as an overly narrow — and occasionally even Christianized — concept of religion, which does not fit Jewish culture or self-understanding; and modern Jewish orthodoxy, which understands religion as a theistic a priori system [Soloveitchik, 1983], negates Judaism as a subjective, personal trait, and relegates a broader notion of Jewish culture to its fringes[1].

&

Before modernity, the undividedness of Judaism lay in its roots, in its construction, in Israel. The first break occurred with the onset of Christianity, with Paul the apostle, with the abrogation — or, as Yehezkel Kaufmann [1996, 20] (1929-30) calls it, "nullification" — of the law (HALAKHA) and the focus on faith. Judaism did not have the real opportunity to expand beyond Israel, but Christianity had, not because of a preconceived plan but due to "specific historic circumstances" [Kaufmann, 1996, 178][2]. Christianity, and later on Islam, were in a position to proclaim Jewish monotheism and ethics (or certain forms thereof) among Gentiles while the Jews themselves were not. "Monotheism", writes Kaufmann [p. 181], "could not conquer pagan nations so long as it bore its original Jewish stamp [...] Its monotheism could win the nations only after detachment from the nation of Israel, and it was

[1] In her book Batnitzky also covers Jewish ultra-orthodoxy, a topic not addressed in this review.

[2] Kaufmann uses here an argument which was later reiterated in a different context, referring to the spread of higher education institutions (and ideas); see in this respect Ben-David [1977].

conveyed to the Gentiles in new revelations, new covenants". By focusing on faith (as opposed to law), Christianity was not hampered by Roman law with which it had to coexist; and while in exile, Jews lived for a good part in extraterritorial enclaves, in ghettos.

From an anthropological perspective, religion of the premodern era (in general) might be seen as a triad: an attempt to comprehend, to explain the world; an edifice of ethical doctrines; and associated cultures. Furthermore, the anthropological perspective would also indicate that religion, the Torah and the MITZVOT (commandments) serve a social purpose[3]. Any attempt to remove one of the three pillars of religion in the premodern era — cognition, ethics, culture — would have been dysfunctional. It should be clear that religious life was a cultural affair intertwined with ethics. Furthermore, religion could not easily be separated from cognition, from the urge to understand or to explain the world. Indeed, ancient or premodern science was part of, and not in conflict with, religion. During the famous Jewish-Christian disputations in Paris (1240), Barcelona (1263) and Tortosa (1413-14), both sides claimed to follow a scientific argument [Maccoby, 2006 (1982)]. The clash with science occurred later on, in the 16th or 17th century (within the Catholic church), when religious doctrines conflicted with science.

The cognitive orientation of religion, and the implicit claims

[3]Jewish theology normally rejects such notions. MITZVOT, for instance, are generally subdivided into two categories, MISHPATIM, i.e. commandments whose logic — or purpose — is apparent; and KHUKIM which are elusive from a functionalist perspective and are accepted as divine decrees. The functionalist perspective which sees reason in dietary laws, the Sabbath norm, the command not to mix wool and linen, et cetera, is disaffirmed: "[...] the profound religious mind would undoubtedly resent such platitudes", writes Soloveitchik [1986, 97]. Batnitzky cites Leibowitz [1992, 66] who opposes the anthropological — functional — perspective: "The purpose of the Torah is not social improvement, and the ultimate ground for the MITZVOT is not concern for man's needs in his social existence".

regarding 'truth', may also have contributed to a "clash of cultures" between Jews and Christians, or Christians and Moslems and, later on, between Catholics and Protestants. Jews did not develop a proselytizing culture, because their religion was, in a sense, naturally confined to Israel, but the Christians had, and Jews were engrossed in this ongoing competition and conflict extending over centuries. What led to persecutions, forced conversions, pogroms and displacements of Jews during the inquisition or in modern times started as a conflict of views or interests leading to anti-Judaism and, eventually, to anti-Semitism and social marginalization.

Judaism's birth as a 'religion' in the modern, non-comprehensive sense is tied, according to Batnitzky, to Protestant reformation, the subsequent HASKALAH, and the eventual formation of the modern nation-state in the mid-nineteenth century. Separating state and religion was a process which extended over some time and which was first consolidated — after the French Revolution — in the new constitutions of European nation-states. Religion was privatized, but allegiance was not. The new states were not just seen as political vessels to discuss views or, in the case of democracies, to cast votes, to elect officials, or to pass constitutional amendments or laws, they demanded — as nation-states — allegiance, patriotism, loyalty, a nationalistic sense of belonging.

The HASKALAH and the modern understanding of nation-state enabled a reassessment of Judaism from within: to live and practice Judaism side-by-side, and on an equal footing, with other denominations. Jewish emancipation was a by-product of the general political transformations preceding, and going beyond, the French Revolution. Among the Jews, Moses Mendelssohn (1729-86) is the scholar most readily associated with the initiation of the

Haskalah. He translated the Torah (1778) into German[4]; Reform Judaism was born. Jews took part in assimilation processes of various shades, they intermarried, were baptized out of conviction or expediency, tried to live a modernized Judaism, or held onto their traditions. For roughly a century there was a certain hope among Western Jews to unite Judaism and nation-state. Jews entered professions, studied sciences, became part of a prospering German university [Richarz, 1974], shaped music and art, and became a constituting element of modernity [Botstein, 1991].

The fusion of Judaism and nation-state never became manifest: Jews longed for political rights, for an end to discrimination, while Gentiles demanded their assimilation, the relinquishing of any visible trace of Judaism — yet assimilation was often not an option. In Western Europe, religion and state were in the process of becoming separated and religion construed itself, as Batnitzky stresses, as a personal category, touching on culture, rituals, and on a new self-understanding of Jews and Judaism. The 'liberal', 'enlightened' hope of Gentiles, exemplified for instance by William von Humboldt [1964] (1809), was that emancipation would lead to a conflation of Jewry with the dominant Gentile society; a visible, proud Jewry had no place in the concepts of a modern nation-state. A Jewish 'question', perceived by Gentiles and Jews alike, by Marxists, social scientists, nationalists, Zionists and anti-Semites, lingered on and was reflected in a broad spectrum of positions. All these eventually affected the earlier encompassing concept of Judaism — in Batnitzky's words, of "religion, culture and nationality" — and the subsequent coping strategies.

In Eastern Europe the Haskalah did not play the role it had played in the West, and emancipation took on a different direction. Within Judaism proper, religiosity and Chassidism acted as

[4] In a way that mirrored his mission: instead of using the Latin alphabet, he used Hebrew letters so that his Jewish audience (familiar with Yiddish and Hebrew) could read the Bible and be introduced to the German language.

a rejuvenating force, and Judaism expanded its boundaries greatly by establishing Yiddish as a literary language (affecting all the arts); the Jewish 'question' was addressed through strong movements of self-assertion, through international visions (Socialism or Marxism), cultural stances (Bundists, Yiddishists) or nationalistic tendencies (Territorialism, Zionism). During the second half of the 19th century, Eastern Europe served as a repository for émigrés moving West (or East), affecting the culture and perception of Judaism at the respective destinations. In Central Europe, the Jewish population in cities like Berlin, Leipzig, Prague, Lemberg, Vienna or Budapest rapidly increased, bringing about an unprecedented blossoming of Jewish culture; and in the late 19th century (and subsequent decades), the U.S. became a new home for Jews and Jewish culture.

The 20th century caught the world off guard. Anti-Judaism and anti-Semitism were postures which Jews had encountered, but in spite of such experiences, Jews were inclined to cling to their respective statehood, their Germanhood [Wassermann, 1921; Reichsbund Jüdischer Frontsoldaten, 1932]. The world appeared unprepared for the systematic — unprecedented — extermination of a people (and associated cultures). And yet, it must have been ready for such an act. Jews were a minority, a tiny minority at that, and after so many centuries of persecution the idea, the thought-experiment, the "dream" [Botstein, 1991, 13] of getting rid of this group had taken hold out of a sense of expediency. This utopia was directed against a loose ethnicity which annoyed, competed, irritated, pestered, confronted — but also seemed, and this is critical, dispensable, not needed: a world without Jews appeared within the confines of the mental landscape of many inhabitants of Germany, Austria (and Central Europe), particularly among the intelligentia [Klee, 2003][5]. Ethical or religious senti-

[5]Botstein draws a clear line *vis-à-vis* other minorities, such as Afro-Americans in the U.S. (which were needed as a labor force); the experience of Native Ameri-

ments did not interfere, opportunism prevailed. And so it was: the combination of a radical nationalistic Nazi movement, aided by a well-entrenched bureaucracy and authoritarian culture, and a widespread sentiment that Jews were alien and superfluous became paramount[6].

Anti-Judaism was and has remained a particularly effective stepping stone to anti-Semitism until today. The church had difficulties accepting its wrongs and liability in this respect and thus in introducing corrective measures. Even in the 20th century, it tried to uphold a proselytizing — cognitive — orientation, fighting for 'truth'[7]. Progressive, ecumenical voices, such as that of the Protestant theologian and philo-Semite Leonhard Ragaz [1947], were impelled to warn Judaism of the "void" and its impending "doom" unless it embraced Jesus[8]. Implicit in this warning was the link between the Jewish position and the predicament of the Jews : "[The Jews] might find in persecution and anti-Semitism a punishment for their rejection of Jesus" and, furthermore, "suf-

cans may come closer to that of the Jews.

[6]In response to the massacres at Charlie Hepdo and a kosher supermarket in Paris January 7-9, 2015, and in countering the specter of a massive emigration of French-Jewish citizens to Israel, corresponding statements were "France is proud to hold the largest population of Jews in Europe" (Ségolène Royal) and "France [would] no longer be France" (Manuel Valls) — Washington Post, January 13, 2015.

[7]This stance is visible during the past millennium and appears to be a *sine qua non* of Christian self-understanding. As an example, I have referred to the Jewish-Christian disputations of the 13th and 15th centuries. A second example is Johann Caspar Lavater's challenge (1769) of Mendelssohn to refute a treatise regarding Christianity (authored by Carl Bonnet), which Lavater had translated and dedicated to Mendelssohn, or else to accept its verdicts and "proofs" and to convert. In Mendelssohn's subsequent "Jerusalem" [Mendelssohn, 1869], his answer to Lavater, he affirms the traditional notion that Judaism is primarily a matter of practice (rather than faith); but he also professes the separation of religion and state.

[8]Letter of Leonhard Ragaz addressed to Margarete Susman, April 9, 1943 [Jäger et al., 1992, 136f].

fering, in its most sacred sense, is part of Israel's mission" [p. 66] (a position which is shared, according to Batnizky, by Soloveitchik or Hermann Cohen[9]). In other words, the noblest Christian supporters of Jews reiterated a centuries' old mantra, carried the seeds of anti-Judaism by claiming — by demanding? — that "Zion is fulfilled in Christ" [p. 69], and used (or abused) the Jewish notion of suffering.

&

With the onset of modern — natural — science, at least since the 17th century, science and religion drifted apart. Science stood increasingly in conflict with religion to explain the world. This opened the possibilities, as I have mentioned, for both Jewish secularism and modern Jewish orthodoxy. Secularism (in various forms) would negate religion's historic role in explaining the world and would stress nationhood or culture; and modern orthodoxy would interpret the HALAKHA in ways to practice religion without conflicting with science: as Leibowitz [1992, 137] observes, "[c]ontemporary scientific and religious thought do not meet on a common plane, as they did in the Middle Ages". Leibowitz' conclusion, while correct in the narrow sense, could also have led to an attempt to realign Jewish religion and science: science is not value-free, as Leibowitz implies (see below); and religion should not be construed to conflict with science (or have its *raison d'être*, as modern orthodoxy sees it, in non-interjecting with science).

With modernity, Judaism constituted itself as a comprehensive, wide-ranging and rich culture of varying form in Western and Eastern Europe, the Americas and the Middle East, and Jewry assumed a much more visible role after it had been virtually dominated and marginalized by Gentile's might and culture. This suc-

[9] "Writing after the Holocaust, Soloveitchik retains Cohen's notion that self-sacrifice is central to Jewish religiosity, but he makes no claims about a specific Jewish mission to suffer for the sake of the nations of the world" [Batnitzky, 2011, 63].

cess may have been one reason, as some authors argue, for the subsequent systematic persecution and extermination of Jews [Aly, 2014; Browning, 2015]. After 1933, World War II and the Holocaust, Jewry found itself in a completely new situation which demanded a wide-ranging reassessment of Judaism — from within and without: already in 1925 The Hebrew University of Jerusalem, a center for the *Wissenschaft des Judentums*, was founded; 1948 the State of Israel, a natural home for Jews, was established; Middle Eastern countries lost their Jewish populations; Jewish culture and science had to regroup primarily outside of Europe; remnants of the once prospering secular Jewish (Yiddish) community within the USSR (or ex-USSR) emigrated to Israel or the U.S.; many scholars dealt with the *shoah* and its aftermath while countless studies tried to come to grips with the Holocaust as a phenomenon; and a new Jewish orthodoxy gained ground.

There are varying striking aspects of Judaism which do not appear to play the same role in other denominations. One of these is the plurality — the various interpretations and living experiences — of Judaism, hence Batnitzky's *tour d'horizon*; and another wondrous attribute is the compatibility of Judaism's orthodoxy with science. Within the ranks of observing Jews, one finds many scientists — such as Leibowitz or Robert Aumann. Orthodox Jews manage to become successful scientists by separating the relevant domains, by strictly distinguishing between religion and science or, as Leibowitz [1992, 132-141] does, "holy and profane": modern science does "not harbor 'meaning' " [p. 133]; "science is indifferent to values, hence its objective force" [p. 135]; "modern science is not concerned with philosophic problems" [p. 135]. Aumann, following this logic, would have to negate any ethical significance to normative aspects of game theory; and Leibowitz himself can expound his views only because his notion of science is narrow (excluding the social sciences, the humanities, the sciences of the artificial, philosophy of science, and by denying normative dimen-

sions of the natural sciences). Within Judaism, orthodox Jews might argue, the "essence of [Judaic] religion is [...] the demand made of man to worship God" [p. 136], to "know God and to serve Him" [p. 140]. In all likelihood, they will not argue that the HALAKHA (law) is a cultural achievement, is man-made, the product of various sages; and even if they acknowledge that "the human language in which the Torah is written may not be construed literally" [p. 140] or that some form of religion is found in all human civilizations, they will stress the unique revelational — holy — aspect of Judaism.

While Jewish orthodoxy is not a new phenomenon, its strength in the chorus of Jewish voices and its almost exclusive focus on the holy, as opposed to the profane, is. Batnitzky refers, among others, to Samson Raphael Hirsch and to Joseph Soloveitchik as representatives of such views. In 1944, Soloveitchik wrote an essay, "The Halakhic Mind", in which he presented religion as a cognitive system, next to and apart from science. The essay refers to a range of philosophers and scientists (e.g. Hegel, Hume, Heisenberg, Husserl, Kant, Kierkegaard, Lasalle, Leibnitz [sic], Newton, et cetera); it does not refer to art, music, literature, culture; it does not mention anti-Semitism or the contemporary persecutions of Jews (prior and during World War II). Soloveitchik [1986, 40] does not depict religion as a triad of cognition, ethics and culture; his focus is (religious) cognition — apart from science:

> [*homo religiosus*] is a cognitive type, desiring both to understand and interpret. Reality, as the object upon which the cognitive act is directed, can no longer be the concern of the scientist and philosopher only, but also of the *homo religiosus*. This does not mean that religion is about to repeat the errors of the Middle Ages and compete with science. It signifies only that knowledge is not the exclusive province of the theoretician of science; religion, too, has a cognitive approach to reality;

and a few pages later [p. 46], Soloveitchik writes "[t]he cognition of this world is the innermost essence of the religious experience".

While Soloveitchik — from my perspective — is correct to chastise a strictly reductionist science and a narrow notion of "objectivity and ethical neutrality" [p. 52], while I share his view that "religion [should not] compete with science" [p. 40], there appears to be no (contemporary) reason to use religion in order to "penetrate the mystery of phenomenal reality" [p. 46] and to construct religion as a "specific epistemology" [p. 46] which lies outside scientific investigations. Modern science, or mankind, cannot explain, will never be able to penetrate, all mysteries: it does not need to know, does not yearn to comprehend everything; and (modern) religion should not serve to amend shortcomings of science. What mankind needs are religions as cultures and ethical — not cognitive, epistemological — systems.

In the modern era, religion's trinity of cognition, ethics and culture had to be reassessed. As Batnitzky shows, religion's focus on cognition was challenged by science; Judaism's tie to ethics (law) and culture was conflicting with Gentile societies; Jews developed new (secular and religious) forms of Judaism; and renewed Jewish orthodoxies came to the fore attempting to establish religion, and Judaism, as epistemological systems apart from, and next to, science.

Plurality is much too extensive today to envision a return to the erstwhile 'wholeness' of Judaism. The former unity of Judaism, if we can speak of such a concept, is gone, and if we were in a position to recreate it today, it could serve only as a blueprint for a sectarian existence. Jewish plurality, or diversity, is a natural safeguard for survival; and the survival of Judaism, like the persistence of civilizations as we know them, cannot be taken for granted. Finally, the religious world as such has become pluralistic. Challenges abound: how to reconcile religion and state, wealth and aspirations, exploitation and sustenance,

policy-making and economic systems, science and values. Societies should not let religion, in all its diversity, stand offside; but, in turn, they should be adequately supported by religion rather than cajoled or intimidated by it.

12

Crime and Punishment

Diversity has become a value we cherish. Politically, societies like to have the whole spectrum of their respective populace mapped, the entire range of communities and cultures. However, not all diversity is appreciated. The intra-national diversity of schooling accomplishments, as measured by PISA[1] or TIMMS[2] scores, is often seen to reflect unequal educational opportunities, disparate or partially inadequate educational facilities, or poverty and social misfortune. Analogous issues arise in the field of public health, where health and life expectancy is related to education and income; or in the field of public policy, where the diversity of family income is growing to levels which threaten to rip apart nations and to endanger

[0]Book review essay on *The Costs of Crime and Punishment* [Kleiman, 2009], published in *European Legacy* [Herbst, 2013b].

[1]Program for International Student Assessment (PISA).

[2]Trends in International Mathematics and Science Study (TIMMS).

democratic structures[3]; or, to mention another issue, in the field of crime, the topic of this note.

Crime rates differ across nations, often by a factor of 1:100. In Mexico, robberies are estimated to exceed 500 cases per 100,000 inhabitants, while Japan is recorded to have a rate of no more than 4 cases[4]. However, crime rates differ from crime to crime. Assaults in Mexico are estimated to have a rate of some 200 cases, while Japan does not have a rate of 2 (as one might expect from the robbery example above) but of roughly 50 cases. Western, developed nations, normally have lower recorded crime rates than countries of emerging economies or undeveloped countries, provided we focus on offenses that are illegal (and contained in crime statistics such as those collated by the UNODC). But even here the differences are substantial. Some of these differences may have to do with definitional matters, some with the underlying causes of crime, some with crime cultures, and some with policing, apprehension and punishment.

Crime is associated with costs. These costs, monetary or immaterial, are born by the victims of crime, by the general public, and by the offenders themselves. We may distinguish between costs that are directly caused by crime (e.g. damage, harm, losses, income foregone, etc.), indirectly associated with crime (e.g. preventive measures of a technical kind, or behavioral or psychological changes, or costs tied to insurance policies, all pertaining to potential victims), and direct and indirect costs associated with policing, apprehension and punishment (born by the general public, the criminals themselves, or the community to which the criminals are perceived to belong).

Because, depending on the viewpoint, costs may be seen as in-

[3] Income differentials in our Western societies, amounting to 1:2,000 or more, are no longer a gross exception.

[4] Figures are taken from the United Nations Office on Drugs and Crime (UNODC), years 2006-09.

come, one will have to look at costs from various angles. For the victim, costs generally cannot be offset by the gains of the criminal (in a Robin Hood type fashion). Furthermore, we normally do not experience a mere "change of ownership", so to speak, but frequently a destruction of values — of life, of health, of property — which cannot be replaced. Lastly, the costs of policing, apprehension and punishment are not simply income sources for people employed as police or correction officers, or funding streams replacing social security payments or food stamp programs. Crime is costly, however we look at it, and societies attempt to keep these costs within sensible bounds.

These bounds, however, vary markedly, partially due to differing crime rates, and partially due to diverging policing and correction practices, even among Western nations. Particularly, the United States is a country with comparatively high crime and high incarceration rates: roughly 1 percent of its adult population is sitting behind bars, i.e. 7 to 10 times as many as in other Western countries such as France, Germany or Sweden, or six times as many as one finds in neighboring Canada. This is regretable — and costly: funds have to be funneled into crime prevention and incarceration systems that could be used elsewhere in the economy, such as in public health or education, and offenders have to be kept in prisons where they cannot make a positive contribution to society and the economy.

Mark Kleiman, a public policy scientist, has written a book to address some of these issues: *When Brute Force Fails*. Kleiman has studied drug-related offenses for at least two decades, but in this case he is trying to deal with a broader spectrum of crimes and with "crime and punishment" in general. His focus is not comparative in an international context, but it may be said to be comparative in a local sense: the experiences in one locality are juxtaposed to those of another. His concerns are the high crime rates in the U.S. and the associated costs that he presumes to run as high as

"more than 10 percent of the GDP" [p. 2], excluding white-collar crime. He is also concerned about the observation that the victims of crime belong to the same social stratum as the offenders themselves, that the "damage falls most heavily on the poor and the socially marginal people least able to bear it; crime not only concentrates [on] the social[ly] disadvantag[ed] but also sustains it" [p. 2].

In order to address the exorbitant costs associated with crime, Kleiman distinguishes three broad categories, namely costs associated directly with crime, with policing, and with incarceration and rehabilitation. He also addresses, implicitly at least, two classes of law offenders the boundaries of which are frequently somewhat blurred: the rational offender, and the impulsive felon. Particularly the rational offender is susceptible to intelligent law enforcement or social service policies, and Kleiman concentrates somewhat creatively on this issue in that he presents a "logic of deterrence" [chapter 4] which is based on game theory; the irrational, impulsive offender is not specifically covered in Kleiman's *When Brute Force Fails*, and I shall not try to expand on this issue here. His "logic of deterrence" stands on the premise that a rational actor might break a rule when the "personal benefit of rule breaking exceeds [its] costs" [p. 49], and if the actor is not held back by conscience or habit. An actor of this orientation is likely to respond to law enforcement that makes rule breaking unattractive, and Kleiman illustrates — with the help of a dynamic game, i.e. a simulation — how such policing based on limited resources might work.

However, law enforcement is severely hampered if one doesn't try to understand the viewpoint of the offender. A person without disabilities generally has difficulties comprehending the position of the disabled, and architects, for instance, must learn to perceive as a person with one or another disability in order to make their

buildings functional. In a similar vein, law enforcement cannot be effective without an understanding of the offender. Even our concept of rationality is affected by this: for instance, the rationality of addicted persons differs from the rationality of the non-addicted, in that their planning horizons differ. An addicted — rational — person (rational in the sense of *Homo œconomicus*) discounts costs and benefits at a much higher rate than the non-addicted and, hence, law enforcement measures designed to fight drug-related offenses will have to take account of this, to the point of even decriminalizing the use of hard drugs[5]. The same is true for poor, badly educated people. Kleiman remarks that "[t]here is evidence that personal discount rates go up under various form of social stress, especially social exclusion, and with some forms of substance abuse" [p. 79]. Here, law enforcement in the narrow sense cannot provide the answer alone. The trick is to affect the planning horizon of potential offenders: the more extended their horizon, the less likely they are to break the law. And to extend their planning horizon, we shall have to provide them with hope and opportunities for advancement.

