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THE RICARDIAN VICE AND THE INDETERMINATION OF SENIOR

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### SYNOPSIS

The general commitments and working requirements of abstract, applied, and art of science, including economics, are assessed. Pure economics deals with the logic of the phenomenon. Positive socio-economics presupposes pure economics and many distinct sciences. Art presupposes socio-economics and direct knowledge of the specificities which characterize the time-space individuality of the phenomenon.

This indetermination was partially formulated by Senior and Mill; graduate education in economics is considered in its light. The habit of ignoring it is the Ricardian Vice, as named by Schumpeter; the prevalence of the vice is exemplified, and its causes analyzed.

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## THE RICARDIAN VICE AND THE INDETERMINATION OF SENIOR

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Abstract or pure science, applied science and art of science are three distinct spheres of knowledge, whether the field of inert matter, or life, or society is in question. A comparative analysis of the three fields focuses attention on the complementarity among the three spheres of abstraction, allows a comprehensive and less conflicting view of economics, and invites a better characterization of the nature of, and method or language appropriate to, each sphere of abstraction, as well as of the abilities, commitments and limitations of its practitioners. The evolving nature of boundary lines between these branches of learning is, however, always acknowledged.

The abstract or pure economic theories, the pure logics of economics, do not tell what ought to be done in reality. It is generally acknowledged, even if not always followed, that value judgments are involved in normative conclusions. More fundamentally, reality involves so many non-economic elements, elements which are omitted from pure theories, that an indetermination is also involved in normative conclusions, and this was clearly stated by Senior and Mill. I suggest calling it the Indetermination of Senior.

Art of economics presupposes applied or socio-economics, an intermediate positive level which collects rays of light from the relevant and distinct pure and applied sciences. Art of economics also presupposes knowledge from direct experience, namely the specificities which account for the time-space individuality of the phenomenon. On the whole, mainstream economists have forgotten Senior and Mill, and are thus addicted to the Ricardian Vice. On the whole, socio-economists have not forgotten them, and this, as I understand it, is a way of stating the chief reason for being of the Society for the Advancement of Socio-Economics (SASE). These questions are covered in five sections.

The first concentrates on the division of labor in the field of inert matter, and indicates the ability and commitment of the specialist on each level of abstraction; an underlying attention to economics is maintained through appropriate quotations from prominent economists. The second section complements the first and deals with the limitations of comparative analysis, namely the effects of the semi-experimental nature of economics and of the ascendant complexity of the phenomenon as one moves from inert matter to society -- this exposition results primarily from direct acquaintance, from 1964 to 1974, with an integrated school in the field of inert matter -- six years as faculty member (Mechanical and Electrical Engineering) of the Aeronautical Institute of Technology (ITA), Brazil -- and also an integrated school of management and economics -- five years as graduate student of industrial administration (MS) and economics (Ph.D.) of the Carnegie-Mellon University (GSIA), U.S.A.

The second section proceeds by incorporating the views of Senior and Mill, which are updated in order to account for the growth of knowledge and the new constellation of sciences which have come to light in the past one and a half centuries. This is used in section three for a restatement of Schumpeter's work on the Ricardian Vice.

Section four exemplifies the Vice by indicating factors which cannot be ignored in constitutional-rule proposals, for instance the multiplicity of economic theories and the perverse effects of rules on behavior; in the

specific case of the monetary-rule proposal, the shortcomings are further exemplified from within the monetarist perspective on which it was founded. There follows a discussion of the causes of the Vice.

Section five exemplifies how the Vice was overcome in the works of H. Igor Ansoff, chief protagonist of the theory of corporate strategy, and of Uno Kōzō, author of the Marxist theory of levels of analysis. It then considers the current state of graduate education in economics in the light of the Indetermination of Senior.

## 1 - ABSTRACT AND APPLIED SCIENCES

There is a substantial division of labor between physicists and engineering scientists. The former are forced into a process of increasing abstraction in the search for ascendant generality, while the latter are restrained within the realism imposed by the required applicability. Both are theorists, as opposed to professional engineers. But the constructs of physics -- vacuum, perfect gas, frictionless motion etc. -- become increasingly distanced from reality as theory progresses. That is not, and cannot be, the case for the engineering sciences, since the theoretical entities must be tied more closely to their real counterparts, and all kinds of safety coefficients have to be developed to allow their implementation. The phenomenon under analysis is the same, but it is treated in a different light.