Once offenders are convicted and incarcerated, they are, for the time being, separated from their normal environment and prevented from breaking the law. However, stiff sentences and long incarceration periods may not always be effective, and they are expensive. A good portion of the excessive costs of the U.S. law enforcement system is due, it appears, on an expanding incarceration rate which has, in the past 50 years, quadrupled [p. 10]. High incarceration rates would have to be associated with corresponding sufficient prison space and the related rehabilitation services, but this is not the case because of a lack of funds. Overcrowded prisons are the rule, and these act frequently as trade schools of crime rather than as correctional facilities, where the incarcer-

[5] In the case of heroin addiction and the associated unlawful drug traffic, great progress has been achieved through M.D.-administered heroin programs.

ated perfect their unlawful craft, to be incarcerated again after their once release.

Fighting crime requires a holistic approach. In principle, society should tend to prefer social programs over punishment, but it is not easy to find the proper balance. Furthermore, "reduced crime will rarely be the central benefit of successful social programs" [p. 121]: it will be a side-benefit. International comparisons appear to indicate, however, that the correctional system of the U.S. is imbalanced, requiring rebalancing, and other countries will have to take precautionary measures not to follow an unwarranted path. In "An Agenda for Crime Control" [chapter 11], Kleiman suggests measures, often simple changes of existing practices, which might affect crime and incarceration rates negatively, to be discussed and evaluated by the corresponding professionals and public officials. What Mark Kleiman does not address, however, is the occasionally smug approach to crime by the fortunate and affluent: their "beating the system", or their "exploiting the system", the legal and quasi-legal versions thereof, but also the broad spectrum of white-collar crimes, is not thematized. Biology teaches us that organisms adjust to opportunities and threats, using force, deception, or other means, and this applies also to humans, in spite of their ethical foundations or moral guidelines. Brute force, as Kleiman suggests, cannot be the only answer to crime; empathy is also required — and insight.

13

The Poverty of Economics

Economics is a social science in the sense that the expression started to be used in the first part of the nineteenth century. Like other social sciences, economics was to be seen as a 'positive' science as conceived by Auguste Comte and others, i.e. a science that disassociated itself from metaphysics and concentrated, instead, on empirically observable and verifiable phenomena. Comte also saw a "hierarchy of sciences" ranked by their degree of generality or, conversely, complexity — mathematics, astronomy, physics, chemistry, biology — , and he was clearly guided by the notion that the social sciences were to emulate the natural sciences. Among the social sciences, economics was closest to this notion of a "social physics", into which the conceptional, notational and mathematical apparatus, common in physics, made its inroads. Thus, almost from

[0]Book review essay covering Gintis et al. [2005]; Bowles et al. [1993] and Hammerstein [2003], published in *European Legacy* [Herbst, 2012b].

its inception in the eighteenth century, economics could be seen as an early trans-disciplinary endeavor.

One of the keys to the success of the natural sciences was their implicit reductionism: complexity was to be reduced by looking only at certain aspects of a broader phenomenon, at parts of a system, and by abstracting from distracting attributes which were not seen as being vital. In this way, specialization took place and academic fields proliferated through subdivision or the merging of intersecting research foci. Disciplines were no longer defined only by the subject matter but more and more by how they study their subject: by their approach and methodology. To combat the growing specialization, countercurrents of a "unity of science" were launched and integrative sciences — such as cybernetics and system sciences — emerged in the past century.

The proliferation of disciplinary orientations during the nineteenth and twentieth centuries had a range of implications which gradually affected not only the sciences as such but also the various professions. It became increasingly more difficult to distinguish between so-called 'pure' and 'applied' sciences, or between sciences and professions. Applied sciences spawned 'pure' research fields at the frontiers of research, 'pure' research paved the road to applications, and the distinction between engineering (or other professional fields) and the natural sciences became blurred. Most important in our context, however, is the fact that the academic community had to give up the strict separation of descriptive and normative aspects of a disciplinary orientation.

How does economics fit into this picture? Like other social sciences, economics evolved as a 'positive', empirically based, science that addresses an inherently complex subject matter. Unlike other social sciences, economics emulated early on a scientistic ideal ascribed to physics and stressed the importance of models or theories which could be formulated in mathematical terms; implications deduced from these constructions could then be tested

— at least in principle — empirically. Scholars of the eighteenth or nineteenth century who had contributed to what we regard now as the early corpus of economics, people like Daniel Bernoulli, Marquis de Condorcet or Johann Heinrich von Thünen, can easily serve also as precursors of modern operations research, political science, or a fledging quantitative sociology.

However, economics did not just develop into a social science which was based on formal models or theories. Perhaps because the ideal type of physics loomed so large over this new discipline, 'grand' — comprehensive, general — theories were to guide the members of this guild. These theories were to describe economic systems and their principal components, basically the production and consumption of goods and services and their associated prices, natural or human resources, levels of technologies, the treatment of stocks, and consumer preferences. Economic theories were built on the foundation of a set of basic postulates — such as "profit maximization", "perfect competition" or "complete preference ordering" — which were considered self-explanatory: for a long time, economists did not see the need to question those or to explore their empirical validity. Milton Friedman argued that as long as theories or models had predictive power, it was not essential "whether [postulates] are descriptively 'realistic', for they never are, but whether they are sufficiently good approximations for the purpose in hand" [Friedman, 1953, 15].

Reflecting on a history or philosophy of science and on Thomas Kuhn's notion of scientific paradigms and revolutions, John Hicks [1983, 4] remarked that the economic sciences — and by implication the social sciences — do not address permanent, repeatable facts as those explored by the natural sciences. The facts which economics address are mainly man-made, that is, the product of human interactions and economics itself: these facts "change incessantly, and change without repetition". That is why I said that economics would address an "inherently complex matter".

There is another aspect which distinguishes economics and the social sciences from the natural sciences. Whereas the latter operate descriptively and delegate normative modes to engineering, medicine, management sciences or politics, the former exhibit a strong interlinking of descriptive and normative approaches. In economics, this interlinking of "what is" and "what ought to be" is particularly strong. If we look at Adam Smith's notion of the "invisible hand" to guide the allocation of resources, if we study classical market models that are built on this premise — and on the notion that the rational self-interest of the individual economic agent will produce a competitive, Pareto optimal, and socially desirable equilibrium —, we cannot say whether these models are meant to be descriptive or normative.

If economic models are meant to be descriptive they should have adequate predictive power. The branch of economics that focuses on the exploration of the empirical validity of models is commonly called econometrics, from which many fruitful studies have emanated, particularly in fields such as agricultural and labor economics or, more generally, the economics of production. However, most of these studies do not rely on the fundamental postulates of classical economics, postulates which appear to have been lifted from "Aladdin's Magic Lamp" or other fanciful fables. The frequently unreflected interlinking of the descriptive and the normative in economics may have contributed to a modern doctrine that, in the words of Kaushik Basu [2011, 4], "describes how a modern economy functions, and assures us that as a system, the current world economic order, founded on individual selfishness and the 'invisible hand' of the free market, is right or, at any rate, the best among what is feasible".

In the past century, various scholars have branched out to broaden this intellectually constricting framework of economics. Perhaps one of the early hallmarks in this effort was the initiation of game theory, first conceived in 1928 and published 1943 as

the "Theory of Games and Economic Behavior" by John von Neumann and Oskar Morgenstern. Game theory evolved in the following decades and provided an entirely new theoretical calculus by which to address economic problems and economic postulates and paradigms. With the growth of mathematical economics, one could also observe a renewed willingness to address non-standard questions. The last major reorientation of economics, in my view, was the emergence of biology as a new ideal type of economics, competing with — if not replacing — physics.

In *Markets and Democracy*, published a few years after the collapse of the Soviet Union and the Iron Curtain, Samuel Bowles, Herbert Gintis and Bo Gustafsson assembled papers that address non-standard questions, in particular regarding the relationship or linkage between economic systems and democracy. It is commonly assumed that capitalism and democracy (or 'freedom') are linked, and this link underlies a great deal of the public and foreign policies from the past century until the present, in both the USA and the Western World: capitalism spawns democracy, and democracy requires capitalism. Several articles in this anthology address labor-managed firms in the context of a post-Walrasian economy, and some deal with market socialism.

The details need not concern us here. Most analyses are of a conventional nature, formulated with the tools and the language economists are accustomed to, but the tentative conclusions the authors draw from these basic arguments are rather unconventional: capitalism and socialism are seen as pluralistic concepts; democracy comes in diverse forms and is not as strongly tied to capitalism as many of us might think (i.e. capitalism can flourish in non-democratic societies as well); various economies on the capitalist-socialism spectrum can be envisaged in terms of the normal apparatus of economic models or theory building.

Peter Hammerstein's *Genetic and Cultural Evolution of Cooperation*, the second book on my list, focuses on two broad fields: bi-

ology and economics. For the most part, the volume assembles articles that address biological phenomena — cooperation of cells, of actors within a species, and of members of different species; and some of the contributions deal with human interaction and cooperation. In both cases, economics and, in particular, game theory is used to analyze the various phenomena under investigation.

For the social scientist interested in economics, the volume offers a truly interdisciplinary and enriching overture on the basic tenets of classical economics, drawing on biology, anthropology, mathematics, ecology, psychology and economics: the question it raises is whether, or to what extent, self-interest and other assumptions central to classical economics should be seen as cornerstones bridging economic agents — producers and consumers — and markets. Indeed, the book goes further: it is an attempt to study "the emergence of cooperation in systems that range from molecules to societies" [Hammerstein, 2003, 1]. While the book documents mainly the trans-disciplinary use of economics within biology, the opposite vision — i.e. the use of biology within economics — is restricted to the basic theme of the collection, cooperation.

Finally, in *Moral Sentiments and Material Interests*, Herbert Gintis, Samuel Bowles, Robert Boyd and Ernst Fehr assemble accounts which focus squarely on economics but address the same question on the roots of cooperation as "Genetic and Cultural Evolution of Cooperation". As a new ideal type of economics, biology or related applied sciences such as epidemiology could be used to pursue novel exploration beyond, or aside from, the topic of cooperation, although the focus on cooperation, which is crucial for a new vision of economics, is clearly warranted.

Economics and related disciplines dealing with the science and art of resource use and allocation embrace a broad spectrum of phenomena which are commonly discussed under such concepts as community, market, and the state (listed in the order of

their gestation). While economics typically concentrates on the market, community falls under sociology (or anthropology, ethnology), and the state falls under political science (or law). However, there is clearly not a strict one-to-one relation between concepts on the one hand and disciplines on the other. Economics has branched out to explore the link between state and market by addressing principal-agent problems or quasi-markets within the public domain, and the contributors of this anthology advocate yet another transgression into the study of community.

Mainstream economics has severely restricted itself by its focus on the fiction or construction of *Homo œconomicus*, and policy implications flowing from this narrow vision tend to be divisive, if not destructive. A broadening of the focus of economics to include community next to market and state could address problems of market or state failures, and would complement the overly restricting postulates characterizing mainstream economics. Community and associated behavioral traits such as fairness, reciprocity and cooperation are deeply embedded in nature and culture, as all three books reviewed here clearly show; and to ignore these traits within economics would amount to an unnecessary impoverishment of that science.

On the other hand, a broader vision of economics appears feasible today even within the framework of a reductionist science. As the editors of "Moral Sentiments and Material Interests" observe, "While the twentieth century was an era of increased disciplinary specialization, the twenty-first may well turn out to be an era of trans-disciplinary synthesis. Its motto might be: When different disciplines focus on the same object of knowledge, their models must be mutually reinforcing and consistent where they overlap" [Gintis et al., 2005, 4]. With that hopeful vision, the poverty of economics, brought about by the doctrinal perpetuation of an early successful approach, could eventually be overcome.

14

The Bounds of Reason

Economics, in its main strains, has become a science molded on physics, the crowning science for a good portion of the 20th century. Economics, similar to physics, was to be based on formal, axiomatic models, and used, like physics, the language and the concepts of calculus to describe these models. In this respect, economics can be viewed as an early example of a trans-disciplinary approach.

As a science physics relies on formal models, and as a natural science physics is bound to calibrate its models through a keen observation of nature supported by measurements. Formal models, eventually at least, have to be verified, and their axiomatic base has to reflect this verification. Mainstream economics emulated physics, but this emulation did not appear to include a critical assessment of its axiomatic base, and parametric adjustments of

[0]Book review essay of *The Bounds of Reason: Game Theory and the Unification of the Behavioral Sciences* [Gintis, 2009b], published in *European Legacy* [Herbst, 2013a].

models became the rule instead of reassessing the canon of basic assumptions.

Physics and economics deal with different kinds of subject matters. Much of what we subsume under 'nature' that is addressed in physics and other natural sciences is quite stable, immutable or reoccurring, and scientists of different generations are in a position to study the same phenomena. In the social sciences there are, for all practical purposes, phenomena that appear to be stable to some extent, and a field like social physics is addressing those. For instance, traffic and crowds are fruitfully modeled like fluids. In many other cases, however, social systems cannot be characterized as stable, immutable or reoccurring: they change at a relatively rapid pace, and their change is predicated on the combined courses of action of individual actors. This makes the social sciences special.

Neoclassical economics pretty much negates the gap separating the natural and the social sciences and assumes that economic systems can be viewed as aggregations of choices by economic agents which are given. In this sense, neoclassical economics does indeed emulate the physical sciences. But unlike the natural sciences and unlike physics, neoclassical economics is frequently wanting when it comes to verifying the theory. Economists appear so much enchanted with the beauty of their theories or models, with the internal consistency and the rigor of their argument, that they do not pay enough attention to the real world. In neoclassical economics external effects or other market imperfections, so common in reality, are treated more like an aberration within the proper theory. The normative seems to replace — instead of amend — the positive. Furthermore, neoclassical economics not only negates the gap separating the natural sciences from the social sciences, it also neglects various modern currents within the natural sciences that deal with the dynamics of 'emergent' phenomena.

Herbert Gintis is one of the creative economists who consistently tries to fight a narrow view of neoclassical economics. But his aims go further. He not only wants to enrich and broaden economics to fight its deficiencies, he wants to contribute to a unified base of the behavioral sciences — economics, anthropology, sociology, psychology, political science and organismic biology (or sociobiology) — and his *Bounds of Reason* is an attempt to sketch such a base. His unifying framework includes five conceptual aspects: (i) gene-culture co-evolution, (ii) the socio-psychological theory of norms, (iii) game theory, (iv) the rational actor model, and (v) complexity theory. In *Bounds of Reason*, and in its companion volume [Gintis, 2009a], Gintis focuses on game theory, with journeys exploring other aspects listed above, and his exposition is introductorily and dense.

Gintis disaffirms the position of methodological individualism, a concept we could also term 'constructivist' and which goes back to Max Weber and Joseph Schumpeter; it asserts that social collectives or phenomena, and the operational notions thereof, are in fact aggregations of individuals or individual decisions and can be explained in terms of those. In contrast, Gintis posits that "human society is a system with *emergent* properties, including social norms, that can no more be analytically derived from a model of interacting [...] agents than the chemical and biological properties can be analytically derived from our knowledge of the properties of fundamental particles" [p. xiv]; specifically, human society — and economics — cannot be explained on the basis of selfish, self-serving actors, so a broader conceptual framework is needed to study and to explain social phenomena.

Gintis pursues the notion of a unified base for the behavioral sciences, a "unified framework for modeling choice and strategic interactions" [p. 221], in which, as he makes plain, game theory — and in particular evolutionary game theory — could play a central role. *The Bounds of Reason* contains many applications of game

theory in various domains and contexts, that is, applications of a theory that had originated within economics and that are now fruitfully applied to other fields. Conversely, economics and other social sciences could profit from views which evolved in fields like organismic biology or anthropology, providing a base to better explain such phenomena as "substance abuse, crime, corruption, tax compliance, social inequity, poverty, discrimination, and the cultural foundations of market economies" [p. 222].

Herbert Gintis is also a strong proponent of the rational actor model. 'Rational' he defines in terms of consistency, yet it does not imply self-interest: "Indeed, if rational implied selfishness, the only rational individuals would be sociopaths" [p. 1]. However, selfish actors can be consistent, and because *Homo œconomicus* is consistently self-interested he is seen as a sociopath [p. 73]. Gintis' notions appear reasonable when applied to biology and the animal kingdom and, in the world of humans, we can eliminate possible inconsistencies of preferences or choices — and the lack of transitivity — by substituting indifferences for preferences. But it appears equally reasonable to assume for the time being that a lot of analyses within the social sciences, including economics, does not hinge on a watertight concept of rationality defined in terms of consistency. But Gintis' position is strict: "Classical, epistemic, and behavioral game theory make no sense without the rational actor model, and behavioral disciplines, such as anthropology and sociology, as well as social and cognitive psychology, that have abandoned this model have fallen into theoretical disarray" [p. 222].

To move away from the constructivist notion of economics (and other social sciences), Herbert Gintis looks at learning. Learning, in an extended way and in the context of adaptation, survival or "transforming sensory inputs into decision outputs" [p. 224], can be seen to take place at four levels — the genetic, the epigenetic, the individual, and the social. Epigenetic learning has be-

come a hot research topic during recent decades, but the interplay between the genetic and epigenetic levels of learning — and the possible reassessment of a Lamarckian role in this matter — is still pretty much a *Terra incognita*. Not all biological systems exhibit all four levels of learning, but the learning of primates does to some extent, and the learning of humans definitely does: we can observe a gene-culture co-evolution. Because of this co-evolution, humans exhibit traits which are deeply embedded in their nature (physiology and psychology), and relevant psychological features are simply negated in the construct of *Homo œconomicus*. Furthermore, because learning is costly, it is instructive to look at the level and the time frame in which learning takes place. Clearly, genetic learning requires a time frame that is several orders of magnitude more extended than the learning at subsequent levels, and economics proper need not look at genetic or epigenetic learning as such. On the other hand, economic analyses have fruitfully entered the discourse of sciences such as biology or anthropology where genetic or epigenetic learning have an impact. Indeed, in the words of Gintis, "there are strong parallels between genetic and cultural modeling" [p. 225].

Because learning is costly, signaling is practiced as a cost-effective measure in biological and human systems. In other words, instead of investigating or assessing something directly, requiring effort, a 'signal', an evolved inexpensive substitute is accepted (e.g. the plumage of the male bird); instead of engaging in a learning process in order to assess a proposition or position, easily available status symbols or credentials of those propagating a position are used as substitutes (e.g. the credentials of a scientist). The cost reducing strategy is effective as long as one can trust the signal to convey the proper meaning of the signified. However, learning is also responsible for adaptation strategies such as cheating, deception, fraud and masquerade, and biological as well as human systems will have to find equilibria positions balancing

cost-reductions due to signaling against costs associated with being duped.

Human learning, be it at the individual or social level, is tied to norms or moral values "that specif[y] the duties, privileges, and normal behavior" associated with various roles of individuals or groups [p. 232]. These roles have to be socialized and intrinsically lived, through a personal commitment of individuals or through a strong cultural attachment in the case of groups; or they might have to be extrinsically fostered or enforced to combat violations. The design and the enforcement of norms in the form of legal systems or official rules and regulations are costly, and the interplay of such man-machine systems is often complex and difficult to foresee. Much of what this entails is addressed in discourses on 'free' societies or markets, on democracy, on investor or state capitalism, on stock market cultures, et cetera, but we lack a ready science or a framework by which to analyze these very complex human concoctions. Perhaps a unified base of the behavioral sciences might help.

15

The Enigma of Knowledge

Knowledge is a resource, a factor of production — like labor, capital, land or natural resources — and so-called knowledge economies depend on it. Alfred Marshall [2011 (1890), 106] referred to two — basic — factors of production, nature and man; he subdivided man (as a factor) into labor and capital; and capital is further grouped into classes like organization or knowledge:

> Capital consists in a great part of knowledge and organization [...] Knowledge is our most powerful engine of production; it enables us to subdue Nature and force her to satisfy our wants. Organization aids knowledge.

Knowledge in its various forms has always been part of economies, of course, and it has been discussed in the literature of several

[0]Book review essay of *Handbook of Knowledge and Economics* [Arena et al., 2012], published in *European Legacy* [Herbst, 2015b].

disciplines (including economics), but the concept really gained weight only after 1985 when another notion, globalization, won ground.

Globalization is a byproduct of the Third Industrial Revolution and the associated transformation of economies. With the relative prominence of the tertiary sector in the Western World, knowledge gained the status of a key resource. Knowledge, and knowledge accumulation and transmission, is an object of investigation of disciplines such as psychology, philosophy, education, sociology, political science, geography, history or information sciences, but it has actually played a relatively peripheral role within economics, in spite of the recent hype regarding knowledge economies. In fact, classical economics and equilibrium theory pretty much-ignored knowledge in their concepts of *Homo œconomicus* and the perfect market: knowledge was not to be included as a formal factor of production. Indeed, it had to be treated as an externality, as a spillover (frequently referred to as the MAR-spillover, after Alfred Marshall, Kenneth Arrow and Paul Romer). Concepts like space (proximity) or agglomeration (central when analyzing knowledge production, research productivity, scientific development, technological innovation, economic growth, et cetera) could not find a main role in classic economic analysis and were relegated to its fringes, to regional sciences [Isard, 1956; Fujita et al., 2001] or economic geography. Outside the framework of classical economics, knowledge is often difficult to spot because it is subsumed under concepts like educational attainment, research funding or patenting activities: indeed, the *Journal of Economic Perspectives* (from 1996 to 2013) lists only eight articles that address the concept of a knowledge economy (but 500 articles on education, 8 documents on research funding, and 48 documents on patents). Knowledge needs to be inferred.

In 1937 Friedrich Hayek delivered his presidential address on "Economics and Knowledge" before the London Economic Club.

In this lecture, he essentially asked to what extent (i) economic analysis makes use of "assumptions and propositions about [...] knowledge possessed by the different members of society" and (ii) "to what extent formal economic analysis conveys any knowledge about what happens in the real world". The first question addresses appropriate (or infeasible) levels of abstractions, and the second refers to economics as an empirical, verifiable science; knowledge, as a factor of production, was not the theme (it is only implicitly addressed).

With the recent *Handbook of Knowledge and Economics*, as the editors profess, an attempt is made to take up the questions Hayek raised and to project them into today's times:

> The economic reality questions the economic theory. The concept of the knowledge-based economy has generated a new 'economics of knowledge' or 'economics of science'. This has prompted greater reflection on the notion of knowledge in analytical areas of game theory, innovation theory, organization theory, firm theory, spatial economics and growth theory [p. 1].

The *Handbook*, it should be noted, is not a handbook: it is an anthology of contributions mainly of European origin; it focuses on economic history, on issues of a philosophy of (a social) science (or on a new economics of science), on organizational theory, on economics; but it is also a venture to extend Hayek's vision at dealing with knowledge as a factor of production.

There was — and is — the vision of a range of economists to establish economics as a normal empirical science. Organismic biology, for instance, studies primates without inferring human motives to explain their behavior. Economics could — and should — basically do the same: it does not depend on the classical, overly restrictive and highly unrealistic, assumptions of a *Homo œconomicus* which remind us, as I have mentioned elsewhere, of the folk tales of the Arabian Nights [Herbst, 2012b] (see Chapter 13). Milton Friedman's reproach, his defense of *Homo œconomicus*, states that

as long as theories or models have predictive power, it is not essential "whether [postulates] are descriptively 'realistic', for they never are, but whether they are sufficiently good approximations [...]" [Friedman, 1953, 15]. Perhaps; but the implication is that such theories or models are unsuitable to address many — and presumably even most — economic phenomena.

In order to approach the enigma of knowledge and its relation to economics and economies, a few pairings may appear fruitful: knowledge versus information; encyclopedic, codified knowledge versus mainly locally acquired instrumental — tacit — knowledge or skills; individual learning versus learning organizations; and facts versus models or theories. Let me begin with the last dichotomy.

The *Handbook* devotes a fair amount of its space to Hayek's two explicit questions mentioned above. In this context the history of economic thought is reviewed (chapters on Vilfredo Pareto, on Alfred Marshall, on Carl Menger and Friedrich von Wieser, on Kenneth Boulding and Friedrich August von Hayek, on Herbert Simon). In the same context epistemological questions arise which have led the editors to have themes explored within a philosophy of science or a sociology of knowledge, themes that I presumed would lie at the periphery of the topics the anthology would cover.