The discreteness of the division of labor among the many sub-fields of specialization varies with the accumulation of knowledge, and the degree of integration between basic and applied theories. An evolving nebulous and vague frontier is evident. Let me first emphasize the lack of one all-embracing science in the field of inert matter -- physics here conveniently stands for all of them. Obviously, the most important basic field for the chemical engineer is chemistry, as distinct from physics, notwithstanding physical-chemistry. Second, since the end of the last century there has been no one all-embracing theory in physics either.

Third, the paradigmatic dissent or the "scientific blindness" found in the case of the distinct abstract and applied views is quite similar to, and perhaps stronger than, that found in the case of competing abstract theories (Kuhn 1971, pp. 37, 61), particularly in the mutual vituperations -- physicists talk about technologists or applied physicists, avoiding references to engineering scientists, physicists talk about vagueness, shapelessness, empiricism, rather than applied theories or models etc. In the other camp, one hears of irrelevance, unrealism, one-track-mindedness (partiality) and so on.

It is worth emphasizing that the distinction between pure and applied sciences cannot be made in terms of the extent to which mathematics is used. The mathematics required in some applied models may be even more sophisticated than that in pure theories. And I am stressing the term "models" because they are mutually disconnected and may even be mutually contradictory, a spurious contradiction derived from their parochialism -- as one moves from pure to applied sciences, the theories tend to lose generality as they gain wholeness. There is a tradeoff. Applied theories overcome partiality at the cost of generality; parochialism is the usual cost as they gain applicability, i.e. as they get closer to reality or, in more formal language, as they hold more closely to the protocol experiences (Margenau 1966, pp. 26-31).

Know-how is the task of the professional engineer. He is interested in the know-why to the extent that it helps in the development of products and processes, no more than that. Commitments are to products, processes and

predictions (particularly in the case of the professional economist) rather than to theories. The physicist is the exact opposite.

The physicist's interest in the know-how goes only to the extent of its help in the development of the know-why, no further. The physicist's commitment is to theory, not products and processes. His commitment is to the improvement and reconstruction of theories, and he follows Occam's Razor, Occam's requirements for structure and form of theories: logical consistency, logical fertility, multiple connection, simplicity, elegance, etc. The physicist's language is logic, and his ability the *esprit géométrique*. It is knowledge for knowledge's sake -- Exhibit 1 exemplifies the spheres of abstraction in the words of prominent economists.

The importance of the physicist's problem -- what aspects of reality to look at -- is primarily dictated by the development of theory, not by social relevance (Kuhn 1971, pp. 36, 164). What needs emphasis here is the fact that the engineering scientist, the applied physicist, chooses primarily in accordance with the social importance of the problem.

The engineering scientist may be viewed as the middleman who translates know-why into know-how, and vice versa. His community is divided in its commitment. The more theoretically oriented work from the know-why downwards, while their more pragmatic colleagues work from the know-how upwards -- I doubt that anything can be said objectively about which is more important, and much of the conflict here may be assigned to internal paradigmatic dissent, or to disguised self-interest, politicking, etc.

Kuznets was a genuine applied scientist in his commitment to the realism which allows applicability. Simon's option for satisficing reflects his position on the indispensability of the know-how, one case of the engineering or applied scientist. Paying attention to the structural, sociological, and psychological dimensions of the phenomenon is a socio-economic approach, another case of the applied scientist. And this may be well understood by the pure or abstract scientist (Knight 1960, p. 111):

Now to say a little more about the unrealism of pure economic theory... All the sciences of man and society are involved if one presses the question [of social action, public choice, and policy decision] further and further back -- particularly history, and possibly even more specially, ethics.

The applied scientist's ability is the *esprit de finesse*. The language cannot be restricted to logic, because "all the sciences of man and society are involved if one" is restrained within the realism imposed by the required applicability. If within each science, even physics, the theories are mutually inconsistent, despite the internal consistencies, no one can expect or prescribe interdisciplinary logical consistency. The applied scientist aims at, say, "ordered and tested knowledge" (Kuznets, exhibit 1), and all the better when it can be cast into the Occamian mold.