Chapter 6 (by Roberta Patalano) on the affinity between Kenneth Boulding [1961] and Friedrich Hayek [1999 (1952)] may serve as an example. I shall actually focus on Boulding. Boulding spent a sabbatical year (1954-55) at the "Center for Advanced Study in the Behavioral Sciences" at Stanford University, and during that year he wrote, and eventually dictated, a wonderfully crafted little treatise for the educated layperson. The book carried the title *The Image*; it did not contain a single reference or footnote, and it dealt with the construction of concepts or images (i.e. with facts, models or theories) by individuals or groups. I read Boulding's *Image* early in the 1960's, and I have reread it lately. Boulding's notions,

in my assessment today, were not particularly revolutionary or unusual, but pertinent, and they called for a cross-disciplinary view which appeared to be embraced, strangely enough, more strongly then as now (viz. general systems theory, operations research, cybernetics, et cetera). However, the particular quality of *The Image* was not designed to elucidate the conjunction of 'knowledge' and 'economics' outside of a general discussion (of a philosophy of science or a sociology of knowledge), and it cannot serve to bring much light to a current discussion within economics. The same applies, more or less I fear, with regard to Hayek's treatise and the works of some of the other scholars covered in the historical perspective of the *Handbook*.

That knowledge is subjective, in a sense, or constructed [p. 132], was not new then, and linking it to cognitive sciences, as the *Handbook* does, seems unnecessary to explain such a view. Perception was seen as an evaluative process, and social perception was demonstrated empirically [Ames Jr., 1951]. That scientists view the world through models, through theories, through interpreted 'images', was a position widely and correctly held then as it is now. That is not to say that all these views are completely subjective [Sokal and Bricmont, 1998; Kuhn, 1970 (1962)]. But it should be clear that we have to distinguish between some phenomenon (something we observe in the external world, or something we view as a problem situation) and the particular 'framing' or 'representation' of that phenomenon.

C. West Churchman [1961] did a great deal of work to clarify this distinction, and he illustrated it in the following way [Churchman, 1970, 141]:

> [a] student of a famous mathematician presented him with the sequence 32, 38, 44, 56, 60 and asked for the next number. It was also stipulated that the properties of the sequence were very well known to the professor and that the generating principle was quite simple. The mathematician, failing to find anything but a fairly complicated polynomial fit, gave up. The answer was "Mead-

> owlark", this being the next stop on the city's subway [which] the professor rode [...] daily".

The professor's misfortune was that he had failed to find the proper 'frame' for the problem he was confronted with. In most new, unstructured situations however, we cannot talk of 'proper' framing; we ought to talk of 'appropriate' framing, and the appropriateness of such framing is a matter of judgement.

To continue our discussion on the enigma of knowledge, the distinction between knowledge and information [covered e.g. in chapters 8, 10, 20 and 21] is of vital importance — and has always been so. When craftsmen were crisscrossing the European continent, they brought knowledge that was displayed in the open while they worked (as masons, pavers or carpenters), but the knowledge was not that easily duplicated: it had to be transferred and acquired in a tacit way (from master to apprentice) over the period of years. Some knowledge did not travel that easily, for it depended on knowledge or know-how pools, on a tradition, and it gave rise to localized communities of instrument makers, artistic painters, watch makers, fabric printers or weavers, fostering specialization which has partially survived to present days (e.g. accordions in the province of Ancona, string instruments in Cremona, weavings in Scotland, silk printing around Como, watch making in the Jura region). This has implications which go beyond old crafts, affecting modern multi-professional fields as well (architecture, civil engineering, mechatronics or electro-mechanics, optics, interior design, et cetera).

Knowledge production in modern times has retained a great deal of its localized character, implying a 'path dependent' development [chapter 8, p. 169]. The initial chemical and pharmaceutical industries in Germany can be seen as directly linked to the innovative laboratories at German universities (i.e. early spin-offs), and the IT-firms in the Silicon Valley and around Route 128 to Stanford, Cal Tech, Berkeley, and MIT [Saxenian, 1994]. The recent

predilection for de-industrialization, in Western nations, appears to negate, or to ignore, the localized nature of a range of knowledge domains, and the (shadow or opportunity) costs associated with this loss are generally not part of the management calculus which led to outsourcing (and de-industrialization). This shortsightedness on the part of decision-makers may have to do with a possible public-good externality of knowledge [Samuelson, 1954] or with what Alfred E. Kahn [1966] called the "Tyranny of Small Decisions". The tyranny-aspect refers to situations where decisions are based on a narrow perspective, without taking into account the cumulative (negative, external) effects of decisions (by others) which are based on a similar narrow decision-making framework. The result of such cumulative decisions may have been rejected by the community of decision-makers had the effects of their individual — independent — decisions been known beforehand: hence the "tyranny". Examples of such situations abound (problems of congestion, environmental or climate change, et cetera). But these external effects need not be negative, they can be positive as well. Home or land owners can profit from investment decisions in their neighborhood; and clearly cities, cultural centers or research universities profit from what are called agglomeration economies [Fujita and Thisse, 2002].

The existence of agglomeration economies has been demonstrated in a range of contexts. A wide spectrum of social phenomena cannot be properly addressed without them, including knowledge, knowledge accumulation, knowledge transfer or transmission, but economics has failed thus far to approach them head on, or has allowed promising approaches to fizzle out or to remain in hibernation. Dominique Foray points out difficulties [chapter 12, p. 275]:

> Evidence about the positive (direct and indirect) effects of the production of knowledge in the society and the economy is difficult to build and it is also difficult to try to measure returns on [...] research projects;

and, furthermore [p. 276],

> [t]he deterioration or even disappearance of a great deal of knowledge is often caused by [externalities as described by Kahn [1966]].

To counteract these deficiencies, to "maintain, reproduce and exploit [...] knowledge" [p. 277)], Foray calls for the support of an "epistemic infrastructure". This infrastructure is evident in higher education, continuing education, research, R&D and apprentice systems of various forms; the management of such systems is demanding; and the contribution of the economic profession with regard to its understanding or guidance of knowledge-generating systems is highly constrained by a discipline which is led more by its own traditions than by problems to be solved. As Giovanni Dosi observes [chapter 8, p. 168]:

> [...] when I see works on empirically applied [general equilibrium] models, [...] I have the same feeling I had when I saw long ago at UC Berkeley the announcement of a seminar on 'Applied Heidegger'.

Epistemic infrastructures, that is, educational systems, have a tendency to focus on higher education; modern higher education systems have a tendency to concentrate on encyclopædic knowledge, not on skills or tacit knowledge; however, localized knowledge feeds on skills, on tacit knowledge. Higher education's concentration on encyclopædic knowledge appears ill-guided in any case because the acquisition of this type of knowledge is most easily assisted by current or future decision-support systems. What students have to learn, and what researchers or developers have to practice, are intellectual skills and instrumental knowledge on how to approach problems, and the acquisition of skills is not only a matter of focus, it is also the gist of a localized culture [Herbst, 2014a].

Current research relates knowledge production to specific conditions: knowledge clusters, cultures of sharing and propagation,

limited hierarchies, fair competition, learning organizations, cultural and intellectual exchange, sensible traditions, et cetera. Some of these conditions (or phenomena) are easily accessible to economic analysis, at least in principle, but the findings, if they exist, are difficult to subsume under a common economic umbrella. Knowledge, in turn, has an impact on economic prosperity (in the sense of a knowledge economy), but this tie is tenuous and difficult to elucidate: most studies in this area (by international organizations like the OECD) have a crude quality. Finally, knowledge in various forms, and attributed to various actors, is reflected in economic models or theories as assumptions or postulates: here, the core of economics proper is addressed or touched.

A basic drawback of (much of) economics, which is indirectly addressed in the *Handbook*, is its ambivalence regarding the descriptive and normative. There are sciences which are descriptive: the natural sciences fall under this category; other sciences are based on descriptive sciences but have a normative orientation: engineering, medicine, planning or operations research. Economics should belong to the first or the second category depending on the aim of analysis (descriptive or policy-oriented), but the descriptive part of classical economics is so value laden that a proper distinction between the descriptive or normative is frequently fraught with undeclared value assessments or ambiguities.

A second problem with economics, which is also addressed in the book, is its tendency to classicize, to transmit outdated notions in the basic curriculum which should have been relegated to specialized courses on the history of economic thought. There are new, valuable developments within economics, of course, and the *Handbook* refers to some (particularly in chapters 9 and 11), but I wonder where figures corresponding to Nicolas R. Rashevsky (biomathematics), Norbert Wiener (cybernetics), John von Neumann (game theory, information sciences), George Dantzig (lin-

ear programming), Herbert A. Simon (artificial intelligence) or Richard Bellman (dynamic programming) are to be found today, figures who were in a position (with others) to shape professions. Was it then easier for bright, unconventional minds to develop their ideas? Were universities, were department heads, more open, more generous?

This anthology links knowledge production to specific conditions that foster it; it traces knowledge's role regarding economic prosperity; and it reflects on how economic models or theory incorporate various notions of knowledge. But it seems unable to 'grab' the topic, to make it transparent, or to spell out new avenues. Economics deals with knowledge as an externality. Externalities derive their name from the notion that phenomena are being addressed which are outside the proper framework of economic analysis; their very existence calls for a broader — more holistic — analysis and a possibly different decision-making setting which would internalize externalities. However, economics does not yet seem ready for such a scenario. Elements of a more common approach within economics do exist, to be sure, but an extended vision is challenging and difficult to pursue. Knowledge in its various forms (e.g. codified versus tacit, individual versus institutional) and roles (e.g. theory building or as an economic factor) is addressed by a range of disciplines or disciplinary philosophies, but a vision on how to structure the broad topic is still lacking: in my view, this is what I had wished the *Handbook* would do.

16

Change Management

The past half century has seen an unprecedented transition: an economic recovery in the Western World after World War II; a prolonged world-wide competition of the two major economic systems and blocks of power, extending over decades; the introduction and continual development of new technologies, particularly in the fields of information processing and bio-chemistry; the spread of the so-called developed economies to an ever growing range of societies; and the eventual formation of what we refer to today as the globalization phenomenon. Concurrently with this development, professions and theories evolved designed to understand and bring about change: operations research was formed as an off-shoot of

[0]The paper on "Change Management: A Classification" was published, slightly shortened, in *Tertiary Education and Management* [Herbst, 1999]. It was partially based — verbatim (pp. 115-119) — on a departmental paper of mine (at the Department of City & Regional Planning, University of North Carolina at Chapel Hill), written roughly 30 years earlier, in 1970.

military operations during WWII [Morse, 1986], to guide the civilian operations of airline companies, manufacturing or utility industries [Fenske, 1970]; the management sciences were instituted, business programs of various color spread in institutions of higher education to serve the increasing demand for MBA's; the planning and policy sciences matured, particularly in fields of public administration; and special purpose programs in the area of hospital or higher education management found their ways into the curricula of a range of graduate programs.

The change in the fabric of modern, Western societies has been an ongoing process: whereas traditional, pre-industrial societies are characterized by a pyramidal economic structure, with most people working in the primary sector of the economy, the modern society is characterized by a complete inversion: close to two thirds of the labor force now form part of the service sector [Fourastié, 1949] (see Chapter 19). The transformation during the past decades — and the thinning out of the industrial sector — was fueled by a gradual move from labor-intensive towards capital-intensive industrial production [Rifkin, 1995; Thurows, 1993]. The impact of this process has been dramatic, not only for the service industries as such but for all three sectors of the economy and — by implication — for higher education: higher education moved from an elite to a mass system [Trow, 1970]; diversity played a more prominent role [Clark, 1983; Kells, 1997; Trow, 1997]; new academic programs were formed and new professions introduced; existing curricula adapted or expanded; professional societies were founded; communication technologies spread; the gradual move away from labor-intensive knowledge-transfer fostered distance learning; and the general discussion on management issues intensified.

In the context of this transformation change theories proliferated. During the early years of the post-WWII era developmental issues prevailed and quantitative approaches, both of a descrip-

tive or evaluative nature, gained prominence. A whole range of new quantitative tools were developed, designed to analyze or optimize processes of production or allocation and fueled by the development of the mainframe computer. Change was predicated on the basis of a strong belief in rational, planned courses of action and autocratic, top-down and expert-based approaches were the rule. In the mid-60s the climate began to change in the U.S. and Europe, particularly in the public sphere and in the wake of new social movements emphasizing bottom-up approaches, broader participation and advocacy [Alinsky, 1971/1989]. At the same time, environmental issues became prominent, culminating in the initial analyses of the Club of Rome and the energy crisis of the early 70s [Forrester, 1961, 1971; Meadows et al., 1972, 1992]. In Japan, the quality movement was well underway, giving rise to an exemplary economic development which was subsequently emulated within our hemisphere [Crosby, 1996; Dertouzos et al., 1989; Thurows, 1993]. Finally, the spread of the developed economies to previously uncharted areas in the 1980s and 1990s and the implicit impact of the globalization phenomenon gave rise to a new round of management approaches stressing flexibility, radical changes and institutional learning [Hammer and Champy, 1993; Senge, 1990].

The proliferation of change theories which evolved during past decades parallels an over-proportional growth in a range of professions, particularly those related to engineering (including information sciences), business, and management [Snyder and Hoffmann, 1994]. With the growth of these professions, individual change theories evolved with particular foci: corporate takeover and mergers, small business practices, technology transfer; land-use or transportation planning, water resources planning, advocacy planning; health management and school systems; et cetera. By now these change theories span a wide range of approaches: the languages in which these theories are cast differ from field to field, differing disciplinary traditions play a role, their lifespan is

limited, and concepts are used with non-standard connotations. On the bases of such a development, it seems clear that communication across disciplinary fields or across schools of thought appears fraught with problems of communication [Sokal and Bricmont, 1998; Herbst, 1998] (see Chapter 2).

In the field of higher education, many of the more popular change approaches originally designed for other purposes were — as "borrowed systems" — adapted to and integrated into the management of individual institutions or higher education systems [Chaffee, 1985]. With the expansion of higher education, the gradual move from elite to mass systems, the expanded roles of higher education and new funding bases, self-regulation and *laissez-faire* at the departmental levels, et cetera, were gradually giving way to more active forms of leadership and governance [Massy and Zemsky, 1990]. Consequently, change approaches or change techniques which proved beneficial in the field of business or public administration were found to be of value and were integrated into the practice of higher education management. In addition, approaches specifically designed for this environment, like assessment procedures in the context of accreditation and self-assessment exercises and peer review, gained prominence [Kells, 1992].

The present note presents an initial classification of diverse approaches to better assess their relative merit. The aim of this is not a final taxonomy or a definite assessment of the history of management; rather, the reflection on classification schemes shall be encouraged in the hope that this will lead to more appropriate selections of change mechanism which fit particular contexts. Basically, we should perceive the proliferation of change approaches as an enrichment of our palette of tools and theories. Change approaches may not compete with one another as much as we think and the lifespan of individual concepts may not be that limited. Rather, change concepts retain value, they complement

each other and are frequently most effective if applied not in an isolated fashion but in a systemic context.

The Proliferation of Change Theories and Their Causes

Under change processes I would like to subsume goal oriented activities of a conscious, premeditated nature. Goal orientation indicates that activities are chosen in response to or in anticipation of a perceived situation. We call this reactive or proactive behavior. The requirement that the behavior be premeditated sets the focus on those classes of activities which are guided by reflective thought and some preparatory organization. Although individual activities are not excluded, the focus in this paper is clearly on social activities with their associated problems of shared perceptions, communication, and common responses.

Activities such as these have various histories, particularly if we look at the terms chosen to designate them. Some, like planning, date back a few hundred years if we take the term as such; but there can be no doubt that plan making in the various fields is far older than that and must have paralleled human development. Others, like quality management, are a few decades old, dating perhaps from the early 1950s; but here, too, it was discovered that quality has not been an exclusive recent concern [Juran, 1995]. One decade ago the term of the learning organization was popularized [Senge, 1990] and recently a government report was published in Britain under the title of "Higher Education in the Learning Society" [Dearing, 1997], suggesting, perhaps, that organizational or societal learning is a new phenomenon. But nothing could be further from the truth. Looking at the development of mankind [Levin, 1993], we observe that learning since the upper Paleolithic period is basically a cultural phenomenon. While direct, individual learning is closely tied to individual brain functions, societal

— or social — learning is not: all of the cultural achievements of mankind — its religious constructs and ethical standards, its languages, its arts and sciences — are primarily based on social learning mechanisms.

If we look at the present vast literature on change processes, both in the wider world and the world of higher education, we observe a constant exchange of keywords to designate these processes. We are not talking merely of planning or management, we use compound nouns or adjectives to specify our focus — and we change our foci. Some of these will designate particular fields of applications, this is clear: health planning, transportation planning, hospital management, etc. But others will designate particular — and changing — emphases regarding the underlying process: strategic planning, contextual planning, quality management.

> No matter how such a system [or change process] comes into use [...] it will [...] tend to follow a set pattern. First, the system will be widely acclaimed in the higher education literature; institutions will eagerly ask how best to implement it. Next, the publication of a number of case studies will appear, coupled with testimonials to the system's effectiveness. Finally, both the term and the system will gradually disappear from view [Chaffee, 1985, 133].

We once talked of planning, programming and budgeting systems (PPBS), zero-based-budgeting (ZBB), management by objectives (MBO), etc. Many of these — by now forgotten — change processes have value and could be of further use.

Apart from the frequent turnover of concepts, a second phenomenon should be mentioned. More and more, change processes — and also some classical, scientific fields — appear to be designated in non-neutral terms. While the disciplines attempted to identify fields of inquiry, the modern terminology is frequently value-laden. Instead of referring to a particular school of thought within a discipline (e.g. the Chicago school of economics, or the Harvard approach to business administration), the entire disci-

pline assumes a strong ideological bent: we speak of New Public Management (NPM), not to designate a particular ideology — or a particular school — of public management, but to usurp the whole field. We appear to fight territorial wars with the help of terms. If this practice continues unchecked, the implications for the intellectual freedom and for higher education itself might be severe.

Thus far, I have argued that change processes have a limited life expectancy and that they are frequently cast in ideological terms. The two aspects appear somehow related. Change processes are normally portrayed as a unitary entity, with a descriptive title and a certain focus, not as a system of elements chosen by managers or planners. As a consequence, if certain elements of a change process appear outdated or ineffectual, the whole process is likely to be replaced by a new process. This leads to a succession of change processes with limited life expectancies and to a proliferation of approaches. Communication problems abound for a number of reasons: the short life expectancy of the processes under discussion is detrimental to the transfer of know-how from teacher to student and from one generation to the next; practitioners lack common concepts and are implicitly asked to follow a particular school of thought; experiences are difficult to calibrate, etc. On the other hand, if we were to think of change processes in a more open, less confrontational way, more in the way of systems of elements of change, we should be in a better position to build and retain a proper practice of management.

Change Management and Problem Structure

To obtain a clearer view on the spectrum of change processes, we shall attempt to match change processes with the problem structures they are designed to address. Change processes are closely related to problem-solving. At the outset, we perceive a

problem situation we would like to change or solve. In systemic terms, a problem situation can be depicted as a triplet $\langle \mathrm{i}, \psi, \mathrm{d} \rangle$ of elements composed of an initial state i, a desired state d, and some form of a transformation $\psi : \mathrm{i} \rightarrow \mathrm{d}$. In the case of reasonably well-structured problems, such as those of recreational mathematics or chess, the problem situation can be easily illustrated. In a three-move-mate-problem of chess, the initial state is given by the figure configuration on the board plus the instruction of which color will move next; the desired state is a mate in at most three moves, although it will normally not be specified what kind of mate is sought; the transformation of the initial state into the desired state is the actual challenge of the chess problem at hand. Problems of recreational mathematics lend themselves to easy structuring and corresponding solution approaches [Bellman et al., 1970; Harel, 1992].

In a more realistic, less structured problem of transportation planning, for instance, we might be confronted with an initial state characterized by a chronic congestion situation that we were able to document on the basis of traffic surveys. The desired state is not necessarily clear at the outset: we might want to remove the congestion situation by increasing the capacity of the traffic mode under consideration or by offering alternative — and additional — modes of traffic; alternatively, we may want to reduce transportation demand by various measures. Depending on the desired state chosen, we would then evaluate and eventually implement alternative courses of action over which we exercise some control and which are designed to transform, possibly through a succession of steps, the initial state as we originally perceived it into the desired state chosen. Analogous problems present themselves in higher education if the demand for certain fields of study grossly exceeds available capacities: Should capacities in these fields be enlarged? How would one finance this expansion? Should enrollment be curtailed (*Numerus clausus*) to fit available capacities? Should the situ-

ation be left unchanged in the hope that an inferior service will reduce the attractiveness of the field? Should the demand be reduced by offering alternative courses of study geared towards the same type of student?

I was alluding to the fact that problems may exhibit varying degrees of structure. We often loosely distinguish between well-structured problems on the one hand and ill-structured problems on the other, knowing, of course, that there exists a whole spectrum [Newell, 1969]. Well-structured problems are distinguished in that initial and desired states are well defined as well as the way by which we plan to transform one state into the other. Mathematical school exercises are often of a well-structured nature and so are many puzzles and recreational board games. Engineering and design problems are commonly characterized by the fact that both initial and desired states are well-defined and the transformation is of a fairly well-defined nature. I say 'fairly well-defined' because in most cases engineering problems are such as to be well-structured in principle: engineers normally know prior to their designing of a structure or component whether the design is feasible; in such cases in which engineers are confronted with an ill-defined transformation, we normally speak of development or research. Diagnostic activities, to mention another example, address themselves to problem situations whose initial states are ill-defined. There are many problem-solving activities which can be characterized not by what they are doing, or how they do it, but by the structure of the problem they address.

Given this systemic sketch of problem situations, we are in a position to propose a classification scheme of problem classes. If we loosely distinguish between well-defined elements of a problem situation (denoted by a '1') and ill-defined elements (denoted by a '0'), we can distinguish $2^3 = 8$ problem classes (see Table 16.1). We are now also in a position to classify problem-solving approaches as a function of the problem class they address: ap-

Table 16.1: Classification Scheme of Problem Classes

Problem Class:	States of Problem Sitation i	ψ	d	Problem-Solving Approaches:
I	1	1	1	Algorithms
II	0	1	1	Diagnostic activities, self-evaluation and peer review, benchmarking
III	1	0	1	Total-quality-management, engineering design, R&D
IV	1	1	0	Environmental scanning technological forecasting, scenarios
V	0	0	1	Diagnosis-treatment approaches
VI	0	1	0	Technology transfer, operations research, SWOT-analyses
VII	1	0	0	Reengineering
VIII	0	0	0	Strategic planning

proaches which work well in well-structured situations and others specifically geared towards the ill-structured cases.

If we look at the lattice which can be formed by these eight problem classes, we can also see how ill-structured problems can be decomposed into sub-problems of lesser scope and higher structure (see Figure 16.1). Each node in the lattice represents a problem class — and by implication also a class of problem-solving approaches. Problem-solving will start at a particular node of the lattice (depending on the problem at hand) and will attempt to move to nodes representing problems with more structure.