The language cannot be restricted to logic, because the theoretical entities must be tied closely to their real counterparts, and because "the world has an uncomfortable way of not permitting itself to be fitted into clean classifications" (March and Simon 1959, p. 1). Logic requires clean classifications, *tertium non datur*, the is or is not of the Principle of Contradiction (Georgescu-Roegen, exhibit 1).

The applied scientist's language is dialectic, dialectic in the limited sense of reasoning without disregard to the vagueness with which reality presents itself, dialectic in the limited sense which was proposed in economics by

Georgescu-Roegen (1967, pp. 17-30) -- one may perhaps be surprised by the fact that Quantum Physics also demands a "quantum logic", which would ideally contain classic logic as limiting case (Heisenberg 1963, pp. 145-60).

Dialectic is too powerful a word, however; it is a "magic word" as it automatically evokes strong support or opposition. Dialogic has no Marxist or Hegelian connotation, and leads to the desired evocation of the Socratic discourse, or of the organic coherence which can be viewed in the Schmollerian economic historians' discourse (Schumpeter 1986, pp. 812-3).

Intellectually unsatisfactory as it may be judged, dialogic is the way of "assembling" distinct constructs, or mutually inconsistent but internally consistent theories. Engineers practice it all the time, the professionals using disconnected applied theories as they are available, applied theories developed by engineering scientists who may keep half an eye, if that, on the aspiration for scientific unity, but are prepared to use all sorts of "safety coefficients" and "approximations" in the maintenance of their first commitment to applicability.

Professional engineers differ still in their due regard for the specificities of the reality or case in question, the product or process they are working with. The specificities account for the individuality of the case and, as such, they are obviously omitted from pure theories, and almost always from the applied ones. But there is an extremely important protuberance of the academic over the professional sphere here. The economic historian, as well as the academic specialist in case studies, shares with the professional economist the same attention to specificities.

The language of the professional engineer is advocacy, in the sense that he advocates a solution when he presents his project. Obviously, the solution should take into account the specificities of his time, his country, and his firm, and should satisfy the specifications which are given to him -- which are exogenous, the economist would say; note that value judgments are also exogenous.

The paradigmatic dissent found in the case of the distinct academic and professional views is strong too. "Those who can do, those who cannot teach" is a well-known proverb, and may be taken as good evidence for the "professional blindness" -- the work experience, as a form of education, has effects similar to those of formal education upon the vision of the professional engineer; one corroboration in a experimental situation may be viewed in Simon (1979, p. 286) -- Exhibit 2 exemplifies the blindness in the words of prominent economists.

If one takes the simple example of the design of a plane or its engine, the division of labor in the field of inert matter is clear. For the physicist, whether theoretical or experimental, it is an unthinkable task: he would lack a scientific sense and charlatanism would be suspected because he does not understand the task -- furthermore, he has no way of pretending knowledge either. Obviously, he would need the know-how, and that is not to be found in the know-why. The professors of aerodynamics, heat engines etc., do participate, but as consultants and in more sophisticated projects. No one would question that this is the job of the professional engineer.

## 2 - THE INDETERMINATION OF SENIOR

For economics and management, for biology and medicine: to a large extent what was said for physics and engineering holds good, but two major limitations should be discussed. The first lies in the order of the complexity, or of dialogic nature, of these large fields of knowledge. The division of labor grows correspondingly less clear as one moves from inert matter to life, from life to society.

In relative terms, there are more economists than physicists in the professional as opposed to the academic world; more important, pure (abstract) and social (applied) economics are lumped together, despite the large number of sub-fields and schools in the applied or social level, such as economic development, monetary economics, some of the neo-Austrian works, most of institutionalism or behaviorism etc. Thus, one must say that the analysis holds good in terms of pure economics versus management science as well as socio-economics.

The second limitation of the analysis resides in the semi-experimental nature of economics and other social sciences. Positive is said to refer to what is, normative to what ought to be (Neville Keynes 1904, pp. 31-6) or, more appropriately, what ought not to be -- to maintain ought is to fall into pure technocracy, technocracy as the modern version of theocracy when science replaces religion in undemocratic governments. It is possible to talk about positive and normative physics, but positive and normative engineering sciences make more sense, because normative clearly connotes directions for dealing with reality rather than laboratory, a molded stylized reality.