On the basis of this schematic construction, we can see problem-solving as a process which moves from the vague and general to the coherent and specific [Emery, 1969]. At the outset, we are confronted with a less than well-structured problem which we transform, through a succession of problem reformulations,

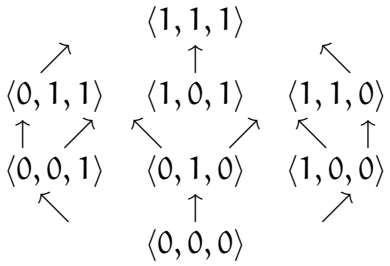

Figure 16.1: Lattice of Problem Classes

into a set of well-structured sub-problems we can solve. During this process, we structure the original problem until we arrive — iteratively — at a well-structured representation which serves as the operational simile of the original problem [Quade and Boucher, 1968]. This chain of problem representations is not unique. In other words, 'adding structure' is not a purely technical matter, quite to the contrary. We often observe that people are in reasonable agreement as far as the acceptance of the ill-structured version of the problem is concerned, but may have widely differing opinions when confronted with a well-structured representation of the same problem. Well-structured versions of a problem cannot be 'deduced' from ill-structured versions of the problem. The process of well-structuring is value-laden and often highly political.

Finally, the schematic construction also indicates how ill-structured problems can be decomposed into sets of better-structured problems of more limited scope — and how particular problem solving or change processes can be combined to address our problems at hand.

Focus of Approach

We have stated above that change processes are closely related to problem-solving. Problem-solving, in turn, relies on models — or on images — of problem situations [Ackoff et al., 1962; Boulding, 1961]. There is no need to enter into the current debate on deconstructivism or philosophy of science [Sokal and Bricmont, 1998; Tierney and Rhodes, 1993; Weinberg, 1992], but it should be reasonably clear that in the social sciences at least, theories and models reflect as much the perceptions of its authors as the outside world they are supposed to map. This situation holds irrespective of the type of theory or model we construct, in the descriptive domain as well as in the domain of evaluative or normative models or theories.

Theories or models of change processes are of an evaluative — or normative — nature. They will rely on descriptive analyses, but their *raison d'être* is a different one: their purpose is to discriminate between alternative courses of actions or to propose particular action schemes. While in the past a certain emphasis was placed on the construction of mathematical models to prescribe decisions, the newer approaches emphasize people-centered — or dialogic — processes of change. The two approaches frequently divide professionals along disciplinary lines, with the more quantitatively inclined opting for the former and the less quantitatively, more verbally inclined in favor of the latter. However, the two approaches do not compete with one another; rather, they are complementary — and should be seen as such.

Schematically, evaluative theories or models distinguish between an endogenous and an exogenous world to analyze or influence [Ackoff et al., 1962]. The endogenous world covers those aspects of a system over which we exert some direct control, while the exogenous world refers to factors which lie outside our direct sphere of influence. If we want to classify approaches to change

Table 16.2: Context of Application of Change Approaches

		Focus of Analyses	
		endogenous	exogenous
Focus of Action	endogenous	*Quadrant 1:* Problem analyses and courses of actions pertain primarily to the direct sphere of influence.	*Quadrant 2:* The analysis of the wider context forms the backdrop for the selection of courses of actions pertaining to the direct sphere of influence.
	exogenous	*Quadrant 3:* Sought-after systemic changes are designed to eventually propagate beyond the immediate sphere of influence.	*Quadrant 4:* The larger context forms the backdrop for sought after broad policy changes.

management from this perspective [Peterson, 1993], we can generate a 2×2 table in relation to whether we would like to primarily analyze or influence a given problem situation (see Table 16.2).

GLOBAL ANALYSIS, LOCAL ACTION Many of the major theories of how to approach the world will fit this scheme. Perhaps a decade ago a slogan became popular, being carried around on bumper stickers: "Think globally, act locally". The basic message behind this slogan was the idea that individual actions have side effects — externalities, as the economists would say — which are not accounted for by market mechanisms and that responsible behavior on the part of the citizenry should voluntarily limit local actions to a subset of actions which are not in conflict with their anticipated aggregated — or global — impact (see Quadrant 2 of Table 16.2). If we talk of sustainable development today, we think along similar lines, although the emphasis is on the building of appropriate supporting structures in the field of technology or law [Schmidheiny, 1992].

While neoclassic economic theory pretty much ignores externalities, external effects have been part of economic thought for some time. In neoclassic theory, individual maximizing behavior will lead to global optima. If this were indeed the case, the above slogan would lose its meaning — or would call for a different interpretation. In reality, however, we are confronted with blatant, singular external effects we may attempt to fight. More damaging, however, are the many minor externalities of individual actions which, cumulated, might lead to global effects nobody wants. Many of today's environmental or societal problems — air and water pollution, deforestation and soil erosion, problems of congestion, decay of neighborhoods or the erosion of public school systems, etc. — are of this kind: the systems under consideration drift in undesirable directions. Kahn [1966] called the mechanism in support of such drifts "the tyranny of small decisions". And Senge [1990] states, "[...] the primary threats to our survival, both of our organizations and of our societies, come not from sudden events but from slow, gradual processes [...]".

The slogan of "Think globally, act locally" may, however, also be interpreted from a more adaptive perspective. We want to see the context within which we operate and we want to select our options accordingly. Such a position has a strong systemic bent: it feeds on the early schools of systems analyses and has recently been popularized under the name of "learning organizations" [Senge, 1990]. The basic notion of that school is that learning in frequent situations cannot be based on trial and error because the consequences of our actions might become visible only in the distant future or in a distant part of the world where we have no direct access or lack knowledge. Irrespective of this particular connotation and the question of how to support organizational learning, the position has gained prominence, particularly in the field of higher education: "[...] the primary focus of [institutional] planning has been to examine environmental change and

to develop institutional strategies for responding or adapting" [Peterson et al., 1997, 3].

Local Analysis, Local Action It is clear that the general strategy we referred to above has a special appeal: many of the professionals who assume functions in the field of planning or higher education management will feel comfortable with it. But that is not to say that other foci are not more prominent. Clearly, the most frequent position adopted, in business and public institutions, is that of a primarily local — endogenous — focus of analysis and action (Quadrant 1 of Table 16.2). This position is convenient in that it minimizes the accumulation of costly intelligence and it will limit courses of actions to that subset over which the organization will exercise sufficient control. But the position is also of an ideal-type: were it not for externalities and could global conditions be readily read locally, the classic assumptions of economic theory would hold and there would be no need to adopt different strategies.

In fact, modern economics is in the process of reviewing its classic assumptions [Arthur et al., 1997]. Local actions will not lead to global optima, but the questions will be raised concerning conditions where a local focus might generate reasonable — or acceptable — results, even from a global point of view. With this focus of inquiry, economics adopts research questions that are well known in the field of organismic biology: we may wonder how ants are in a position to quickly repair a damaged anthill while the perspective of the individuals, so we must assume, is limited indeed. The chosen focus of inquiry is also an expression of hope and a modern answer to Lindblom's dictum of "muddling through" [Lindblom, 1959]. If economics — or the policy sciences for that matter — are in a better position to explain the conditions under which the pursuance of local foci and the general stability of the system at large go hand in hand, we shall have gained a great deal.

Local and Global Analyses, Global Action While change approaches in the fields of business and non-profit organizations fall predominantly into the first and second quadrants of our presently discussed classification scheme, change approaches of many public agencies will have to be classified as belonging to the third quadrant. Public agencies, together with their associated set of laws, frequently act as catalysts of change taking place outside the narrower confines of the agency. Significant is not primarily what goes on within an agency, but what kind of an impact the agency has on the society at large. Housing, transportation, land-use or school authorities are not judged primarily on the basis of what goes on within the respective office; they are judged on the basis of the larger effects of their work. Conceptually, these agencies participate in a two-person game [Rapoport and Guyer, 1966] whose rules they shape but whose outcome they have only limited control over.

Lastly, there are change approaches pertaining to fields of public planning — and particularly to large infra-structural projects — or change approaches of a very general nature with an undefined planning horizon (Quadrant 4). In the fields of public planning, we are confronted with situations similar to those of public agencies, but we have a clearly different focus: in the case of public agencies management questions are dominant — the running of the particular agency over time — , whereas in public planning a future is conceptualized. Again, this future will be brought about by two actors, the public authorities responsible for whatever investments are necessary, and the public at large which will interact with the facilities that were part of the planning effort. Because so much of the planning work pertains to a distant point in time and because the public at large has such a significant impact on the performance of the system under consideration, the foci of analyses and action lie predominantly outside the immediate boundaries of the institutions engaged in planning. Apart from public planning,

Table 16.3: Classification Scheme of Analyses-Action-Classes (Examples)

		Focus of Analyses	
		endogenous	exogenous
Focus of Action	endogenous	Continuous quality improvement Reengineering Self assessment & peer review	Benchmarking Environmental scanning Learning organizations Scenario-based planning Institutional planning
	exogenous	National performance review New public management Impact assessment Technological forecasting Technology transfer	Applied sociology Public sector planning Public policy making

there are also the fields of the applied social sciences and public policy planning. In the applied social sciences societal aspects are studied with the general aim to further our understanding of these aspects — and perhaps also to prepare the groundwork for future forms of interventions.

Higher Education Management With this, we have a second framework to classify major change approaches which have become prominent in the field of higher education management. While I do not attempt to present a definitive classification, and while I would like to emphasize that such classifications are characterized by a degree of subjectiveness, I should think that some examples might be helpful in the understanding of the presented concepts (see Table 16.3). In this second classification framework, change approaches are grouped by the context of application (Table 16.2): depending on how we perceive this context, we will focus on different classes of change processes; and conversely, depend-

ing on our interests in particular change processes, we will have to take account of particular contexts of analyses and action.

Concluding Remarks

In recent decades, management approaches designed to bring about desired change proliferated. In the field of higher education, many — if not most — of the more popular change approaches which found their ways into literature and practice were adopted by institutional management. This adoption did not occur uniformly, by all involved; nor did an eventual adoption take place without time limits. In fact, management approaches can be linked to schools of thought or basic professional orientation and the lifespan of particular theories is limited. There is a constant generation of ideas which are introduced, propagated and popularized — only to be replaced by new versions of ideas. The process of this history of ideas will continue, but it appears that a clearer picture will have to emerge regarding the linking of theories and regarding their concurrent use or replacement over time.

The present paper criticizes the unreflected use of change processes. Many processes are chosen without a clearer picture of the options at hand and without a deeper understanding of the pros and cons of individual processes under consideration. The choice of change processes seems to be linked to professional orientation: the disciplinary background of the key players of change processes appears to have a strong bearing on the types of the processes chosen. Furthermore, change processes appear to be selected more on the basis of their popularity than on the basis of analyzed merit. While our environments, or worlds, indeed do change, change approaches designed to respond to these environments appear to change even faster: frequently, we observe them as fads.

We are thus confronted with a paradox: while we observe that many of our higher education systems in the world have retained a strong traditional orientation with slow changes and reluctant

adaptations to changing conditions, we are confronted with ever-varying change theories. In fact, most higher education systems seem to lag behind the general economic development [Herbst, 1997], although there appear to exist exceptions [Clark, 1998; Trow, 1997]. We can argue that higher education systems eventually adapt to changing societal conditions and that a certain lag in responsiveness will, in fact, improve the stability of the system and will keep it better on course: both higher education and research require commitments extending beyond the short range. But we should also be clear on our focus: we want to change and modernize higher education, not necessarily change theories.

17

Excellence

Where performance is manifest, there is no reason to spell it out: we see it; the facts are clear, uncontested; in a 'naturally' stratified system, there is no need for deliberations. Even in competitive situations we can be gracious, generous, by upholding a satisficing stance, in grouping the performing and in separating them from the insufficient. Some margin of error is tolerated: the non-performing, minor academic among the sufficient, and the talented outsider, the non-elected intellectual.

I

This may have been the situation within academia some time ago. But the world has changed. Western societies have turned their once pyramidal architecture of the economy, as Jean Fourastié [1949] had predicted, upside down: the tertiary sector of the economy, formerly the smallest, became the most prominent one;

the industrial was replaced by a post-industrial era, diminishing manufacturing; the erstwhile dominant primary sector of the economy became capital intensive, employing the least labor. Demand for higher education multiplied as a consequence, mass higher education was recognized as a phenomenon [Trow, 1970], research universities have come to resemble engines of economic prosperity, retrenchment became a common policy, and a new entrepreneurialism took hold [Clark, 1998]. The growth of higher education is a byproduct of the general transformation of societies, and it is costly, competing with other causes worth pursuing, i.e. with localized labor-intensive activities that cannot easily be outsourced to regions where labor is cheap[1].

Because education and, in particular, higher education is seen to be tied to economic prosperity, education has become — in the language of economic analysis — a production factor with which nations compete (see Chapter 15). In the year 2000 the European Council earmarked the goal "to become the most competitive and dynamic knowledge-based economy in the world" by the year 2010 [European Parliment, 2000], a target which had to be revised only a few years later: it was unrealistic, and it was not accompanied by any substantive measures designed to pursue such an aim. Particularly the proposed "European area of research and innovation" was ineffective, in spite (or because) of the top-down initiated Bologna program, since higher education was not in the mood to reform itself: European higher education remained locked, or chocked, as Joseph Ben-David and Zloczower [1962] ob-

[1]The connex of "tertiary culture" (Fourastié), outsourcing and "mass higher education" (Trow) is a topic too broad to address here in some detail. Mass higher education is a consequence of the tertiary culture and outsourcing, but it cannot serve as a single remedy to the loss of blue color employment: jobs created through IT, robotics or new service industries (as some futurologists would claim) is unlikely to fully compensate for losses in manufacturing. The expansion of old service industries (in the health or elderly care sectors, or in continuing education, for instance) might close the gap.

served, strangulated by a self-imposed culture of rules and regulations whose effectiveness appears wanting [Münch, 2014][2].

The tie that links higher education to economic prosperity is rather tenuous [Herbst et al., 2002, 14], as the past two to four decades have clearly shown. Germany, with a relatively bland system of research universities (and associated academies), has done reasonably well economically; the same can be said of a range of other European nations. In contrast, the dominant positions of U.S. (or — to some extent also — U.K.) research universities has not found its correspondence in a prospering U.S. (U.K.) economy. With the exception of the spin-off culture, first around Route 128 (in Boston) and subsequently in the Silicon Valley (of California) [Saxenian, 1994] or the Research Triangle Area (in North Carolina), the link between higher education to economic prosperity is loose. Israel emerges to come closest to a correlation between higher education research and economic prosperity, and other nations (of the Far East) appear to move into the same direction[3].

Higher education and its offshoots have become a major industry, in spite of the loose tie linking higher education to economic prosperity. Gone are the times when there was a clear understanding, a social contract, on how to sustain such systems, and funding — or resource allocation — issues have come to dominate [Herbst, 2007]. This cultural shift affects higher education in profound ways. Research universities have slowly drifted away from their "ivory tower" image, with their pursuit of "knowledge for its own sake", to become branded enterprises to compete in

[2] It remains barely assessed by mainstream meta-science.

[3] It should be noted here that OECD lists Israel and the U.S. with the highest poverty rate (18.6% and 17.2%, respectively, 2012-14) amongst its 36 members, with Estonia, Chile and Turkey faring slightly better. "The poverty rate [as defined by the OECD] is the ratio of the number of people [...] whose income falls below the poverty line [, that is, below] half [of] the median household income of the total population." It is a relative — not an absolute — measure; see: `https://data.oecd.org/inequality/poverty-rate.htm`.

an international market of ideas and concepts: marketing takes precedence over production, rankings over self-assessment, secrecy over free communication, serviceability over scholarship, signaling over transparency, credentialing over learning or individual growth.

&

How should we assess academic productivity? Indeed, we barely know. In the old days, we had universities with few foci, to educate the clergy, the philologist and philosophers, the lawyers, medical doctors, natural scientists and teachers; and there were specialized schools in the fields of engineering, mining and architecture to cater to the corresponding needs of society. During the past 200 years, enrollment rates in Europe may have multiplied by a factor of 20 or more, and specialization and 'output' have expanded correspondingly. Growth in higher education was accompanied eventually by an increased diversity of higher education institutions and their corresponding missions [Clark, 1997; Trow, 1997]. Quality became an amorphous concept, often difficult to spot or to categorize; talent a rare resource to be scouted similar to that of soccer teams; paradigms multiplied (outside the natural sciences) in non-Kuhnian ways; publication outlets proliferated and stratified; the assessment by indicators replaced the evaluation by insight.

Research on tertiary education has not kept pace with this transformation of the educational landscape. Indeed, as the average quality of research has declined with its proliferation, research on higher education appears to have followed the same — inverse — relation. Since the turn of the millennium, European higher education research has been preoccupied in inordinate ways with the Bologna Process, a top-down initiated — and ill-fated — policy to enhance tertiary education, focussing frequently on the degree of its implementation rather than on substantive issues [Herbst, 2017]. Social processes of that magnitude are difficult

to judge outside of a framework of sampling; but one could easily assume that the normal rates of reforms within higher education would have been equally effective (with regard to the various aims pursued) as the Bologna Process itself. Some critical analyses of European higher education, including the Bologna Process, were made, but they remain a fringe phenomenon. What is lacking are empirical studies within a sensible conceptual framework of what is, and quantitative studies of what could be.

What policies stress is a focus on 'excellence', whatever that might mean. This focus is served by an a priori imputation of — rather than a search for — excellence, by the implantation of 'excellence initiatives' or 'centers of excellence'. It is also promoted by a range of pseudo-scientific ranking schemes designed to identify excellence in higher education institutions [Abbott, 2014a]: e.g. the QS World University Rankings; or the Academic Ranking of World Universities (issued by the Center for World-Class Universities of the Shanghai Jiao Tong University) [Billaut et al., 2010]. In most of these cases, a linear combination of indicator-values is used to evince an overall score of excellence, in spite of methodological deficiencies, some of which have been spelled out long ago [Fishburn, 1964, 1973] — and which render such rankings schemes almost useless [Herbst, 2005][4].

Excellence of institutions is not that easy to embrace: do we want to define it in absolute terms (as the ranking schemes above purport to do), or in terms of the institutional contribution to the learning experience, the improvement, of students or scholars

[4]My hunch is that if a student were to come up with such ranking schemes as part of a term paper in the field of operations research (or multi-criterion-decision-making), he (she) would flunk the course. Furthermore, the rankings are not transparent, that is, the transformation of empirical data (culled from various data bases) into scores cannot be traced (it is hidden from the reader) — and, hence, cannot be replicated (in stark contrast to normal scientific practice). In spite of that, reputable universities embrace such rankings, mainly because of a combination of conceit and opportunism.

[Astin, 1985]? Which performance indicators are associated with excellence and how? How does one operationalize excellence, how does one produce it? Which institutions would we want our children to attend? Is money a decisive factor to achieve excellence? Where do really creative ideas originate, and why?

The focus on excellence of institutions is accompanied by a focus on excellence of individuals. 'Talent' is spotted early and recruited even from afar. This sets off a cascade of sifting layers, of winner-takes-all processes [Frank and Cook, 2010], with the seeming aim to select and foster the gifted: schools focus on knowledge transfer rather than on the development of mind and character; tests are administered to do the sieving; pupils and students are pressured to perform rather than encouraged to explore; and test scores purport to convey the complexity of personality and prospect. There are a range of implications: assessment may be counter-productive and selection premature; success may be tied in inordinate ways simply to luck; the diligent are often more successful than the talented; indeed, talent may remain undetected; tests should primarily inform the teacher (about the effectiveness of teaching) rather than to assess the person being taught.

How did the processes identifying the creative personality work before these cascades of sifting layers were applied? Well, we have the geniuses we detected; the others we do not know (see Chapter 9). Wolfgang Amadeus Mozart and Felix Mendelssohn Bartholdy are known. Albert Einstein flunked the entrance exam at the Swiss Federal Institute of Technology in Zürich and was subsequently — after finishing high school, his successful enrollment and his studies in physics — not selected for a post-doctoral position at that institution. John von Neumann finished his studies in chemistry at the Swiss Federal Institute of Technology with average grades. Franz Kafka we might have missed were it not for his friend Max Brod. Ludwik Fleck may have remained an author

without resonance were it not for Thomas S. Kuhn [1970 (1962)] who had referred to Fleck. Walter Benjamin was not amongst the chosen, and he survives after he was driven (as a Jew) to commit suicide; Alan Turing, after serving the nation, faced (as a homosexual) the same predicament. Donald E. Knuth had the fortune to be brought up in a normal environment. Daniel Hope became a major violinist because his mother had taken on a secretarial position with Yehudi Menuhin.

Performance is unlikely to be associated with a — top-down — focus on performance. The Dada-movement, formed a.o. by Hugo Ball, Tristan Tzara, Hans Arp, Richard Huelsenbeck and Marcel Janco, was a current by artists and writers who had not graduated from an art academy (only Wassily Kandinsky had a formal education). Stanislaw M. Ulam, Stefan Banach, Hugo Steinhaus and John von Neumann did mathematics because of their inner urge, and they found themselves in informal circles, in the coffee houses of Lwów [Lemberg] and other cities [Ulam, 1991; Mauldin, 2015]. The Vienna Circle around Otto Neurath et al. [1970, 1971 (1955)] was not formed by a European Commission to foster science. Switzerland had a rich culture of fine arts, in spite of a lack of local academies. The Unix operating system [Silvester, 1988 (1984); AT&T Bell Laboratories, 1987] was not formed by a consortium to run today's laptops or supercomputers. The Rolling Stones and Beatles, Bob Dylan and Joan Baez, Doc Watson and Elvis Presley made music because they wanted to — and because some agents found them attractive[5]. Delano Meriwether, an M.D. at the Baltimore Cancer Research Center, took up track for fun to become A.A.U. champion[6]. Before elite universities had topped the league

[5]There were many fine musicians in Appalachia whom I listened to in a pub or at a local festival and who neither made the charts nor found agents.

[6]"Dr. Delano Meriwether, a 27-year-old hematologist, is stretched out on his bed watching a telecast of a track meet between the U.S. and France. He stares intently at the 100-meter dash, turns to his wife Myrtle and says, 'Hey, I think I can beat those guys'. Myrtle nods and mutters, 'Sure, honey' " [TIME Magazine,

tables, the provincial and ethnical played a major part[7].

The longing for excellence has economic implications, and it is partially tied to an inability to assess, to use one's own judgement. Our own assessment is delegated: to Guide Michelin or Gault-Millau, to the Academic Ranking of World Universities, to Sotheby's or Christie's in the case of fine arts, to Robert Parker with regard to wine, to the Pritzker Architecture Prize committee, to science journals. The external assessment takes on the role of a 'signal' (as the economists would say), the signal serves as a proxy for the original, and the reading of the signal is a substitute for one's own appraisal. This has advantages: the costly, time-consuming evaluation that depends on know-how and background can easily be replaced by a cheap — and quick — selection process; and it is, to a certain degree, also necessary, in that we depend on it, in that we cannot avoid such signals (see Chapter 14); but it has also severe drawbacks: the expensive or exalted is seen as a substitute for quality; the exclusive or faddish takes precedence over craft or talent. Instead of stumbling into a magnificent trattoria at the gate of the remote *Valle dell'Orco*, south of the *Grand Paradiso* mountain range, the *Trip advisor* or the Guide Michelin will have to be consulted to find a restaurant in Milan or Rome; musical performances depend on large audiences, even if the people in the concert halls cannot distinguish between the good and the exceptional, cannot pass a blind test[8]; the same can

July 12, 1971].

[7]"The writers who shaped and expanded my sense of America were mainly small-town Midwesterners and Southerners", wrote Philip Roth [2017], "writers shaped by the industrialization of agrarian America, which caught fire in the eighteen-seventies and which, by providing jobs for that horde of cheap unskilled immigrants, expedited the immigrant absorption into society and the Americanization, largely by way of the public-school system, of the immigrant offspring".

[8]Joshua Bell performed at Union Station in 2007 in Washington D.C.: "[t]o

be said of art exhibits[9]; aspiring, gifted natural scientists cannot find proper employment in academia because their work is speculative (theory, hypothesis driven) rather than merely empirical (or computational) and, consequently, not accepted by major journals[10].

II

Science, the acquisition and study of knowledge, is tied to that what society seeks to know. Research positions follow demand, occupational patterns mirror what is dear to society. The market model of professionalism holds. An imbalance between supply and demand of positions will lead to some form of rebalancing or adjustment, eventually at least, to higher wage prospects and the intrusion of 'outsiders' into fields with labor demand; or, in the case of excess labor in given domains, to lower wage prospects and an associated flight of professionals into other métiers. This has implications, directly or indirectly, for the enrollment of students and for the appointment of faculty and staff in higher education.

In basic sciences, universities try to employ faculty in promis-

make a long story short: almost no one noticed him" (Time magazine of September 30, 2014).

[9]One of the most telling exhibitions that I have seen was on German expressionism in the Tel Aviv Art Museum in 2012, "Utopias on Paper: Prints and Drawings from the Museum Collection" [Hadar, 2011]. Although I thought that I was familiar with German expressionism and its history, a fair number of the exhibited artists, perhaps twenty percent, I did not know: eighty percent had survived, and twenty percent had perished from the roaster of acclaimed artists, in spite of the fact that their work was — in my assessment — as good as that of their more successful peers.

[10]I am not talking here of wacky science, of communicating with extraterrestrial units, or of transferring the content of one's brain onto a computer chip, of trying to bring about eternal life, of conversing with the dead. Most of the madmen proposing these views are well established in academia or society; I am talking about science that is 'normal', that can be verified (by the scientific community) within an ordinary time frame.

ing fields. Some of these fields are known and large and they adjust to new currents and insights almost imperceptibly and bit by bit. Some of the fields are novel, requiring new funding, and they are normally formed gradually through the cross-disciplinary interplay of established fields. Finally, some fields become outdated and are being replaced by newer areas of inquiry. In applied or professional fields, the pattern of gestation, reorientation or abandoning of disciplinary orientations is similar to the one just sketched. Some fields are upgraded from trade or art schools to become academic; some domains of inquiry are reoriented, or merged in a cross-disciplinary way, or split to serve specializations; and some fields are downgraded and loose their former academic status.

Remuneration of professionals follows this pattern to some extent: it is generally low where there is an oversupply of labor and high where there are labor shortages. However, other factors regarding pay seem to play a role as well. Neoclassical economic theory posits that wages reflect the marginal productivity of the wage earner; if we find (in an equilibrium situation) wage differences, they must be due to differences in productivity. In many Western countries we observe significant wage differences between groups of professionals, and it is unlikely due to productivity differentials: medical doctors or lawyers commonly earn more than engineers or scientists, perhaps by factors of two to three[11]. These wage dif-

[11]Regarding marginal productivity: Wages that differ by factors of two or three are one thing. Remunerations that differ by factors of 50 or 100 are something else, but they do exist: CEO's of major companies earn that much more than (e.g.) professors of economics at leading research universities. Sherwin Rosen [1981] has described skewed distributions of income where the few on the top garner extraordinary income (in sports, the arts, in business). Rosen argues that a talent ranking T (an ordered set) is mapped to a remuneration scale R, that is, $\varphi : T \to R$, whereby, for any $a, b \in T$ and $a \succ b$, $\varphi(a) \geq \varphi(b)$. Furthermore, small ranking differences within T may translate into very large remuneration intervals within R. My argument is that, in reality, there do not exist such mappings. The correlation between T and R is likely to be positive, but not exceedingly high, and the skewness of the correlation lacks meaning (see also p. 165f):

ferences should draw talent into high paying occupations, affecting eventually a more equal distribution of wages and talent. But this does not happen: M.D.'s and lawyers are organized like gilds or cartels, restricting the access to their profession and regulating their fees[12]. In the case of M.D.'s, costs of services increase with the number of M.D.'s (because M.D.'s steer the demand to some extent) and governments generally regulate their number. Furthermore, both M.D.'s and lawyers have direct — private — client contact wheres engineers and scientists do not: they normally deal with institutions. The two classes of factors, cartels and clients (principal), are primarily responsible for wage differences[13].

One aspect of this specific market definition of labor is the role ascribed to professions without private client contact. Basic sciences are fostered in research universities[14] and financed — directly and indirectly — mainly by the respective public. Basic research is necessary for downstream developments, it is (in large measures) a public good, and it is financed by the public because it serves society. This view is well established with regard to the classical — natural — sciences (including mathematics), and the argument can be extended to Stem-fields[15], the humanities and social sciences, and the applied disciplinary orientations as well. The number of professionals (or scientists) working in the various domains is directly related to their demand, that is, to the value a

it normally can be described on the basis of rigged markets.

[12]This has not always been so; see e.g. Jarausch [1990].

[13]There are, of course, wage differences between men and women (in Switzerland, they are documented to be below 10%). On the whole, these differences are not due to outright discrimination but to a subtle mix of causes. The primary reason for wage differences, it appears, is the linking of profession and gender: in professions where women have traditionally been dominant, wages are generally lower (also for males), and it will take time to rectify this situation.

[14]Both public and private types of institutions are non-profit oriented. There are no profit oriented higher education institutions engaged as research universities.

[15]Science, technology, engineering, management.

society ascribes to their work. If professions need professionals, a corresponding educational setup will normally guarantee that the required labor force will be formed.

Problems arise where societal issues are not addressed because the labor force does not match those. Labor demand is dependent on specific institutional setups which 'call' for this labor, and if the call is lacking societies may be left with important — unresolved — issues[16]. Environmental protection activities are only possible within the context of corresponding positions: most economists work for banks or insurance companies, not for NGO's, public planning agencies or labor unions; basic research in the field of public economics is dependent on curricula which aim to train applied public economists — and on positions where such graduates would find employment; et cetera.

Problems also arise when talent is not being recruited to address particular issues, when the matching of issues and problem-solvers is amiss. C.P. Snow's "two cultures" did not distinguish between two sets of issues to deal with. But this appears to be the case when issues are approached: problems within the STEM-fields (natural sciences and engineering) are dealt with by people whose talent is rooted in 'structural' thinking, and issues within the social sciences are primarily delegated to people whose training has focused on languages and socio-political skills[17]. The juncture for this division of labor takes place early on, perhaps even before high school, and it is wrong: it may do injustice to aspiring professionals; but it is wrong primarily because the frequent matching of issues of the social sciences with problem-solvers not

[16]Or we would have to argue that un-addressed issues are pseudo-issues or non-existing.

[17]Socio-political skills should not be less prevalent with people who have the talent and training of structural thinking. Furthermore, it appears that the inclination to approach social problems with the help of structural thinking, with operations research and the applied mathematical sciences, has diminished in the past half century (in relative terms).

specifically trained in structural thinking is clearly deficient and does not serve the problems at hand. Social science problems are inherently complex problems, and the handling of complex problems is enhanced through structural thinking[18].

Societies can only attempt to address problems for which they provide the required know-how and positions, and in a range of cases, it appears, societal problems are simply left to remain unattended: they fall outside the spectrum of feasible issues, outside that which is admissible in terms of the dominant social theories. In contrast, some technologies or customs, tied to the individual consumer (and the market credo), spread like infectious diseases or wildfire: suburbia, urban sprawl and private transportation; air, water and marine pollution; social media; botox and cosmetic surgery. What is technically possible will be done: implications are rarely assessed on an a priori basis, they are borne.

Who has been charged with defining, with specifying the academic spectrum? Ideally, it is academia itself [Polanyi, 1958]. But the task of specifying is not that simple: it depends on funding agencies, on research programs, on student enrollment patterns, on employment and labor demand. An astute academia would look into the future, establish the curricula and research vessels which are deemed to play a role in the periods to come, and convince employers to use the services of its graduates. In many cases, this had worked[19]; and in some cases the process seems to fail[20]: societies appear to have the labor force they deserve.

[18] There are a range of cross-disciplinary programs focusing on the mathematical social sciences, but they form a tiny minority of the corresponding curricula.

[19] The information technology (IT) revolution was clearly instigated by research universities (e.g. MIT, Stanford, Cal Tech, Berkeley, et cetera), and its products generated novel consumer markets. The new biology follows this path.

[20] The environmental sciences were also a product of research universities, but their impact is clearly limited because environmental sciences lack a broader consumer market — and they are dependent on political clout.

18

Productivity

The question on how to steer the foci of academic — or societal — inquiry is normally associated with the assessment of academic productivity in a narrower sense. Academic work, i.e., teaching, learning and researching, can be partially described in quantitative terms, and it forms the base of a sociology of science — or a meta-science of science ('scientometrics') or higher education institutions ('institutional research'). These approaches have gained in importance during the course of emerging science metrics and performance measurements.

Academic (or research) productivity is frequently being defined in terms of indicators based on bibliometry. In such cases, scientometric performance measurements (based on the Science Citation Index) can be used to asses it empirically [Garfield, 1956]. Generally, such assessments focus on the individual researcher (as a base for employment or promotion appraisals), on scien-

tific journals or academic departments (in the context of self-assessment or peer-review studies), and recently on academic departments and institutions (i.e. university rankings), but it is rarely used to elucidate the link that ties academic productivity to the environment of academic work.

Research performance is dependent on a range of factors or circumstances: individual resources such as talent, educational background, age or work ethos; institutional culture and forms of intra- and inter-institutional — or domestic and international — cooperation; disciplinary or inter-disciplinary approaches; infrastructure and monetary resources; degree of autonomy and reporting structures, at the levels of individual institutes or entire institutions; paradigm dominance and the prestige of authors; luck and serendipity [Merton and Barber, 2004]; et cetera. These factors or circumstances, in turn, might differ depending on the aim of research: applied research, or development, calls for separate working conditions — or takes place in a different cultural setting — than so called 'pure' research or basic science; some research questions require an elaborate and large scale infrastructure; and crash programs — similar to a "Manhattan Project" — are altogether a different matter.

A common focus of studies on innovation or research performance is the focus on the genius, on "brains" [Waldinger, 2015], on the "star scientist" [Rosen, 1981; Azoulay et al., 2010; Abbott, 2014a]. Associated with these foci is the focus on how genius rubs off on the immediate peers, or how "star scientists" are shaped by or influence their environment[1]. Successful scientists breed successful scientists. But it is also known that successful scientists,

[1]A " 'Star scientist' may be attracted by more productive departments and at the same time enhance the departments' productivity. Similarly, high quality departments attract more funding for physical capital [i.e. equipment and infrastructure], which further increases productivity. Finally, good scientists attract funding for additional physical capital" [Azoulay et al., 2010].

as mentors, are chosen more by their graduate students than the other way around. If success of the mentor is manifest (ex post assessment), the choices of graduate students may be guided opportunistically; if success of the mentor is yet to develop (ex ante assessment), success is likely to affect both mentor and graduate student.

One under-researched question refers to the researcher-environment relationship and how this affects research productivity. In spite of the centrality of this issue, there are glaring blind spots in the respective research landscape. As Fabian Waldinger [2015] phrases it,

> [...] we know little about the effects of different inputs for the production of scientific knowledge[2].

But there are a range of things we do know. In the setting of a university[3], research takes place as an extended — and intergenerational — form of learning. Experienced scholars, i.e. faculty members (principal investigators), tutor junior scholars, doctoral or post-doctoral students, and the learning takes place in a

[2]This is all the more astounding because the research enterprise is costly, and concerns regarding effectiveness would dictate that output (appropriately measured) be maximized relative to given inputs. Effectiveness ought to be the concern of higher education officials, that is, to make the most with the given resources (a concern for efficiency, i.e., for a minimization of costs relative to given — chosen — output levels, is frequently upheld by politicians) [Herbst, 2007, Appendix B]. Effectiveness can only be attempted if one understands the systemic — socio-economic — aspects of the research activities. To assume that research teams work at the production possibility frontier and, to raise production, more inputs are needed, is shortsighted and misleading. Because researcher-environment relationships are barely understood, production functions are difficult to sketch. However, there are strong indications that research effectiveness differs among environments and that some research universities, and some higher education cultures, are more effective than others [Herbst et al., 2002; Herbst, 2004][Herbst, 2007, Appendix C][Herbst, 2014a].

[3]As opposed to research in the setting of research academies (or dedicated research institutes) — such as the Max Planck Institutes, the CNRS, et cetera.

team [Ehrenberg and Kuh, 2009]. Advanced research never has the form of a simple know-how transfer in one direction, from teacher to student. All in the team profit from working together, junior and senior members. Junior members profit from the experience and guidance of their doctoral parent or senior research associates, they profit from interacting with each other, and senior members profit from the seeming naiveté and the 'funny' questions of junior members, or from their know-how in new technologies and their — possibly different — disciplinary background[4].

Inter-generational research is a native form for universities in that these are charged to educate and train future professionals, scholars and faculty members. But it is being questioned, implicitly at least, whether that form of research is also the most proficient. Not all research cultures adhere to an inter-generational model centered in research universities. In some countries dedicated research institutes (DRI) are the locus of research, and universities are often seen primarily as training institutions. In such cultures, research institutes (DRI) or academies are meant to assemble the more experienced researchers. Dedicated research institutes are less encumbered by the burden of teaching and they work, by their design, with more mature professionals. But they are also likely to suffer from inherent subordination problems, restricting the autonomy — and creativity — of a good portion of researchers, and the constant inflow of fresh blood and turnover of talent is comparatively constrained.

The question which of the two models presented is better suited to foster research, the inter-generational model of the research university, or the intra-generational model of the dedicated research institute or academy, is difficult to answer. Obviously,

[4]Depending on the research culture, there is also a division of labor which is frequently detrimental to the effectiveness of research (with the exception of large research enterprises which require this division of labor): senior members manage research, and junior members do the actual researching.

the aims of research, pure or applied, and the type, 'big' or 'small', play a role. Furthermore, there is the question to what extent the two models are exclusive and to what degree, and under what circumstances, an overlap appears possible and advisable. In countries where the second model has (or had) some credence (in the USSR or Russia, in Germany, France or Italy), there is a certain tendency to link research institutes with universities, and in countries where the first model is prominent (U.S., U.K., Israel, Switzerland) dedicated research institutes exist. Lastly, where research is 'big' and 'pure', a sharing of a science infra-structure (as provided by CERN, for instance) is common.

If the question regarding inter-generational (i.e. university-based) versus intra-generational (academy or dedicated research-institute-based) research were insignificant, differences in research organization would not impact on research productivity, and the observed differences in research organization could be seen as stylistic, brought about by the different histories of nations and higher education or research systems. On the other hand, if differences of research productivity can be observed [National Research Council, 1995; Cest, 2002; Ostriker et al., 2011][5], they might be attributable, in part at least, to the way higher education and research is organized. If such a link is hypothesized, ways should be found to attribute differences in research productivity to the organization of research [Hurley, 1997].

Linking research productivity to the organization of research (of universities), we may distinguish four foci or layers: (i) the core (or nuclear) research team, lead by a principal investigator (PI); (ii) a collection of core research teams, such as institutes or departments; (iii) the university as such; and lastly (iv) virtual associations (going beyond the physical campus). Productivity consider-

[5] See also: `www.socialsciences.leiden.edu/cwts/products-services/leiden-ranking-2010-cwts.html`.

ations can be tied to each of these layers. Furthermore, regarding the allocation of resources, we have to deal with substitution issues, e.g. (i) fewer principal investigators, larger research teams and smaller departments versus (ii) more principal investigators, smaller research teams and larger departments [Herbst et al., 2002; Herbst, 2004][Herbst, 2007, Appendix C]. For simplicity, I shall restrict my reflections primarily to the first three layers.

Let us look at the first of these layers. Addressed are core research teams led by a principal investigator[6]. Team size is influenced by a range of factors, not the least by the principle investigator: senior researchers, or researchers in applied fields, may lead comparatively larger teams (because of the particulars of the research field, their status, their acumen in grantsmanship), but larger teams may not be more productive[7]. Core research teams need a particular size to fulfill their function to educate doctoral and postdoctoral students and to exploit some economies of scale, but beyond a certain point, diseconomies of scale become apparent.

Scale economies are defined in terms of an input-output relationship. As the size of the research group increases initially, the group or unit profits in various ways: team members can be recruited with the necessary background and resources to pursue the envisaged research and to reach critical mass; specific roles can be assigned and a certain division of labor can take place; team members have a common interest and share (or learn to share) the core of a 'scientific language' or tacit knowledge; communication can take place in an affective stimulating atmosphere. The research unit will eventually reach a composition and size that suits its task.

[6]That is, an independent researcher with the rank of an assistant, associate or full professor.

[7]Measured as output (e.g. papers, patents) or outcome (e.g. citations, citations per paper, citations per patent) per researcher.

As the research group is allowed to grow further, beyond the size which is optimal for its mission and type of research [Galison and Hevly, 1992], per caput productivity will eventually go down: the internal communication will become more time-consuming or less quality oriented, the 'distance' between researcher (i.e. doctoral and post-doctoral student) and principal investigator (PI) will increase, and the group itself might loose cohesiveness, both in aim and in structure; the pressures to subdivide, if only informally, will rise; administrative regulations and overhead will accumulate and overall quality will suffer: the research unit might grow well beyond an optimal size and might become too large to be most effective, at least from the point of view of the neutral, external observer[8].

A range of scholars have studied economies of scale in the context of research production and their findings are generally ambiguous [Fruton, 1990; Hurley, 1997; Coccia and Rolfo, 2002; Carayol and Matt, 2004; Coccia, 2005][9]. For the most part, scale economies could not be found, that is, research output appeared to be independent of the size of the organizational unit under investigation, or actual diseconomies were found: smaller units had a higher per caput research production than larger units. This am-

[8]Bloated research groups, and sub-optimal research morphologies, become a matter of choice when extra-scientific aspects (personal income, social status, etc.) play a prominent role in the lives of scientists. Furthermore, ingrained higher education cultures or performance-funding (in various forms) may foster this unhealthy tendency via misplaced incentives, for instance, such as focusing on output measures by principal investigator (PI), a very common mistake of improper normalization by even reputable observers or funding agencies, instead of output per researcher as such (PIs, whose names are listed on most publications produced within their group, naturally produce more 'output'; or: PIs will have an incentive to lead bloated research groups). Many faculty members fear that they have no real choice, they feel 'forced' to play this academic game; others, profiteers of such systems, gladly conform.

[9]The ambiguity may have to do with the form of their chosen tools: correlation or linear regression analysis.

bivalence may be due to two factors: (i) a disregard for the non-linearity of economies of scale, and (ii) a disregard for agglomeration economies next to, and apart from, scale economies.

Agglomeration economies need to be distinguished from economies of scale. In the urban or regional context, agglomeration economies can normally be spotted when there are possibilities to reduce transportation — or access — costs, ease or streamline matching mechanisms, or exploit knowledge spillovers [Fujita et al., 2001; Fujita and Thisse, 2002; Glaeser, 2010; Duranton et al., 2015]. This is why certain cities thrive, why we observe knowledge spillovers of research universities, or why the Silicon Valley has become so competitive [Saxenian, 1994]. The very same phenomena work within the environment of research universities. Easy — informal — access to unfamiliar expertise or different domains of knowledge spurs innovation. The same is true for the convenient *ad hoc* matching of problems and solvers. Furthermore, in the course of such activities, knowledge spillovers will occur that affect the way how scientific fields are perceived, defined and practiced. Environments or academic cultures that nourish agglomeration economies have a competitive edge over those which do not pay enough attention to such phenomena — or only in insufficient degrees.

Universities that successfully exploit agglomeration economies need not do so in a conscious, premeditated manner; but it will help if they pay attention to this phenomenon. Most likely, they will follow a course that has been outlined for them by their higher education culture, and the same will apply for universities that do not properly exploit agglomeration economies. For a university to change the course which has been carved out by history and culture, or for a university to retain a course that may seem outmoded by current mores, it is necessary to understand the forces that foster productivity. In fact, universities are embed-

ded in historically grown higher education cultures which shape the behavior of their members, their structural setup, their morphology [Bourdieu, 1988], their management to a high degree, and the link with productivity is mainly incidental. However, a focus on productivity will necessitate a critical analysis of the various systemic associations, and hence also a critical assessment of the relevant higher education culture.

If universities or higher education policy agencies want to focus on productivity, they will have to pay attention to aspects and factors which tie higher education institutions to productivity. Part of these factors relate to structural — morphological — aspects of higher education. We may formulate the following propositions:

> *As enrollment rates (in the course of mass higher education) grow, the higher education landscape needs to diversify* (see p. 132 above) [Clark, 1997; Trow, 1997].

Diversification will imply foci on various strands of higher education institutions, in particular research universities and teaching institutions of various missions.

> *As research universities face funding constraints, a trade-off between (i) better faculty-student and faculty-staff ratios (as quality indicators) versus (ii) growth presents itself; universities should be led by quality, not growth* [Herbst et al., 2002].

Better faculty-student and faculty-staff ratios are costly, but they have also advantages: in the context of research universities, competent faculty will acquire research grants (so called third-party funds); salary differences between senior (non-faculty) researchers as substitutes for faculty members are frequently not that substantial or significant; better faculty-student ratios help

to reduce wasteful dropout rates and to raise standards of education; and improved faculty-staff ratios increase per caput research output (both qualitatively as well as quantitatively).

In the case of the nuclear research group and the assessment of economies of scale, per caput output will peak in a team normally not larger than ten members (i.e. the faculty-staff-ratio will be roughly 1 : 10); larger teams are characterized by reduced per caput output (that is, by diseconomies of scale). If research universities are guided by this insight, this has direct — positive — implications[10].

> *As research universities pursue quality, they need to control the growth of enrollment (in order to match their academic offerings with their resources)*[11].

If growth (of students at the various levels) is not controlled, quality of education and research is bound to suffer.

> *As research universities focus on decent faculty-student and faculty-staff ratios, they will generate opportunities to reorganize — and reorient — their organizational structure: smaller core teams imply more faculty members, larger departments, inter-departmental institutes (normally), and the — eventual — exploitation of agglomeration economies* [Herbst et al., 2002].

Smaller research teams appear to be anathema in a continental European — or Humboldtian — higher education culture, because faculty members derive their social status frequently from their

[10] In the U.S., decent research universities normally have faculty-student ratios of roughly 1 : 20; very good research universities have faculty-student ratios of circa 1 : 10. In Europe in contrast, faculty-student ratios are deficient in comparison by factors between 4 to 8 [Herbst et al., 2002; Herbst, 2014a].

[11] The legal base for controlling enrollment and growth goes back to a ruling by U.S. Supreme Court Justice Felix Frankfurter, concerning the "fourth academic freedom" (in the Sweezy vs. New Hampshire case, U.S. 234, 1957). There are a range of first-rate institutions which follow this pattern (they practically do not grow over years): MIT, California Institute of Technology, Weizmann Institute.

role as "chair holders" and heads of a group of subservient researchers (doctoral and post-doctoral students)[12]. The perspectives of the faculty and those who manage or govern universities need not match, and if differences persist, a realignment of aims and mission of the various stakeholders appears advisable.

[12]In the fall of 2017, President Lino Guzzella of the Swiss Federal Institute of Technology in Zürich issued a call to increase the number of faculty by roughly 20% and to improve in this way faculty-student and faculty-staff ratios (see: `https://www.ethz.ch/content/main/en/news-and-events/eth-news/news/2017/11/retreat.html`). The idea to increase the number of faculty (relative to the number of students and staff) has been around for decades [ETHZ, 1991, 30-32], only to lay dormant indefinitely.

19

Growth, Change and Excess

During the past two-hundred years, political economy moved its focus gradually from scarcity, to affluence, to excess, while economics itself basically remained a science of scarcity. The focus of political economy paralleled a reality which in turn was interlinked with an "image" of that reality, as sketched by economics, political science, and sociology; and it was this interlinking, this implicit oscillation between description and prescription, between scarcity and excess, that shaped reality as we experience it.

&

It was Thomas Robert Malthus who predicted (in 1798) that increases in food production could not keep up with population growth, that humanity will be faced with a major trap — a "Malthusian trap", as it was later called. Subsequent generations were basically busy arguing that he was wrong: ill-informed regarding the relation between agricultural productivity and pop-

ulation growth, and much too conservative with respect to the potentials of food production. And yet, Thomas Robert Malthus' name endures as a household word, not exactly matching that of David Ricardo — or the modern, seminal "The Limits to Growth" [Meadows et al., 1972]; but his "Essay on the Principle of Population" was well received during the past 100 years and remains more popular than Paul R. Ehrlich [1968] (after the initial hype following the publication of "The Population Bomb").