Physicists feel free to move away from reality because the experimental physicist can, and to a significant extent does, construct idealized realities in laboratory experiments: vacuum, perfect gas and so on. Pure economists do not feel the same freedom because experimental economists, econometricians, economic historians etc., cannot, to the same extent, do the equivalent: create economic man, perfect competition and so on. To play down the difference with the "exceptions" in physics will not do. It is a childish but very frequent game: it just takes advantage of the fact that "classifications are not clean". It is like saying that five or forty is the limit of the voting age, based on the premise that no-one can go over to the dialogic interval of, say, fifteen/twenty-one and prove the correctness of eighteen.

Ethical barriers stand in the way of constructing idealized economic realities, but other impossibilities are also obvious. Economists have no alternative but to look at society as it is, or as it was, and take into account its changing nature, including the change derived from the accumulation of knowledge itself -- which, ironically, reduces its value and that of history.

A thorough look may require knowledge of all the other social sciences. This is one attraction of socio-economics, where more elements of the phenomenon (reality) are represented, thus permitting a less distorted view. But pure-theoretical economists also work with the opposite motivation, that of improving their theories -- "improving" in Occam's sense --, whatever their school of thought. This usually leads to the reduction in the number of axioms -- basic constructs carrying fewer and fewer elements of reality --, and a parallel increase in deductive chains, or sequences of theorems (Margenau 1966, p. 36).

Normative economics, if it is understood as normative pure economics and

includes the connotation that its practitioners are apt to tell what ought not to be done in reality, has a flavor of charlatanism and of a lack of scientific sense. And I really mean "flavor" because of the limitations of the analysis already discussed -- in general, pure economists know more about reality than physicists.

If the pure economist also has the "intuition and the wide knowledge of facts" (Keynes 1951, p. 158), he is constantly aware of many reserves and qualifications: if relevant and similarly interpreted normative propositions of sociology and other partial social sciences do not conflict with an economic proposition -- not to say with conflicting economic propositions; if efficiency can be taken as the decisive factor in the matter; if omitting the irreversibility of time here but not there is an acceptable simplification -- see Hicks (1976, p. 140) on Keynes --; and so on.

Normative economics, if it is understood as normative socio-economics, conveys the usual meaning of the expression, and it is safer to practice because many of those reserves and qualifications form an integral part of the theories, they are already dialogically in-built. Let me take a testimony by Hicks (1976, pp. 139, 143, 145-6):

The two progenitors of the Austrian school were Menger and Bohm-Bawerk... What was it in Bohm that so annoyed Menger? I believe it is simply that in Menger time is uni-directional. Menger's theory [the beginnings of a theory] is an economics in time... the [Wicksell's version of Bohm's] theory became no more than a theory of stationary state... out of time... I also mean that it [Stationary State economics] has encouraged economists to waste their time upon constructions that are often of great intellectual complexity but which are so much out of time, and out of history, as to be practically futile and indeed misleading... It is clear that his [L. Lachman] view of me is like Menger's view of Bohm-Bawerk... His ideal economics is not so far away from my own ideal economics; but I regard it as a target set up in heaven. We cannot hope to reach it, we must just get as near to it as we can...

A hint at the "ideal economics" may be found elsewhere, "by generalization, by constructing 'more general' theories, theories which put more things into their places, even if we can do less with them when we put them there" (Hicks 1980, p. 209). It lies "in heaven"; Hicks must surely have been ultimately hinting at the dream of science, "to explain all phenomena, those of economics as well as those of physics and chemistry, in terms of an all-embracing theory in which all constructs are logically related" (Margenau 1966, p. 32) -- this dream is a subtle motivation, however, and it plays its role even for those scholars who call it "illusion" (Heer 1969, p. 211) or "creed of unified science" (Georgescu-Roegen 1967, p. 61). "On earth", here and now, are the socio-economics and dialogic.

Now, whatever the current gulf which separates dynamic from evolutionary theories (the irreversibility of time is one element here), the hope is that it may be bridged in the future, and the history of science does not authorize mere opinions like "the waste of their time..."; more forcefully, the history of science does not authorize unfounded generalizations like Buchanan's condemnation of mathematical economists (see exhibit 1).