Growth has remained a fact and a golden calf. Since Malthus' times world population has grown by a factor of seven; during the same period, grain yields (tons per hectare) have grown by a factor of four to seven (depending on the location); area harvested has expanded, but area harvested per capita has declined; meat consumption has gone up with income, substituting for 'cheaper' foods, and using cereals for feed; essential tropical rainforests are cut to clear the land for inessential grazing or palm oil plantations; antibiotics used in livestock foster the emergence of resistant bacteria; ethanol or biodiesel production use crops, not only crop residues; fertilizer and pesticides' use have greatly expanded as part of the "green revolution"; after World War II, marine catch of fish expanded by a factor of five, reaching a plateau just before the year 2000; new "industrial" foods are being discussed — based on sea plants (algæ), insects (locusts) or laboratory-grown meat — to feed future generations. For the time being, hunger is caused by poverty and war, not by the sheer lack of food. However, poverty and war are not God-given: they are caused by misappropriations of economic regulations, by greed or false aspirations, by the division of peoples and nationalism, forcing the week to abandon their occupations as farmers, fishermen or craftsmen, tradesmen, and to migrate to the outskirts of the modern metropolises, to the favelas, or to become refugees in war-torn regions in search for peace. The overconsumption of many in the Western world, communicated in the virtual media, influences negatively the livelihood of

others, and it affects our health (in the literal and elliptic senses). To conclude, Malthus may not have been completely wrong.

Growth, economic growth, has become the golden calf. Economic growth is seen as the remedy, the elixir, for most of the ailments which have befallen humanity. If the number of Chinese tourists in Switzerland declines in a given year, local tourist offices express alarm[1]; if Gross Domestic Product (GDP) increases (in spite of a stagnation of per-caput GDP, for instance), economic commentators are happy. Steady growth appears to be a primary aim, irrespective of its circumstances and meaning, and irrespective of the fact that physical growth cannot be sustained. If physical growth will have to be abandoned, eventually at least, we should do it sooner rather than later: prudence would dictate that; and if economic growth is not directly tied to physical growth, we need to distinguish the two, decode their relationship, and find accounting schemes or measurements which reflect these two dimensions.

Soon after World War II, Jean Fourastié [1949] presented in his *Grand espoir du XXe siècle* [see p. 129] a bold prediction. In archaic societies, he observed, the primary sector of the economy (agriculture and forestry) was the most populous; the secondary sector (mining and manufacturing) was second in ranking, with far fewer people involved; and the third sector (services) was perhaps the smallest of the three with the least people employed. In due time, he stated, with technological development and the associated changes in labor productivity, this pyramidal structure of the economy would be turned upside down: societies would move from a "primary civilization" (i.e. prior to the first industrial revolution) through a "transitionary period" to a "tertiary civilization" (after the year 2000, Fourastié reasoned). Indeed, this is the

[1] Mass tourism is particularly effective in ravaging localities (e.g. Venice, Barcelona) or local crafts or customs.

reality now in highly developed countries of the Western world: Fourastié's prediction has become true.

Fourastié predicted the major effects of this development correctly, but his reasoning, judged on the basis of hindsight, was deficient. He attributed this change to technological development which would affect the primary sector the most (high productivity growth), the secondary sector less (moderate productivity growth), and the third sector the least. Indeed, in his original *Grand espoir*, Fourastié predicted no major technological development — and consequently no growth in productivity — in the tertiary sector of the economy. Fourastié was familiar with international trade, to be sure, but he had not yet experienced the third industrial revolution, was not yet familiar with technological development which brought about information technologies, globalization, the 'de-industrialization' of the highly developed countries of the Western World, and an extended focus on — and a redefinition of — service industries.

Whether we are living in a stable tertiary "civilization", as Fourastié had termed it, is debatable. The fact is that a range of countries within the Western World are now primarily supported by service sector economies; many of their erstwhile manufacturing industries have been out-sourced to nations where labor is cheap; and where manufacturing was retained, it had become capital intensive, was used for prototyping purposes only, or served high-tech or specialty markets. Side effects of this development are — chronic, long-term — unemployment among the less educated, in which blue color workers are driven into poverty or into a dependency on social-security (when that exists), spurned also by new tendencies to replace service sector jobs by robots, to outsource them as well (to India, for instance), or to abandon these altogether (by delegating the 'service' to the customer).

Because markets are not efficient, the welfare state will have to pick up the tab for private outsourcing decisions (provided social-

security provisions are properly financed). From a customer's or citizen's point of view, it is deemed preferable to finance social-security rather than to pay a higher price for local produce; from a welfare-state point of view, it appears more desirable to finance the unemployed rather than to subsidize an industry. The tertiary "civilization" seems transitory, at least for the time being. As labor costs rise in 'developed' economies, out-sourcing processes to countries where labor costs are comparatively low will continue. But eventually, with rising transport costs, with smaller differences in labor costs across nations[2], local production will gain attractiveness — and re-industrialization processes might take hold, particularly if they can be based on local traditions and retained specializations.

Before "tertiary cultures" take hold, rural flight and urbanization sets in. It is not primarily that land, the native soil, can no longer support its increasing population, growing because of better health provisions; it is more that the lure of the cities, with their glitter and prospects, becomes irresistible. In old societies, in England to some extent, or in Switzerland for sure, decentralized manufacturing developed along the waterways[3]: the spinning and weaving mills in the 18th and 19th centuries were installed along the streams and rivers to harness the water which would drive the waterwheels or, later on, the small turbines of hydro-electric plants, implanting a decentralized industrialization which has survived in part until now. In more recent times,

[2]We can assume raising income, and raising labor costs, as nations move from a developing to developed status. South Korea, for instance, in 1960 had a per capita GDP (purchasing power parity, PPP) that was lower than that of Ghana, Morocco or Sénégal; 2010, i.e. 50 years later, South Korea's PPP was roughly on a par with that of countries like Portugal or Slovenia, and it was by factors higher than that of the countries mentioned initially: 16.3 (in the case of Ghana), 7.5 (Morocco), and 22.0 (Sénégal). Source: IMF.

[3]Or where the natural resources were.

in the 20th century, industrialization — or commerce, of course — did not develop simply where the water was; it formed where there was labor, and labor was where there was the expectation for work, i.e., in cities, within urban agglomerations. The driving forces behind these migratory movements were urbanization — or agglomeration — economies which promised comparative advantages derived from clustering. In Third World countries, rural flight and urbanization was frequently accompanied by overcrowding, slums, overloaded or non-existing infra-structures, epidemics and bad living conditions, et cetera, but it was also recognized that the rural-flight trend could not be reversed and that a "strategy of deliberate urbanization" was better suited to alleviate or control the situation [Friedmann, 1968][4].

Today, metropolitan areas in developing regions have populations of more than ten to twenty million inhabitants: Karachi, Dhaka, Delhi, Lagos, Istanbul, Mumbai, Lahore, Cairo, Kinshasa, Jakarta, Lima. There are larger cities in China with populations exceeding twenty million: Shanghai, Beijing, Guangzhou. It is unclear to what extent city size and prosperity go hand in hand, but there are strong currents responsible for ever-growing metropolises, and there are indications that the current Chinese government uses some form of "deliberate urbanization" as a development strategy. Population growth fosters urbanization — directly and indirectly, gradually — and urbanization fosters economic growth.

In the mid-1960s, the economist Alfred E. Kahn [1966] published an article with a title that embraced, in its shortness, one of the major ailments of neo-classical economics: "The tyranny of small decisions". When I stumbled over Kahn's paper, I knew

[4]The new migration, and current refugees streams (which are foiled by fences), have other roots: primarily war or climate change (droughts).

that he had addressed a key issue of economics, and when I ponder about these issues now, roughly half a century later, I am inclined to think that the social sciences have not progressed enough to properly steer the phenomena Kahn had described.

Kahn was looking at dynamically evolving situations — such as the breakdown of public transportation (and the railroad service to Ithaca, and Cornell University, where Kahn was teaching). As automobiles became more ubiquitous, as interstate highways were built in the U.S.[5] to serve the automobile, a process was launched whereby automobile usage, the construction of highways, the development of new shopping centers on the outskirts of cities and suburbanization, in general, proved to be mutually reinforcing. The effect was the imperilment and, subsequently, the eventual demise of the railroad which had served Ithaca[6].

We are, of course, familiar with such dynamically evolving situations: the gradual rise of Amazon and other outlets, and the corresponding decline of local bookstores; the installation of large shopping centers, *hypermarchés*, and the eventual disappearance of the food store, the bakery, around the corner. The gradual changes are caused by a series of individual consumer decisions whose implications may not have been taken into considerations: "the consumer can be victimized by the narrowness of the context in which he exercises his sovereignty" [p. 24]. The 'tyranny' shows itself then when the eventual — unforeseen — outcome is not in line with the wishes, the preferences, of consumers and citizens: the decision to own and drive a car is one thing, but the eventual disappearance of railroad service and local bakeries or food stores is bemoaned; the use of relatively cheap fossil fuels to run thermal electric plants, heating systems and vehicles appears self-evident, but global climate change is another matter[7]; the decisions to con-

[5] Following the Federal-Aid Highway Act of 1956.

[6] In 1956.

[7] Climate change is generally not denied. What is denied, or belittled (even

struct atomic plants to provide societies with seemingly inexpensive — and ample — electricity are easy to comprehend, but to realize, eventually, that "cheap" energy may in fact be very expensive and dangerous over the long term, is confrontational[8]; the buying of a hand lotion (using palm oil as an ingredient) is a small matter, but the encroachment of palm oil plants on pristine, primeval forests is something else; the use of the internet, of search engines and social media, is convenient — or even enriching — , but the implicit abrogation of one's privacy and autonomy (as we experience it with current technologies), and the prospects of a full-blown Orwellian 1984-culture, is frightening.

Environmental scientists have discovered Kahn and "small decision effects" to explain environmental degradation, the loss of natural habitats, or causes for climate change; the humanities have yet to discover the phenomenon of drifting cultures, the debilitating effects of crowd behavior. "Small decision effects" are not consistent with Adam Smith's concept of the "invisible hand" and with neo-classical economics, and economics has basically failed thus far to incorporate them into a framework of a modern science of economics.

---

by the current U.S. administration), is its man-made component, the anthropogenic impact. Current knowledge indicates that the man-made component of climate change is significant. But even if science were to be less assertive in its assessment, prudence would dictate that mankind should act as if the anthropogenic impact on climate change is substantial: for one, science in its (assumed) less assertive assessment might turn out to be wrong; and there are better usages for fossil resources than to burn them.

[8] My opposition to atomic energy (based on current technology) rests on two observations: (i) Current arrangements of the financing of atomic plants leave out the future costs associated with the storage of nuclear wastes. In this context, the argument against subsidizing so-called alternative energy sources (based on sun, wind, etc.) is hollow. (ii) Atomic plants are not insurable because (ii.a) the probability of an accident is impossible to assess (as history has shown, and because there are no statistics since accidents are rare) and (ii.b) the possible losses associated with an accident, if it occurs, can be excessively high.

Economic growth, observers state with some glee, is accelerating; change is not simply a shift, it is increasing; the "half-life period of knowledge", some experts claim, is decreasing. Economic well-being is somehow tied to economic growth, and accelerated growth appears to be preferred over steady growth. This has implications for technological or social change and impacts on how humans adapt — or on how they are expected to develop or learn. The entire discussion on acceleration, on the change of change, leaves out one rather stable factor, the human being itself. Change may be accelerating, but accelerated change may not be sustainable, and it cannot dislodge, it must somehow embrace human nature.

Human nature, however, is not accepted as something stable, as something that science or mankind should not change. Brain-computer interfaces are fancied or marvelled, simple cyborgs are built today and more elaborate ones are foreseen, machine consciousness is being discussed, mind uploading onto machines is envisioned, aging and death are fought, the colonization of outer space is planned. It appears easier to build a Fuller dome for a Human colony on Mars than to pacify and develop a war-torn Middle East, or to construct solar plants in the Sahara for the production of hydrogen. It seems more facile to define tomorrow's technologies than to design — to simulate, to test out — economies which would serve mankind better. It is far more attractive to start *de novo* somewhere, with something, than to make amends with that which we have.

The encroachment of science fiction on science is fed by a consumer culture which places an individual in the driver's seat of development whose individuality, at least in economic terms, is lacking. It is also fed by tendencies to substitute fancy words or tumid concepts for the normal or appropriate. Writers talk of "algorithmic societies" when they refer to forms of bureaucracy, to "op-

timization" when 'improvement' or 'good' would suffice[9]. Today's economies thrive on crowd behavior, and they depend on markets which feed on large crowds. The "common good" is rarely the product of an ongoing debate within society or the science community; it is no longer defined primarily by political consensus, but, more and more, by dominant markets. Domination may grow slowly and imperceptibly until it "emerges" in full bloom. Inferior products may come to dominate, and domination may be taken as a substitute for quality[10]. Furthermore, choice is restricted: consumers are frequently 'forced' to consume a product they dislike[11].

This rapid emergence, blossoming, ripening and eventual decay of products and markets, and the emergence of yet other products and markets, is a byproduct and co-requisite of rapid economic growth. It can be seen as a modern equivalent — or an extension — of Adam Smith's "invisible hand". According to Smith, there is no need to bother with the *interna* and the details of a market-driven economy: the allocation of resources, the product spectrum and consumption patterns will turn out to be just fine without further ado — thanks to the "invisible hand". Likewise, dominant markets evolve because consumers opt for their products, and there is no need to question such allocations.

[9]In all likelihood, these writers do not know the history of operations research; see e.g. Morse [1986].

[10]Domination should not be seen as the operational definition of product assessment: products ought to be assessed by different groups or people, in a pluralistic way, and depending on their background and views, the outcome of assessment will be different. There are many examples of inferior products that dominate (for instance in the domain of software engineering), but since market outcomes are seen as substitutes for assessment, there is no concept left by which to define 'inferior'.

[11]This is a side effect of lacking real choice, i.e. of some forms of monopoly (or oligopoly) situations. In such cases, consumer surveys will aggravate the problem. The 'forcing' is evident: irrespective of a consumer's preference for public transportation, for instance, locational decisions may dictate the choice of a car.

Cultural development beyond subsistence depended on a degree of surplus. This interlinking of surplus and culture appears to be in the process of a new gestation with wide ramifications, threatening cherished conceptions. Economic growth today is linked to a culture of surplus which does not appear designed to feed, to dress, to house, to educate; rather, it presents itself to serve, first and foremost, the economy. The economic system is no longer seen as providing for man's ends; it is the other way around: man's wishes and needs are 'used' in the service of the economy.

Andrew Abbott [2014b] relates some implications of this culture of growth and "excess". Excess needs to be evaluated, screened and assessed in order to be considered rationally, to sieve the sufficient from the insufficient, the good from the sufficient, and the exceptional from the good. This sieving can be overwhelming, too demanding. This is why nature and man may resort to "signaling", to a cheap substitute for the real. But even without signaling there are ways to address excess — by simply ignoring the phenomenon:

> Randomness [...] is used to handle excess [... M]any social structures have positions that will function reasonably effectively no matter who is placed in them. That this or that particular person becomes a superstar in this or that academic or artistic field is relatively accidental. The narrowing of reputational rankings into steep hierarchies results from centralization of communications [... I]f we impose artificially steep rankings on talent distributions that are in fact relatively flat, randomness inevitably increases. Luckily, it doesn't really matter who is the top soprano, the top swimmer, or the top professor of sociology. Once created, social entities can survive despite relatively random and average inputs, something quite evident in the history of monarchy and aristocracy throughout the world. Random filling of elite positions probably makes very little difference to many social structures [Abbott, 2014b, 16].

True enough, "it doesn't really matter who is the top soprano",

metaphorically speaking, but it does affect, and effectively ridicules, economic systems or theories which purportedly place meritocracy — or variants thereof, such as marginal productivity — at their center.

Economics is badly equipped to describe social systems that move, that drift, and because the dynamics of such systems is insufficiently modeled, it is hard to foresee and to evaluate future conditions. An ecological — or biologically — oriented economics, it appears, would do better (see Chapters 13 and 14). The future is not only built by us collectively, it needs to be endured.

What are the implications of futurist cultures that ignore the implicit dynamics of change, that feed on science fiction, on an uncritical faith in markets and technological solutions to societal problems, on crowd behavior? It appears that such cultures transport us back into an era of pre-modern science with its ominous, overwhelming futures. Modern economies — and modern investment theories — have taught us that only the immediate future is pertinent, not the prudent outlook over a longer planning horizon; and the lack of consensual foresight and care drives civilizations into gloomy times. The modern predilection for futuristic science and technology appears not to help, on the contrary: it seems to make mankind even more vulnerable than it already is.

Growth or change have far-reaching implications which ought to be understood as best as we can. Foresight, planning, ought to be coordinated with the rate of change, and the higher this rate "the further one's headlights must throw their beams" [Godet, 1987] (see p. 10 in Chapter 2), the more societies become dependent on decent forecasts and future-scenarios. The future should not simply 'emerge', be the unforeseen result of small decision effects, of drifting economies, of crowd behavior, requiring ex-post corrective measures: it should be pro-actively imagined and be a product of reflected societal choices (that is, supported by scientific insight

and the constant development of the various academic disciplines — see Chapter 17).

20

Form and Content

As a noun, 'form' refers to that which has form, shape, body, configuration, composition, structure: form is matched to its referent. As a verb, 'to form' refers to the formed. Form does not normally stand alone; we conceive it as part of a pair of related concepts: that which is given form, molded, arranged, constructed, fashioned; and the form of that.

Whether the concept of 'that' is discernible without a form is debatable: at least, the detachment of form from its referent is intellectually challenging as the second of the ten commandments, the ban on images of the divine, has taught us. In generic terms, we may hold a notion of a house, a cat, a car, and we evoke in our minds respective pictures. We think, we imagine, we describe in terms of images [Boulding, 1961]. The linking of referent and form helps us to perceive, to understand, to communicate, if only imperfectly because the matching of referent and form is both indi-

vidually and socially construed. A referent calls for a form; communication allows us to calibrate images and the calibration of images serves communication; and the cultural ban on divine images calls for constant scrutiny and moves into eternity the elusive truth.

A referent is tied to a form, or better yet, a form is ascribed to a referent, if only temporarily so. Our earth was once seen to be flat and she has become, in line with modern physics and evidence, round. Some attributions are characterized by extended time frames, by a long endurance of paradigmatic truth, and some are revised relatively frequently [Kuhn, 1970 (1962)]; some are fairly singular, shared by almost all, and some are pluralistic; but ascriptions, attributions are what we are talking about when we have the form of a referent in mind, a model of a phenomenon, an image, descriptively or prescriptively, not the referent itself. Truth (outside the domain of mathematics or logic) is a matter of experience, of empirical knowledge.

The early sociology of knowledge posited that forms, mental forms, theories, are ascribed to referents in ways that reflect the view of those who ascribe. Ascriptions are not necessarily personal, individualistic, but are said to be socially conditioned, linked most prominently to the "social class" or the "school of thought" to which the attributing author belongs. Marxists held this view, and many of today's social philosophers, more or less, may concur. The linking of referent, form and ascription is a delicate matter, and it touches on the notion of paradigmatic truth, particularly in the natural sciences. It may even encourage academics to write on topics for which they clearly lack the foundation; and they appear to think that an elucidation of such topics is up to their own hermeneutic, that the laws of nature can be interpreted as a social construction (of those who concur)[1].

[1]Alan Sokal became so annoyed by reading the texts of contemporary social

Ascriptions are difficult to justify [Motterlini, 1999]. "Taste, not argument, guides our choice of science; taste, not argument, makes us carry out certain moves within science [...]" states Paul Feyerabend [p. 117f]. Ascriptions are often tied to specific schools of thought or practice, particularly as they concern the 'soft' or the applied sciences, the social sciences or the humanities. They are not tied to a grand set of criteria by which to distinguish between — and "demarcate" — feasible or infeasible positions (the "goodies" versus the "baddies"), and most scientists or engineers do follow their metier in a tacit manner, in the sense of "science is what scientist do"[2] — without explicit normative notions, without having enrolled in a course in the philosophy of science, without having read Ludwig Wittgenstein, Michael Polanyi, Karl Popper, Thomas S. Kuhn, Imre Lakatos or Paul Feyerabend.

Form as such, alone, without ascription, appears non-existing, at least in the empirical world. If we perceive, describe, picture, we give form to a phenomenon; if we design, mold, configure, shape, arrange, organize, frame, construct or plan, we give form to an artifact. However, there is form in the abstract, and we can envision it through the sciences of the artificial, through math-

philosophers like Jacques Derrida, Bruno Latour or Jean-François Lyotard that he devised a scheme, a trap, a hoax by which to expose nonsensical positions of many fashionable intellectuals [Weinberg, 1996; Sokal and Bricmont, 1998] (see: `http://www.physics.nyu.edu/sokal/`): it became known as the "Sokal Affair". If representatives of today's intelligentia should hold the notion that physics is a matter of interpretation, he suggested they might jump from the window of his upper floor faculty office at New York University, in order to test their theory. The major point, however, is not the interpretation of post-modern, "deconstructionist", or even earlier social philosophy as such. More important — and more damaging — is it that concepts, that links between form and referent are being introduced which cannot be operationalized, which are not tied to the empirical world, which do not make sense, and which are clearly false or incomprehensible [Carnap, 1931].

[2]The phrase appears to have been used in the 1950s, e.g. by Warren Weaver (in the September 1953 issue of *Scientific American*). In my memory, I trace the phrase back to C. West Churchman.

ematics, through logical structures; and we can compare forms, play with them. Forms which we perceive as being tied to one phenomenon we rediscover in seemingly unrelated phenomena, leading to the hunch that such phenomena are tied by common underlying laws. Forms evolve, follow rules, appear to be characterized by ideal-types, by their own æsthetic.

In the early 1980s I saw a documentary movie by Heinz Bütler on a community of artists living as patients in a psychiatric clinic with the name of Gugging, just outside of Vienna, in Klosterneuburg (*Zur Besserung der Person*, 1981). I have always been interested in art, but I have become disenchanted with the art scene, with its pretentious self-understanding and market orientation and, while living in the Southern U.S. (in the 1960s and 70s), found other foci for my eyes, such as the photographs of the Farm Security Administration, found in the Library of Congress (in Washington D.C.), or the quilts of exceptional beauty (which I collected), done by women (of various occupations) lacking any artistic training. Bütler's movie introduced me to a world I had barely heard of (in spite of my knowledge of Adolf Wölfli) and, by chance, I was able to view an exhibit subsequently of the work of Gugging artists, shown in the *Museum Moderner Kunst* in Vienna in the summer of 1983.

I can vividly recall the deep impression that this show made on me, and I decided to visit the clinic. The visit took place in the fall of 1983; I took photographs of patients — and of the setting — with my Widelux and Sinar cameras; I talked with Leo Navratil [1983], the director of the clinic, and with patients; and I bought a number of works of art, drawings and etchings by Philipp Schöpke, Rudolf Horacek, August Walla, Johann Hauser and others. This *l'art brut* (outsider art), as it became known after Jean Dubuffet, an early admirer and collector, was used by Navratil [1998] (following others) for diagnostic and therapeutic purposes, but he was very

conscious of the artistic value of the works of his — schizophrenic, psychotic or depressive — patients who had no background in, or knowledge of, 'cultural' art.

What made the art of Gugging — or what makes good outsider art — so special is its enormous expressiveness which goes far beyond what is known in established fine art: Munch's "The Scream", or even Picasso's "Guernica", appear tame in comparison. The linking of content and form is so immediate, so telling and revealing, so obsessive, so individualistic and unique as to be intrinsic. What Kandinsky [1912] claimed as the essence of art, the *innere Notwendigkeit* (the inner need or urge, the internal or innate necessity) to express, stands at the center of *l'art brut*, forms its core[3]. The translation of content into form by the author, the specific ascription, is done in a handwriting which is unique, unaffected by stylistic conventions used by others — such as the artist-patient working next door. What one perceives as a characteristic of high art, namely the specific language in which the work is composed and by which it can be recognized, is far more symptomatic of outsider art. The mutual influence which characterizes the work of artists belonging to a given school of high art appears to be absent in the case of outsider art: Gugging artists like Oswald Tschirtner, or others like Josef Wittlich or Willem van Genk, remain singular[4].

Outsider art is not a replacement for, or an alternative to, high art; the strong exponents of *l'art brut*, however, are truly genuine and compulsive, 'artless' one may even claim, unpretentious.

The Bauhaus, without doubt and in spite of its relatively short lifespan from 1919 to 1933, was one of the most influential design

[3]To what extent art can be seen as an expression of an inner need, instinctively guided, libidinous, is open to debate; in the case of *l'art brut*, however, this interpretation is not that far off the mark.

[4]Since my erstwhile enchantment with *l'art brut*, outsider art has become insider's art: an object for enthusiasts as well as collectors.

academies — and perhaps 'the' singular art school of the 20th century. It was founded in Weimar, moved to Dessau in 1925, was forced to relocate again, to Berlin in 1932, and had to close there in 1933.

The Bauhaus was a design school, it may be seen to epitomize modern architecture, product design and typography, but it was only part of a broad spectrum of movements which, together, started to reinterpret the various arts and crafts, first perhaps with the forming of the German *Werkbund* (1907). The Bauhaus only partially mirrored the spectrum of movements extending from the U.S. to Western Europe and the USSR, ignoring mostly (with exceptions) the literary focus of Dada, Expressionism and Surrealism. Instead, it dwelled on a visual syntax of basic forms pursued also by De Stijl, the Futurists, and the Constructivists; and it bridged the various disciplines to focus on a common culture of design, a *Gesamtkunstwerk* (an artistic synthesis) as it was later called. Apart from a short period under the leadership of Hannes Meyer (1928-30), and contrary to common notions, the Bauhaus cannot really be seen as a stronghold of functionalism, but it developed and handed over these seeds to subsequent generations. The Bauhaus was, no doubt, style-forming and innovative with regard to its curriculum and didactic approach, and the impact of the *Neue Sachlichkeit* (New Objectivity) extended way beyond the design professions to embrace even philosophy [Carnap, 1931]. This blossoming of a design culture came to an erstwhile end when the Nazis took power in 1933.

Because the Bauhaus was part of a broader movement, remnants of this culture — in architecture, industrial and graphic design — can be found in various countries; and the legacy of such movements affects curricula today around the globe. The Bauhaus was associated with modernity, but modernity is not necessarily perceived as a contemporary movement: modernity, by various ac-

counts, is a process of the past, being followed by post-modernity[5] and subsequent — future — developments. Whether this makes sense is debatable. If the gist of the Bauhaus, of modernity, is seen as stylistic, then we can assume a definite time-dependency of a modernistic style. If, on the other hand, the essence of modernity in the design professions is a certain philosophical base, the time-dependency of ideas is not that strong and these might very well survive, like many ideas and ethical commitments.

In the late 90s I was involved with others to organize an exhibit of the photographer Irmel Kamp-Bandau [1994] on "Tel Aviv Modern Architecture (1930-39)" at the Swiss Federal Institute of Technology in Zürich. In preparing the exhibit, we were thinking about speakers who could introduce the show at the opening, and we finally settled on a scholar from the humanity's faculty. This appeared to be a good choice: the person selected was very familiar with the White City, and he was deemed to put this experiment in architecture and city planning into a broader context.

I was charged with preparatory talks with the professor but was staved off a number of times. Eventually, the opening took place. Werner Oechslin, the architectural historian and host formally introduced our guest speaker whom I had not the chance to brief, and our guest proceeded to speak in what quickly turned into a rant against the White City and the intellectual status of the early immigrants to Palestine: the so-called Bauhaus architecture of Tel Aviv was seen as derivative, as being built by epigones, lacking in originality; and an equally sordid judgement was handed

[5] In a documentary movie by Peter Schubert on the *Hochschule für Gestaltung in Ulm* ("Designlegende HfG", 1988), a German interviewee, Alexander Neumeister, the designer of various high-speed trains in Germany and Japan (ICE 3, ICT and Shinkansen Nozomi 500), calls the post-modernity movement in design and architecture fascistic (*fascistoid*). There is a tie linking modernity (in its futurist form) to Fascism, but Neumeister meant most likely the Nazi predilection for a pompous architecture with its super-elevated sign character.

out with regard to European Jews — scientists, writers and artists — who had chosen to emigrate to Palestine — and not to England or the U.S.[6]. Eventually, he finished and, presuming the public would not amicably share a Prosecco with him, left the lecture hall. We were all shocked and dismayed.

This is not the place to analyze the occurrence from a psychological point of view nor can I claim competence to do so. For many years I have pondered about this person's stance, wondered whether his position was defensible from my point of view, mused about implications. In the fields of sociology or economics of science, my own domain of research, I cannot distinguish that easily between the genuine or originary and the derivative, the pastiche, the take-off, and we can see the epigonic as a motor of scientific — or artistic — development. Indeed, it is the epigonic that places the originary into proper context. Without this connection, art historians or musicologists would not be in a position to distinguish periods of artistic, architectural or musical style; nor would they have the means to assess the merits of the originary. We normally observe a network of interdependent relations that make up a culture, of those who influence and those who are influenced, and the roles of affecting or being affected interchange and are not fixed on an a priori basis.

In assessing cultural statements, one might imagine the derivate: does it make sense? does is extend, interpret, remold the original in a suitable way? could Kant's categorical imperative apply? On the basis of such stances, how would one assess the architectural derivates molded on a Mies van der Rohe, Marcel Breuer or Hannes Meyer? on Le Corbusier or Louis Kahn? on Robert Ven-

[6]The amusing — or not so amusing — aspect of this story is that the Bauhaus architecture was seen as alien among nationalistic oriented Germans and, hence, it was characterized in the Nazi vernacular as a *Palästina Stil* (Palestine style); see Peter Hahn [1985, 52], citing Rudolf Paulsen (the writer and son of the philosopher Friedrich Paulsen) in the *Völkischer Beobachter* (March 30, 1932).

turi, Michael Graves or Frank Gehry? And once one has evaluated the pastiche, what is the judgement with regard to the original, the innate?

One of the traits of architecture is its sign character. Early farmhouses, separated by mountain ranges, major catchment areas and vast plains may show similarities in construction that exhibit common notions on how to join beams, frame doors or windows, lay bricks or stone; but the same farmhouses exhibit dissimilarities which are due to the comparative wealth of the domestic population, their major occupations, the fertility of the land or settlement patterns, and climate, of course. All these factors together form the style — and the implicit sign character — of the farmhouses under investigation. Once a style has been established, its sign character consolidates it as an architectural heritage, even if the erstwhile conditioning factors, in the sense of a functional design, change.

The Bauhaus with its emphasis on a new style, a *Neues Bauen* (new construction) more in line with novel technologies and basic needs of clients than with an architectural heritage, was immediately embroiled in a dispute which separated professionals as well as users along political lines: on the one hand one finds the modernists of various shades — the leftists and liberal bourgeois — opting for the 'new'; and on the other hand there were the traditionalists and nationalistic minded who took on a more "reactionary" view or, in the case of the Nazis, a stance against "cultural Bolshevism". However, a close reading of the position of those who opted for the 'new' will reveal that they were not necessarily anti-nationalistic. Indeed, amongst the proponents of the *Neues Bauen* were those who would hope that the 'new' would provide a basis for a national — "nordic and germanic" — movement[7].

[7]Hugo Häring, one of the founding members and secretary of *Der Ring*

During the winter of 2016/17, the *Musée des Arts Décoratifs* in Paris had a show entitled *L'Ésprit du Bauhaus*. One of the sections of the show, entitled *L'Heritage du Bauhaus*, looked at the impact of the Bauhaus after its closing, analogously to my argument above to study the epigonic in order to assess the original (see also Chapter 10)[8]. One of the people listed under the *L'Heritage* heading was Fritz Ertl, a former student at the Bauhaus (1928-31) and one of the architects of the Auschwitz concentration camps[9]. The implication was that Auschwitz could be seen in the tradition of the Bauhaus, that Auschwitz was an offshoot of the modern movement. Michel Weinfeld, the son of a former Bauhaus student, calls this connection, rightly so, a *véritable monstruosité* [10].

The knowledge that Ertl was a co-architect of Auschwitz has been around for some time, of course [Cohen, 2011, 290-295], and the fact that well-educated professionals, "products of the best German schools" [p. 293], served the Third Reich, was also known. What was new at the Paris show, perhaps, was the allusion of a link leading from the Bauhaus curriculum to Auschwitz; or, in my language, Auschwitz was to serve as an epigonic image of the Bauhaus original: not the Auschwitz architecture mimicking the Bauhaus originals, but Auschwitz in the spirit — *l'ésprit* — of the Bauhaus[11]. What was barely acknowledged were the cases in which nationalistic — "nordic and germanic" — notions were di-

(1926-33), an informal association of architects (with members such as Walter Behrendt, Walter Gropius, Ludwig Hilbersheimer, Ernst May, Erich Mendelsohn, Ludwig Mies van der Rohe, Hans Poelzig, Hans Scharoun, Bruno Taut) might be mentioned here; see Peter Hahn [1985, 272f].

[8] I shall also draw on Chapter 10 in the following.

[9] This is not shown in the catalog of the show [Gabet, 2016].

[10] `http://paris.blog.lemonde.fr/2016/10/20/942-lesprit-bauhaus-au-musee-des-arts-decoratifs/`

[11] It is also noted, inter alia, that the typefaces used to inscribe the entrance gates of Buchenwald and Auschwitz were of — or similar to — a Bauhaus design.

rectly subsumed within Nazi thought and were led to live on in post World War II (greater) Germany; or the work of mathematicians or natural scientists (and social scientists, philosophers or lawyers) that survived, in spite of the fact that their authors were implicated in Nazi ideology[12].

Curiously enough, I had previously been confronted with this strange allusion after I had given a talk in the fall of 2006 at a *club-off-ulm*[13] gathering in Weil am Rhein on *Funktionalismus: Das Legat von Ulm.* In my talk I wanted to present a soft advocacy on functionalism, both in the sciences as well as in the applied arts, as practiced in Ulm at the *Hochschule für Gestaltung* (where I had studied, 1958-62). This advocacy was fed by my skepticism, at times even disdain, regarding post-modern philosophy and design. I didn't mean to call for an outright abrogation of humor, irony, pop-art, Kitsch or commentary in design and architecture; my argument was more that the spicing of dishes should be done with some care: that the sofa moulded on a baseball glove, the coffee table styled on a drawing pin, the house that has the shape of binoculars or appears to topple over — that such designs remain the exception to the normal staple, a possible commentary or citation (as we know it from literature and film), but not the rule.

In response to my talk I was approached by a former colleague, a well-respected scholar in the field of design theory, who reminded me that functionalism should not be pursued any longer: it should be replaced by a "human-centered approach to design". To buttress his position, he mentioned Birkenau (Auschwitz II) to epitomize functionalism. First, I was taken aback: I imagined that it was just a tactless, off-the-cuff remark. During subsequent eMail exchanges, however, I realized that my colleague was

[12]The literature here is actually quite extensive but didn't have that much of an impact on higher education or the professional position of the implicated.

[13]An alumni association of the *Hochschule für Gestatlung* (1953-68), a design school located in Ulm, moulded on the Bauhaus.

earnest, that he meant what he had said. I told him that I felt offended: as a person embracing functionalism to some extent, and as a Jew (who should know better). I couldn't see a discrepancy separating functionalism from human-centered design because I naively surmised that most design should be human-centered, and the a priori exclusion of "human-centeredness" from functionalism, I thought, was strange[14].

The conflict between my former colleague and myself evolved because we had non-sharing attributions of what we should understand under a concept like 'functionalism'. For him, functionalism embraced design-processes which were dominantly product oriented, not user oriented. For me, a user orientation was just one of the conditioning factors which have to be taken into account. Indeed, as a former planning student, I was well aware of precursors of human-centered approaches. The early metropolitan transportation studies in the U.S. had a tendency to design the layout of highways in such a way that these would plow through land where land prices were low, and those were, as a rule, the neighborhoods where the urban Black population would live. Highway design would destroy the social fabric of the residents living there, carve through their communities. Locals would be penalized twice: first their homes were without value; and second, low land prices were attractive for a transportation agency in search of a minimal cost alternative for a highway corridor. The basic mistakes of early urban transportation planning brought to the fore a counter approach: advocacy planning [Davidoff, 1965;

[14]"Human-centered design" is a term that cropped up in the 1980s and has gained attention ever since. Its impact, however, is limited — in comparison to the concept of "organizational learning", for instance (which is cited roughly 50 times as often than "human-centered design"); or even in comparison to the concept of "wicked problems" (which is cited roughly more than twice as often). "Human-centered design" appears to refer to a fad, to a sales pitch, not to a sound concept of planning or management.

Kravitz, 1970; Alinsky, 1971/1989][15].

There is no single approach, no unique methodology, no theory or process which would guarantee a watertight — "humane" — outcome: the inhumanity of Auschwitz, of the Holocaust, cannot be attributed to a design methodology. The functional design of a gun or a torpedo — or a soft drink (aiding diabetes), for that matter — does not discredit functionalism as such; Eichmann's activities, their dreadful aspects, do not appear to be tied to the content of courses dealing with logistics; Ertl's barracks in Birkenau look about the same as the old Swiss army barracks (used now by rock climbers and mountaineers) *vis-à-vis* the Hotel Furkablick (on the Furka pass in Switzerland) with its charming restaurant renovation designed by Rem Koolhaas; Auschwitz' architecture is very similar to that of the worker's housings that characterize the former textile industries in Łódź; and the linking of Birkenau's architecture to the curriculum of the Bauhaus, to its "heritage", is pure nonsense. I have written before on — conscious, premeditated — change processes (covering problem-solving, design, or planning), and I have characterized these processes in terms of structuring activities that move problem situations from the fuzzy and vague to the defined and distinct (see Chapter 16) [Rittel and Webber, 1973]. These processes, unique as they are in their case-dependency and irrespective of how they proceed, are value-laden, not value-free, as are, of course, their aims.

No design can be determined to the extent envisioned by a straightforward interpretation of Louis Sullivan's dictum, "form follows function" (1896). Some designs — of airplanes, rockets, cargo vessels, racing cars, skis, tennis rackets, hearing aids — are characterized by low degrees of freedom, some can only be understood as man-machine systems, but all are dependent on technolo-

[15]Even the concept of "advocacy planning" had its heydays (around 1970), and has subsequently been integrated into mainstream approaches to planning.

gies, the interchange with the user, and the interpretation, the visions of the designer. Other designs — of household or consumer goods, furniture, housing, office spaces — offer broader degrees of freedom, and it is here that the discussion on functionalism sets in.

Functionalism calls for a focus on honest, straightforward design: Alfred Altherr, Max Bill, Wilhelm Kienzle and Willy Rotzler called that (around 1950) *Die gute Form* (good design); Max Bill coined (1949) the phrase *Schönheit aus Funktion und als Funktion* (beauty from function and as function). 'Design' itself, as an English translation of the German *Gestaltung*, became conspicuous to mean something stylish, something other than 'good' design, because 'design' became associated with designers — like Raymond Loewy who had styled the fashionable Studebaker car models — who would deviate from the 'good' form: a car had to look like a car, not an airplane; an office building like a utility structure, not a Greek temple; a family home like the dwellings of blue or white collar workers, not a diminutive version of a royal palace. Beams should be shown, not covered behind stucco[16]; construction principles should be made transparent, visible; fake materials were to be shunned. Lucius Burckhardt [1995] referred subsequently with his *Design=unsichtbar* (design is invisible) to the fact that many of today's major design characteristics are hidden (in microprocessors and other technologies), not readily visible: good design, hence, took on a new dimension.

Before, during and after World War II, there was a willingness to follow the credo of a modern — unadulterated — version of design in many countries around the globe. Companies like IBM, Olivetti, Braun or Lufthansa became flag-bearers of this movement; architects and designers like Albert Kahn Associates, Skidmore, Owings & Merrill (SOM), Oscar Niemeyer, Jean Prouvé,

[16]These were the times before fire regulations required the incasing of steel structures.

Charles and Ray Eames, or Hans Gugelot co-authored it; civil engineers like Pier Luigi Nervi or Robert Maillart were involved. Design was to follow a logic, a stylistic concept that was directly tied to its unadulterated purpose (as seen by the design teams); there were to be no hidden agendas, no allusions to grandeur or false elevations, no pretentiousness. Designers and architects of this line followed a professional ethos, like M.D.'s, engineers or managers of that period, and they did not see themselves as "hired hands" [Khurana, 2007], salesmen or stage producers. But "the times they are a-changin". Conspicuous consumption was followed by an affluent society, by what Vance Packard called waste makers, status seekers, hidden persuaders — and by "excess" [Abbott, 2014b]. This new culture of over-production and over-consumption (in the developed world) effectively killed an æsthetic of frugality, relegated the *gute Form* to a few specialty markets (like those of the Apple corporation whose design is inspired by Braun), and disposed of its refuse, its junk (to the developing world).

That form and content are linked is a position shared by a broad spectrum of observers, uniting leftists and rightists, old futurists and new traditionalists, modernists and post-modernists. Form expresses content. The Persian lamb coat my mother aspired to (and never owned) was not primarily to combat the cold during winter months; and the diamonds (she eventually inherited from her mother) had to refer to her two sons. Diamonds and fur coat had a sign function: they were meant to embrace the elusive well-being, to try to grab a decent prosperity. Frames of paintings do not necessarily serve the function to shield, to protect the art; they are frequently meant to enhance, to amplify, to heighten art, to give it meaning, and they may do this in ways that contradict — that show a grave misunderstanding of — the exhibited: looking at the framing of art allows for a quick assessment of the connoisseurship, the grasp, of the collector. Form decodes the referent.

The linking of form and content is personal; but the personal is not strictly individualistic: it is part of culture or schooling, of an upbringing, of tacit knowledge, of peer membership, of what one calls home; it is influenced by the social fabric of which the individual is part, and in turn, it shapes that context. The linking of form and content is a universal phenomenon, but the specific linking refers to groups, political parties, constituencies, authors, consumers; it needs to be decoded to be understood or interpreted. Group phenomena abound, are deeply ingrained in our social and psychic setup (see Chapter 14). Psychedelic insignia, imported from India, were stylistic emblems associated with a cultural rebellion of the 1950s and 1960s, and punk was a product — and a provocation — of the 1970s. Prostitutes, in order to be successful in their business, have to look like whores. The bourgeois once aspired to be an aristocrat, and the worker a bourgeois, and the respective preference patterns mirrored that. Modern autocrats like Recep Tayyip Erdoğan and Vladimir Vladimirovič Putin or would-be illiberals like Donald Trump appear to share a common proclivity for a golden Neo-Baroque Louis XIV interior design. Style and stylistic preferences disclose, reveal, unmask.

Today, we can also observe an inverted approach to style, to fashion, detached frequently from its erstwhile meaning: tattoos, once common among sailors in our hemispheres, have become fashionable — even on the beaches of Tel Aviv[17]; the worn Levy 504 jeans, characteristic of the blue color worker, have become the model of today's designer jeans, industrially bleached and torn, to be sold at high fashion stores (and worn, preferably, with a Gucci bag); punk paraphernalia of a former underground culture or Botox and 'æsthetic' surgery, common in the porn business, have graduated to become emblems of a saturated life. The in-

[17] Jewish law, the HALAKHA, does not accept tattoos; and Jews who wear some do not seem to link those to the practice of the Nazis to tattoo — to "number" — their concentration camp prisoners.

version of stylistic insignia may be applauded from an egalitarian, republican or anarchic point of view; but it may also signify a chameleonic loss of dignity and truthfulness, a new disorientation, to be exploited by the mighty and manipulative.

General Index

Bibliography and Index of Citations

Abbott, A., "The Excellence of IT: Conceptions of Quality in Academic Disciplines," in Herbst [2014b], chapter 8, 147–165. 133, 144

———, "The Problem of Excess," *Sociological Theory* 32 (March 2014b), 1–26. 165, 183

Ackoff, R. L., S. K. Gupta and J. S. Minas, *Scientific Methods: optimizing applied research decisions* (John Wiley & Sons, 1962). 120

Alinsky, S. D., *Rules for Radicals: A Primer for Realistic Radicals* (Vintage Books, 1971/1989). 111, 181

Aly, G., *Why the Germans? Why the Jews? Envy, Race Hatred, and the Prehistory of the Holocaust* (Metropolitan Books, 2014). 75

Ames Jr., A., "Visual Perception and the Rotating Trapezoidal Window," *Psychological Monographs: General and Applied* 65 (1951), 1–32. 103

Arena, R., A. Festré and N. L. Lazaric, eds., *Handbook of Knowledge and Economics.* (Edward Elgar, 2012). 99

ARONOWSKY, J. S., ed., *Progress in Operations Research: Relationship between Operations Research and the Computer*, volume III (John Wiley & Sons, 1969). 203, 212

ARTHUR, B. W., S. N. DURLAUF AND D. A. LANE, eds., *The Economy as an Evolving Complex System II*, volume XXVII (Santa Fe Institute: Addison Wesley, 1997). 123

ASHBY, R. W., "Introductory Remarks at Panel Discussion," in M. D. Mesarović, ed., *Views on a General Systems Theory: proceedings of The Second Systems Symposium at Case Insitute of Technology,* chapter 12 (John Wiley & Sons, 1964), 165–169. 9, 21

ASTIN, A. W., *Achieving Educational Excellence: A Critical Assessment of Priorities and Practices in Higher Education* (Jossey-Bass Publishers, 1985). 134

AT&T BELL LABORATORIES, ed., *UNIX System: Readings and Applications*, volume I and II (Prentice Hall Press, 1987). 135

AZOULAY, P., J. G. ZIVIN AND J. WANG, "Superstar Extinction," *The Quarterly Journal of Economics* 125 (2010), 549–589. 144

BAR-ON, D., *Legacy of Silence: Encounters with Children of the Third Reich* (Harvard University Press, 1991). 61

BARTHES, R., *La chambre claire* (Editions du Seuil, 1980). 3

BASU, K., *Beyond the Invisible Hand: Groundwork for a New Economics* (Princeton University Press, 2011). 88

BATNITZKY, L., *How Judaism Became a Religion: An Introduction to Modern Jewish Thought* (Princeton University Press, 2011). 67, 74

BELLMAN, R., K. L. COOKE AND J. A. LOCKETT, *Algorithms, Graphs and Computers* (Academic Press, 1970). 116

Ben-David, J., *Centers of Learning: Britain, France, Germany, United States* (McGraw-Hill/Transaction Publishers, 1977). 68

———, *The Scientist's Role in Society: A Comparative Analysis* (University of Chicago Press, 1984/1971). 35

Ben-David, J. and A. Zloczower, "Universities and Academic Systems in Modern Societies," *European Journal of Sociology* 3 (June 1962), 45–84. 130

Bijker, W. E., R. Bal and R. Hendriks, *The Paradox of Scientific Authority: The Role of Scientific Advice in Democracies* (The MIT Press, 2009). 43

Billaut, J.-C., D. Bouyssou and P. Vincke, "Should you believe in the Shanghai ranking? An MCDM view," *Scientometrics* 84 (July 2010), 237–263. 133

Botstein, L., *Judentum und Modernität: Essays zur Rolle der Juden in der deutschen und österreichichen Kultur 1848 bis 1938* (Böhlau, 1991). 71, 72