It is up to the applied or socio-economic scientists, as it is up to the engineering scientists, to derive applied models and the consequent normative implications. After all, Adam Smith's progressive division of labor was confirmed. Pure and socio-economics are complementary; imbalances may occur here or there, a really difficult problem whose "out of time" and out of space



solution would be unspeakably "misleading".

"Practically futile and indeed misleading...": in the terms here developed, this is so because, as it happens, normative propositions have been erroneously or unduly derived from pure constructions, which in this particular case omit the irreversibility of time. Senior (1938, p. 3) has been forgotten:

But his [Political Economist] conclusions, whatever be their generality and their truth, do not authorize him in adding a single syllable of advice... The business of a Political Economist is... to state general principles, which is fatal to neglect, but neither advisable, nor perhaps practicable, to use as the sole, or even the principal, guides in the actual conduct of affairs... To decide in each case how far those conclusions are to be acted upon, belongs to the art of government, an art to which Political Economy is only one of many subservient Sciences.

It is something to say for economics, and pure economics in particular, that Senior, its first master of the hypothetical-deductive model (Schumpeter 1986, p. 484) starts his work by stating its principle limitation. And this limitation is nothing short of an indetermination, one worth calling *The Indetermination of Senior*.

Senior's "Political Economist" is here updated, "abstract or pure economist" is the idea. "Single piece of advice" is also updated, and in "normative conclusions" there is an added generalization. Senior's dichotomy is equally changed into the trichotomy of pure economics, socio-economics and art of economics. The latter conveniently stands for the art of social sciences, but the term additionally characterizes the phenomenological domain.

In the same way, socio-economics conveniently stands for applied social sciences. The idea is better expressed by Mill (1877, pp. 152) in a footnote: "each art presupposes, not one science, but science in general; or, at least, many distinct sciences". To the extent that socio-economics models each economic problem under rays of light from the relevant distinct and mutually contradictory social theories, not to speak of the distinct pure economic theories, socio-economics exhibits the Indetermination of Senior to a lesser, and qualitatively different, degree.

Socio-economics is then first and foremost positive economics, a positive intermediate science; and its normative conclusions should be qualified not only, and not obviously, because of value judgments, but because of the nature of scientific knowledge: the most important and dominant features of the reality may happen to lie in its time-space individuality, in the specificities. Mill (1877, p. 155) again:

No one who attempts to lay down propositions for the guidance of mankind, however perfect his scientific acquirements, can dispense with a practical knowledge of the actual modes in which the affairs of the world are carried on, and an extensive personal experience of the actual ideas, feelings, and intellectual and moral tendencies of his own country and of his own age.

An alternative understanding is to view normative propositions more in the realm of specialization of professional economists, those directly involved with the "practical knowledge", those who know from direct experience -- this knowledge can be transmitted, but time, costs and noises of transmission are very high in comparison with the case of applied sciences, and particularly with pure sciences. As for the value judgements dimension, the normative propositions are clearly in the realm of society as a whole, as indicated

above.

The case of the medical doctors, general practitioners in particular, says it well: "there are no diseases, there are patients", i.e. the specificities of the patient (the case) may be more important in the determination of the treatment (normative conclusions from medicine or applied biology) than the general features of the disease -- I am much in debt to my father, Dr. Jose Maria da Silveira Jr. (27-11-1908/02-10-1988), Medical Practitioner, not only for long discussions here, but for the example of his daily professional practice. He strictly followed this well-known ethical precept of his vocation.

As one moves from inert matter to life, from life to society, the increasing complexity of the phenomenon means ascendant individuality. So, the indetermination of Senior, which for all reasons but precedence should be called the Indetermination of Mill, is here updated in the following terms:

The propositions of abstract economics, whatever be their generality and their truth, do not authorize normative conclusions, but cannot be ignored. The latter, namely what ought not to be done, is derivable from positive socio-economics. The derivation is to be qualified by the specificities of the case.

### 3 - THE RICARDIAN VICE

The Ricardian Vice is the habit of extracting normative conclusions from pure economics. Analyses which do not take into account crucial elements of the phenomenon, are conducted and applied as if they did. The Vice was described and named by Schumpeter (1986, pp. 540, 1171):

They [Senior, Mill and others] merely meant that questions of economic policies always involve so many noneconomic elements that they should not be dealt with on the basis of purely economic considerations... one could only wish that the economists of that (or any) period had never forgotten this piece of wisdom -- had never been guilty of the Ricardian Vice.

what we have called above the Ricardian Vice, namely, the habit of piling a heavy load of practical conclusions upon a tenuous groundwork, which was unequal to it yet seemed in its simplicity not only attractive but also convincing.

On the whole, this piece of wisdom has been forgotten by mainstream economists. The Friedmanian trichotomy is positive economics, normative economics and art of economics. Friedman (1953, pp. 3-7) omits the existence of other positive social sciences. Mill is wrong, the art of economics presupposes just economics. "The conclusions of positive economics seem to be, and are, immediately relevant to important normative problems, to questions of what ought to be done and how any given goal can be attained" (emphasis added; *ibid.*, p. 4). The art of physics presupposes just physics: professional engineers may ignore the chemical properties of the elements; iron, aluminum, hydrogen, oxygen, plutonium and gold, all elements are everywhere perfect substitutes. The Vice is thus legitimized.

Most mainstream economists talk about actual unemployment problems based on conclusions of the work-leisure scheme, of the abstract labor-supply function; it takes just the reading of an applied classic, *Organizations* (March and Simon 1959), to avoid this Ricardian Vice, and to see how economics and other social sciences are "subservient Sciences" (Senior), i.e. to see how they inform the construction of March and Simon's inducements-contribution scheme. (To say that the work-leisure scheme is a dialogical limiting case of the

latter is to convey, unconventionally but appropriately, the general pattern of the relation between pure and socio-economic models.)

Schumpeter's monumental *History of Economic Analysis*, a classic of its kind, is also a classic of the socio-economics kind, socio-economics in the sense here developed, say, applied economics à la Mill. Schumpeter does not forget the Ricardian Vice in his own work. I repeatedly and randomly opened the classic, but it did not take many experiments to find my mark in a remarkable passage (*ibid.*, pp. 988-9):

The essential result of Barone's or any similar investigation is that there exists for any centrally controlled socialism a system of equations that possess a uniquely determined set of solutions... this means that so far as its pure logic is concerned, the socialist plan makes sense and cannot... (emphasis added.) We must not forget that, just like the pure theory of competitive economy, the pure theory of socialism moves on a very high level of abstraction and proves much less for the 'workability' of the system than laymen (and sometimes theorists also) think.

Schumpeter's language is dialogic, say, dialectic à la Georgescu-Roegen. Repeating my "experiment", I succeeded again, and found a succinct justification of his periodization of history, and of his 1870-1914 period (*ibid.*, p. 753). It is dialogic at its best. Using logic, the pure economist would be at a loss with the number of "exceptions", the number of authors or works which do not conform with any criterion of periodization; commitment to logic would thus mean declaring the intractability of the periodization problem, or "omitting" the exceptions.

Finally, a word on the Schumpeterian elegance. As a scientific body matures, its theoretical skeleton grows and undergoes qualitative moves to higher layers of abstraction, unless a commitment to applicability prevails in its scientific community. It is interesting to note that as Schumpeter moves along the historical development of economic analysis, and from its origins reaches general equilibrium, his methodological reserves and qualifications consistently increase as the abstraction ascends.

#### 4 - EXEMPLIFICATION

Let me take the popular political campaigns for constitutional reforms in the U.S.A., the rule proposals; for instance, the monetary base should increase by a fixed annual rate. March (1978, p. 603) deals with the rigidity of measures of performance where ambiguity is inherent in objectives, values or tastes. My first socio-economic comment on constitutional-rule proposals requires very few adaptations and paraphrasings of his problem, and it was originally directed against the disruptive role of the International Monetary Fund in the current international debt crisis.