Botvinnik, M. M., *Computers, Chess and Long-Range Planning* (Springer-Verlag, 1970). 9, 19

Boulding, K. E., *The Image: Knowledge in Life and Society* (The University of Michigan Press, 1961). 3, 102, 120, 169

Bourdieu, P., *Homo Academicus*, 2nd edition (Stanford University Press (Les Editions de Minuit), 1988). 151

Bowles, S., H. Gintis and B. Gustafsson, eds., *Markets and Democracy: Participation, Accountability and Efficiency* (Cambridge University Press, 1993). 85

Browning, C. R., "How Envy of Jews Lay Behind it," *The New York Review of Books* LXII (2015), 44–46. 75

BURCKHARDT, L., *Design=unsichtbar* (Cantz, 1995). 182

CARAYOL, N. AND M. MATT, "Does Research Organization Influence Academic Production? Laboratory Level Evidence from a Large European University," *Research Policy* 33 (2004), 1081–1102. 149

CARNAP, R., "Die Überwindung der Metaphysik durch logische Analyse," *Erkenntnis* 2 (1931), 219–241. 171, 174

CEST, "La Suisse et la 'Champions League' internationale des institutions de recherche 1994-99: Contribution au benchmarking international des institutions de recherche (Cest 2002/6)," Centre d'Etudes de la Science et de la Technologie (Cest) (2002). 147

CHAFFEE, E. E., "The Concept of Strategy: From Business to Higher Education," in J. C. Smart, ed., *Higher Education: Handbook of Theory and Research,* volume I (Agathon Press, 1985), 133–172. 112, 114

CHURCHMAN, C. W., *Prediction and Optimal Decision: Philosophical Issues of a Science of Values* (Prentice-Hall, 1961). 4, 14, 103

———, "The Role of *Weltanschauung* in Problem Solving and Inquiry," in R. Banerji and M. Mesarovic, eds., *Theoretical Approaches to Non-Numerical Problem Solving* (Springer-Verlag, 1970), 141–151. 103

CLARK, B. R., *The Higher Education System: Academic Organizations in Cross-National Perspective* (University of California Press, 1983). 110

———, "Diversification, Competitive Autonomy, and Institutional Initiative in Higher Education Systems," in Herbst et al. [1997], chapter 4, 37–41. 132, 151

———, *Creating Entrepreneurial Universities: Organizational Pathways of Transformation* (Pergamon, 1998). 127, 130

Coccia, M., "A Scientometric Model for the Assessment of Scientific Research Performance within Public Institutes," *Scientometrics* 65 (December, 2005), 307–321. 149

Coccia, M. and S. Rolfo, "Size of Research Labs and Performance: an Analysis of the Italian National Research Council," in *3rd International Conference on Management of Innovation and Technology* (Zhejiang University, Hangzhou (China), 2002). 149

Cohen, J.-L., *Architecture in Uniform: Designing and Buildig for the Second World War* (Canadian Center for Architecture, 2011). 178

Crosby, P. B., *Quality is Still Free: Making Quality Certain in Uncertain Times* (McGraw-Hill, 1996). 111

Davidoff, P., "Advocacy and Pluralism in Planning," *Journal of the American Institute of Planners* 31 (1965), 331–338. 180

Dearing, R., "The National Committee of Inquiry into Higher Education: 'Higher Education in the Learning Society': Dearing's Summary," *The Times Higher Education Supplement* (July 25 1997). 113

Dertouzos, M. L., R. K. Lester and R. M. Solow, eds., *Made in America: Regaining the Productive Edge* (HarperPerennial, 1989). 111

Duranton, G., J. V. Henderson and W. Strange, eds., *Regional and Urban Economics*, volume 5A (North-Holland, 2015). 150

Ehrenberg, R. G. and C. V. Kuh, eds., *"Doctoral Education and the Faculty of the Future"* (Cornell University Press, 2009). 146

Ehrlich, P. R., *The Population Bomb* (Buccaneer Books, 1968). 156

Emery, J., "Management Information Systems," in Aronowsky [1969], 489–524. 118

ETHZ, "Planung 1992-95 (Mehrjahresplan)," Vizepräsidium Planung & Entwicklung (23. Januar 1991). 153

EUROPEAN PARLIMENT, "Lisbon European Council: Presidency Conclusions," Technical Report, March 23 and 24, 2000. 130

FENSKE, R. W., *Operations Research: 15 Year Index, Volumes 1-15, 1952-1967* (Operations Research Society of America (ORSA), 1970). 110

FISHBURN, P. C., *Decision and Value Theory*, number 10 in Publications in Operations Research (John Wiley & Sons, 1964). 133

———, *The Theory of Social Choice* (Princeton University Press, 1973). 133

FORRESTER, J. W., *Industrial Dynamics* (Wrigth-Allen Press, 1961). 111

———, *World Dynamics* (Wrigth-Allen Press, 1971). 111

FOURASTIÉ, J., *Grand espoir du XXe siècle* (Presses Universitaires de France, 1949). 110, 129, 157

FRANK, R. H. AND P. J. COOK, *The Winner-Take-All Societyy: Why the Few at the Top get so Much More than the Rest of Us* (Virgin Books, 2010). 134

FREELAND, R. M., *Academia's Golden Age: Universities in Massachusetts 1945-1970* (Oxford University Press, 1992). 33

FRIEDMAN, M., *Essays in Positive Economics* (The University of Chicago Press, 1953). 87, 102

FRIEDMANN, J., "The Strategy of Deliberate Urbanization," *Journal of the American Institute of Planners* 34 (1968), 364–373. 160

Fruton, J. S., *Contrast in Scientific Style: Research Groups in the Chemical and Biochemical Sciences*, volume 191 of *Memoirs Series* (American Philosophical Society, 1990). 149

Fujita, M., P. Krugman and A. J. Venables, *The Spatial Economy: Cities, Regions, and International Trade* (MIT Press, 2001). 100, 150

Fujita, M. and J.-F. Thisse, *Economics of Agglomeration: Cities, Industrial Location, and Regional Growth* (Cambridge University Press, 2002). 105, 150

Gabet, O., ed., *L'ésprit du Bauhaus* (Les Arts Décoratifs, 2016). 178

Galison, P. L. and B. Hevly, eds., *Big Science: The Growth of Large Scale Research* (Stanford University Press, 1992). 149

Garfield, E., "Citation Indexes for Science," *Science* 123 (1956), 61–62. 143

Gintis, H., *Game Theory Evolving* (Princeton University Press, 2009a). 95

———, *The Bounds of Reason: Game Theory and the Unification of the Behavioral Sciences* (Princeton University Press, 2009b). 93

Gintis, H., S. Bowles, R. Boyd and E. Fehr, eds., *Moral Sentiments and Material Interests: The Foundation of Cooperation in Economic Life* (The MIT Press, 2005). 85, 91

Glaeser, E. L., ed., *Agglomeration Economics* (The University of Chicago Press and the National Bureau of Economic Research, 2010). 150

Godet, M., *Scenarios and Strategic Management* (Butterworths, 1987). 10, 166

Goldhagen, D. J., *Hitler's Willing Excecutioners: Ordinary Germans and the Holocaust* (Alfred A. Knopf, 1996). 63

HADAR, I., ed., *Utopias on Paper, German Expressionism: Prints and Drawings from the Museum Collection* (The Tel Aviv Museum of Art, 2011). 137

HAHN, P., ed., *Bauhaus Berlin: Eine Dokumentation* (Kunstverlag Weingarten, 1985). 176, 178

HAMMER, M. AND J. CHAMPY, *Reengineering the Corporation: A Manifesto for Business Revolution* (HarperBusiness, 1993). 111

HAMMERSTEIN, P., ed., *Genetic and Cultural Evolution of Cooperation* (MIT Press, 2003). 85, 90

HAREL, D., *Algorithmics: The Spirit of Computing* (Addison-Wesley, 1992). 116

HAYEK, F. A. V., *The Sensory Order: An Inquiry into the Foundations of Theoretical Psychology* (The University of Chicago Press, 1999 (1952)). 102

HERBST, M., "Die Hochschule zwischen Tradition und Erneuerung," in Herbst et al. [1997], 173–193. 127

———, "The Rise and Fall of Strategic Planning," *Tertiary Education and Management* 4 (1998), 153–157. 7, 112

———, "Change Management: A Classification," *Tertiary Education and Management* 5 (1999), 123–137. 109

———, "The Production-Morphology Nexus of Research Universities: The Atlantic Split," *Higher Education Policy* 17 (March 2004), 5–21. 145, 148

———, "Zur Rangordnung von Universitäten: ein Jahrmarkt der Eitelkeiten?," *Tages-Anzeiger* (November 2, 2005), 11. 133

———, *Financing Public Universities: The Case of Performance Funding* (Springer Science + Business Media, 2007). 131, 145, 148

———, "American Hegemony and the Postwar Reconstruction of Science in Europe," *European Legacy* 13 (June 2008), 351–396. 29

———, "From Higher Aims to Hired Hands: The Social Transformation of American Business Schools and the Unfulfilled Promise of Management as a Profession," *European Legacy* 14 (2009a), 101–103. 23

———, "German Intellectuals and the Nazi Past," *The European Legacy* 14 (2009b), 247–249. 61

———, "Gypsy Scholars, Migrant Teachers and the Global Academic Proletariat," *European Legacy* 14 (2009c), 926–928. 55

———, "The Paradox of Scientific Authority," *European Legacy* 16 (2011), 822–824. 43

———, "MIT at 150," *European Legacy* 17 (2012a), 245–248. 33

———, "The Poverty of Economics," *The European Legacy* 17 (July 2012b), 944–947. 85, 101

———, "The Bounds of Reason: Game Theory and the Unification of the Behavioral Sciences," *The European Legacy* 18 (2013a), 940–942. 93

———, "The Costs of Crime and Punishment," *European Legacy* 18 (2013b), 751–753. 79

———, "Academic Organization and Scientific Productivity," in Herbst [2014b], 15–35. 106, 145, 152

Herbst, M., ed., *The Institution of Science & the Science of Institutions: The Legacy of Joseph Ben-David*, volume 302 of *Boston Studies in the Philosophy and History of Science* (Springer Science + Business Media, 2014b). 199, 207, 212

Herbst, M., "Chess Metaphors: Artificial Intelligence and the Human Mind," *European Legacy* 20 (October 2015a), 787–789. 17

———, "The Enigma of Knowledge," *European Legacy* 20 (2015b), 647–651. 99

———, "Judaism and Religion," *The European Legacy* 21 (2016), 576–581. 67

———, "European Higher Education," *The European Legacy* (02 2017), 1–5. 132

Herbst, M., U. Hugentobler and L. Snover, *MIT and ETH Zürich: Structures and Cultures Juxtaposed* (Centre d'études de la science et de la technologie, Cest 2002/9, www.swir.ch, 2002). 41, 131, 145, 148, 151, 152

Herbst, M., G. Latzel and L. Lutz, eds., *Wandel im tertiären Bildungssektor: Zur Position der Schweiz im internationalen Vergleich* (Verlag der Fachvereine (vdf), 1997). 202, 206, 209, 215

Hicks, J., *Classics and Moderns: Collected Essays on Economic Theory*, volume III (Harvard University Press, 1983). 87

Hurley, J., *Organisation and Scientific Discovery* (John Wiley & Sons, 1997). 147, 149

Imhoof, M. and C.-P. Lieckfeld, *More than Honey* (Orange-Press, 2012). 20

Isard, W., *Location and Space-Economy: A General Theory Relating to Industrial Location, Market Areas, Land Use, Trade, and Urban Structure* (MIT Press, 1956). 100

Jäger, H. U., M. Mattmüller and A. Rich, eds., *Leonhard Ragaz in seinen Briefen: 1933-1945*, volume 3 (Theologischer Verlag Zürich, 1992). 73

Jarausch, K. H., *The Unfree Profession: German Lawyers, Teachers, and Engineers, 1900-1950* (Oxford University Press, 1990). 139

Juran, J., ed., *A History of Managing for Quality: The Evolution, Trends, and Future Directions of Managing for Quality* (ASOC Quality Press, 1995). 113

Kahn, A. E., "The Tyranny of Small Decisions," *Kyklos* 20 (1966), 23ff. 105, 106, 122, 160

Kaiser, D., ed., *Becoming MIT: Moments of Decision* (The MIT Press, 2010). 33

Kamp-Bandau, I., *Tel Aviv: Neues Bauen 1930-1939* (Distributed Art Pub Inc, 1994). 175

Kandinsky, W., *Über das Geistige in der Kunst, insbesondere in der Malerei* (R. Piper & Co., 1912). 173

Kaufmann, Y., *Christianity and Judaism: Two Covenants* (The Magnes Press, The Hebrew University, 1996). 68

Kells, H. R., *Self-Regulation in Higher Education: A Multi-National Perspective on Collaborative Systems of Quality Assurance and Control* (Jessica Kingsley, 1992). 112

———, *The Implication of Increased Institutional Diversity for Higher Education Evaluation*, in Herbst et al. [1997] (1997), 43–51. 110

Khurana, R., *From Higher Aims to Hired Hands* (Princeton University Press, 2007). 23, 183

Klee, E., *Das Personenlexikon zum Dritten Reich: Wer war was, vor und nach 1945* (S. Fischer Verlag, 2003). 64, 72

Kleiman, M. A. R., *When Brute Force Fails: How to Have Less Crime and Less Punishment* (Princeton University Press, 2009). 79

KOTOV, A., *Think Like a Grandmaster* (B.T. Batsford Ltd., 1971). 8

KRAVITZ, A. S., "Mandarinism: Planning as Handmaiden to Conservative Politics," in T. L. Beyle and G. T. Lathrop, eds., *Planning and Politics: Uneasy Partnership* (Odyssey Press, 1970), 240–67. 181

KRIGE, J., *American Hegemony and the Postwar Reconstruction of Science in Europe* (MIT Press, 2006). 29, 34

KUHN, T. S., *The Structure of Scientific Revolutions*, volume 2 of *International Encyclopedia of Unified Science* (The University of Chicago Press, 1970 (1962)). 103, 135, 170

LEIBOWITZ, Y., *Judaism, Human Values, and the Jewish State* (Harvard University Press, 1992). 69, 74, 75

LEVIN, R., *The Origin of Modern Humans* (Scientific American Library, 1993). 113

LEVY, D., *Chess and Computers* (B.B. Batsford Ltd, 1976). 19

LINDBLOM, C., "The Science of Muddling Through," *Public Administration Review* 19 (1959), 79–88. 123

LOTH, W. AND B.-A. RUSINEK, eds., *Verwandlungspolitik: NS-Eliten in der westdeutschen Nachkriegsgesellschaft* (Campus-Verlag, 1998). 64

MACCOBY, H., ed., *Judaism on Trial: Jewish-Christian Disputations in the Middle Ages* (The Littman Library of Jewish Civilization, 2006 (1982)). 69

MACHOL, R. E., "Graceful Failure," *OR/MS Today* 24 (October 1997), 18. 12

MARSHALL, A., *Principles of Economics* (CreateSpace Independent Publishing Platform (Macmillan and Co.), 2011 (1890)). 99

Massy, W. F. and R. Zemsky, "The Dynamics of Academic Productivity," State Higher Education Executive Officers (SHEEO) (1990). 112

Mauldin, D. R., ed., *The Scottish Book: Mathematics from The Scottish Café, with Selected Problems from The New Scottish Book*, 2nd edition (Birkhäuser, 2015). 135

Meadows, D. H., D. L. Meadows and J. Randers, *Beyond the Limits: Confronting Global Collapse, Envisioning a Sustainable Future* (Chelsea Green Publishing, 1992). 111

Meadows, D. H., D. L. Meadows, J. Randers and W. W. Behrens, *The Limits to Growth: A Report for The Club of Rome's Project on the Predicament of Mankind* (Universe Books, 1972). 111, 156

Mendelssohn, M., *Phädon oder Über die Unsterblichkeit der Seele; Jerusalem oder Über religiöse Macht und Judenthum* (F.A. Brockhaus, 1869). 73

Merton, R. K. and E. Barber, *The Travels and Adventures of Serendipity* (Princeton University Press, 2004). 144

Mintzberg, H., *The Nature of Managerial Work* (Harper & Row, 1973). 7

———, *The Rise and Fall of Strategic Planning* (Free Press, 1994). 7

Morse, P. M., "The Beginnings of Operations Research in the United States," *Operations Research* 34 (1986), 10–17. 110, 164

Moses, A. D., *German Intellectuals and the Nazi Past* (Cambridge University Press, 2007). 61

Motterlini, M., ed., *For and Against Method: Including Lakatos's Lectures on Scientific Method and the Lakatos-Feyerabend Correspondence* (The University of Chicago Press, 1999). 171

MÜNCH, R., "Faded Grandeur: Disciplinary Differentiation, Interdisciplinarity and Renewal in the German Academic System," in Herbst [2014b], chapter 6, 83–102. 131

NATIONAL RESEARCH COUNCIL, *Research-Doctorate Programs in the United States: Continuity and Change* (National Academy Press, 1995). 147

NAVRATIL, L., *Die Künstler aus Gugging* (Medusa, 1983). 172

———, *Die Gugginger Methode: Kunst in der Psychiatrie* (Gustav Fischer, 1998). 172

NEURATH, O., R. CARNAP AND C. MORRIS, eds., *Foundations of the Unity of Science: Towards an International Encyclopedia of Unified Science*, volume 2 (University of Chicago Press, 1970). 135

———, *Foundations of the Unity of Science: Towards an International Encyclopedia of Unified Science*, volume 1 (University of Chicago Press, 1971 (1955)). 135

NEWELL, A., *Heuristic Programming: Ill-Structured Problems*, volume III of Aronowsky [1969] (1969), 360–414. 117

OSTRIKER, J. P., C. V. KUH AND J. A. VOYTUK, eds., *A Data-Based Assessment of Research-Doctorate Programs in the United States* (The National Academies Press, 2011). 147

PETERSON, M., *Qualitative and Quantitative Approaches to Academic Culture*, volume IX of Smart [1993] (1993), 344–388. 121

PETERSON, M., D. D. DILL, L. A. METS AND ASSOCIATES, *Planning and Management for a Changing Environment* (Jossey-Bass Publishers, 1997). 14, 123

POLANYI, M., *Personal Knowledge: Towards a Post-Critical Philosophy* (University of Chicago Press, 1958). 141

Quade, E. and W. Boucher, "Systems Analysis and Policy Planning," R-439-PR, Rand Corporation, 1968. 11, 119

Ragaz, L., *Israel, Judaism and Christianity* (Victor Goliancz Ltd, 1947). 73

Rapoport, A., *Operational Philosophy: Integrating Knowledge and Action* (John Wiley & Sons, 1965). 2

Rapoport, A. and M. Guyer, "A Taxonomy of 2×2 Games," *Peace Research Society (International)* VI (1966), 1–26. 124

Rasskin-Gutman, D., *Chess Methaphors: Artificial Intellligence and the Human Mind* (The MIT Press, 2009). 17

Reichsbund Jüdischer Frontsoldaten, ed., *Die jüdischen Gefallenen des deutschen Heeres, der deutschen Marine und der deutschen Schutztruppen, 1914-1918; ein Gedenkbuch*, 2nd edition (Der Schild, 1932). 72

Richarz, M., *Der Eintritt der Juden in die akademischen Berufe*, volume 28 of *Schriftenreihe wissenschaftlicher Abhandlungen des Leo Baeck Institutes* (J.C.B. Mohr (Paul Siebeck) Tübingen, 1974). 71

Rifkin, J., *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-Market Era* (G.P. Putnam's Sons, 1995). 110

Rittel, H. W. and M. M. Webber, "Dilemmas in a General Theory of Planning," *Policy Sciences* 4 (1973), 155–169. 4, 181

Rosen, S., "The Economics of Superstars," *The American Economic Review* 71 (December 1981), 845–858. 138, 144

Roth, P., "I have fallen in love with American names," *The New Yorker* (June 5 & 12 2017). 2, 136

Samuelson, P. A., "The Pure Theory of Public Expenditure," *The Review of Economics and Statistics* 36 (Nov. 1954), 387–389. 105

SAXENIAN, A., *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (Harvard University Press, 1994). 104, 131, 150

SCHMIDHEINY, S., *Changing Course: A Global Business Perspective on Development and the Environment* (MIT Press, 1992). 121

SCHWINGES, R. C., ed., *Examen, Titel, Promotionen: Akadmisches und staatliches Qualitätswesen vom 13. bis zum 21. Jahrhundert*, volume 7 of *Veröffentlichungen der Gesellschaft für Universitäts- und Wissenschaftsgeschichte* (Schwabe & Co, 2007). 65

SEJNOWSKI, T. AND P. CHURCHLAND, "Silicon Brains: Innovative computer devices are being inspired by the results of research on the brains of nature's creatures," *Byte* (October 1992). 20

SENGE, P. M., *The Fifth Discipline: The Art and Practice of Learning Organizations* (Doubleday, 1990). 111, 113, 122

SHANNON, C. E., "Programming a Computer for Playing Chess," *Philosophical Magazine* 41 (March 1950), 256–275. 9, 18

SILVESTER, P. P., *The UNIX System Guidebook*, 2nd edition (Springer-Verlag, 1988 (1984)). 135

SIMON, H. A., *Models of My Life* (Basic Books, 1991). 9

SLATER, J. C., *Solid-State and Molecular Theory: A Scientific Biography* (John Wiley & Sons, 1975). 37

SMART, J. C., ed., *Higher Education: Handbook of Theory and Research*, volume IX (Agathon Press, 1993). 212, 215

SNYDER, T. D. AND C. M. HOFFMANN, "Digest of Educational Statistics," Technical Report NCES 94-115, National Center for Education Statistics (NCES), US Department of Education, 1994. 111

SOKAL, A. AND J. BRICMONT, *Fashionable Nonsense: Postmodern Intellectuals' Abuse of Science* (Picador, 1998). 3, 103, 112, 120, 171

Soloveitchik, J. B., *The Halakhic Man* (The Jewish Publication Society, 1983). 68

———, *The Halakhic Mind* (Seth Press/The Free Press, 1986). 69, 76

Teeuwen, R. and S. Hantke, eds., *Gypsy Scholars, Migrant Teachers and the Global Academic Proletariat: Adjunct Labor in Higher Education* (Rodopi, 2007). 55

Thurows, L., *Head to Head: The Coming Economic Battle Among Japan, Europe, and America* (Warner Books, 1993). 110, 111

Tierney, W. G. and R. A. Rhodes, *Postmodernism and Critical Theory in Higher Education: Implications for Research and Practice*, volume IX of Smart [1993] (1993), 308–343. 120

Trow, M., "Reflections on the Transition from Elite to Mass Higher Education," *Dædalus* 90 (1970), 1–42. 110, 130

———, "Reflections on Diversity in Higher Education," in Herbst et al. [1997], chapter 3, 15–36. 110, 127, 132, 151

Ulam, S. M., *Adventures of a Mathematician* (University of California Press, 1991). 135

von Humboldt, W., "Über den Entwurf zu einer neuen Konstitution für die Juden," in *Schriften zur Politik und zum Bildungswesen (1809–1834),* volume VI of *Werke* (Wissenschaftliche Buchgesellschaft (Cotta), 1964). 71

Waldinger, F., "Bombs, Brains, and Science: The Role of Human and Physical Capital for the Creation of Scientific Knowledge," *Review of Economics and Statistics* (2015). 144, 145

Wassermann, J., *Mein Weg als Deutscher und Jude* (S. Fischer Verlag, 1921). 72

WEINBERG, S., *Dreams of a Final Theory* (Pantheon Books, 1992). 120

———, "Sokal's Hoax," *The New York Review of Books* XLIII (August 8 1996), 11–15. 171

ISBN (10): 1-5275-0788-2
ISBN (13): 978-1-5275-0788-3