The complexity of the economic phenomenon ought to be emphasized -- Hayek's (1975, pp. 251-2) elaboration on its essential organized complexity provides a good context here. Given the inherent complexity, the more rules of performance there are, (a) the greater is the tendency to concentrate efforts on irrelevant ways of abiding by them, and (b) the greater also is the number of perverse ways, when the rulers do not care for the relevant aspects of the phenomenon which were not contemplated by the rules. So, (c) there exists a tradeoff between these negative effects, and the positive enlargement of controls over the rulers. This optimal clarity problem, as March calls it, suggests caution on rule proposals.

My second comment is closely related to this. The more complex the phenomenon is, the greater is the possibility of alternative and equally plausible ways of its being explained (Morgenstern 1963, p. 25). So, a correlation exists between the increasing number of theories, or schools of thought, and the growing complexity of the phenomenon, from physics (Heisenberg 1963) to psychology (Loevinger 1987), passing midway through economics -- a mature approach to the differences among current schools in the macrofield was recently taken by Dow (1985); the reverse seems to predominate in all disciplines, and not least among physicists. Given this situation, from what school should rules be taken? Again, this suggests caution on rule proposals, particularly if a Constitution is involved.

Let me, however, for the sake of exemplification, assume that the other social sciences are irrelevant here (after all, it is an "applied economic field"), and that monetarists are correct: the monetary base is exogenous, the money supply is determined by the standard money multiplier (Silveira 1974b); the demand for money is stable, but for reasonably predictable shifts in response to changes in financial institutions (Silveira 1973).

There follows a positive conclusion: a fixed five-percent annual increase of the base would in fact mean a progressive relaxation, or a rising effective rate, if the diversity of financial products and institutions expands, as has happened in the last two decades. Even in this idealized reality, the monetary rule cannot be so simple.

Let me reduce the degree of idealization. Take the money multiplier; it is not socio-economics, but it is difficult to think about a simple applied economic model closer to reality (and more widely used). Nevertheless, it ignores the bankers' requirement for compensating balances. One may account for this requirement by introducing a bankers' behavioral equation, and by defining the extra balances which the public must hold.

The extra balances distinguish the effective money supply from the observed or measured balance. Let the base increase by the fixed "constitutional" rate; by increasing the requirement, bankers contract the effective money supply, while the measured balance expands, and vice versa (Silveira 1974). In other words,

bankers are able to "fine-tune" the constitution! Let me now consider a positive conclusion of applied economics à la Mill, or socio-economics (Kuznets 1972, p. 319):

Economic growth perforce brings about a decline in the relative position of one group after another... a change not easily accepted, and, in fact, as history teaches us, often resisted. The continuous disturbance of pre-existing relative position of the several economic groups is pregnant with conflict -- despite the rises in absolute income or product common to all groups. In some cases, these conflicts did break out into overt civil war, the Civil War in the United States being a conspicuous example... The modern national state plays a crucial role in peacefully resolving such growth-induced conflicts... [which] may be described as a process of controlled revolution.

I connected this to behavioral economics, to Simon's construct, the administrative man. I also discussed the different intensities of pressure over the Monetary Authorities which result from different rapidities of structural transformation of the economy (Silveira 1984; 1987). The rule proposals ignore this socio-economic conclusion.

The fixed "constitutional" rate is pro-cyclical: it is more restrictive when the structural transformation speeds up and the consequent redistributive conflict rises, and vice versa. The importance of the matter is such that further comments are unnecessary. The rule proposals are usually out of time, because the positive constructions which inform them are out of time.

A Knightian touch is in order: should more laws be enacted with the aim of regulating the behavior of "the law-breaker of the universe" (Knight 1960, p. 53)? If reasonably substantiated observations of the erosion of moral codes exist and are evoked to justify replacement by constitutional rules, it is necessary to look still further into the degree of substitutability between them. Joan Robinson (1983, p. 11) maintains the survival of the species as the ultimate reason for moral codes, but denies efficiency in the replacement: "honesty is much cheaper".

These are examples of immediate questions which may occur to any economist who is not addicted to the Ricardian Vice. Certainly, similar applied questions are raised by many who favor rules. A serious question of fact is raised by Meltzer (1987, p. 1), "The thesis I will present is that forecasts of main economic aggregates are so inaccurate -- so wide off the mark on average -- that discretionary policies based on forecasts are unlikely to stabilize the economy". Incidentally, Meltzer neither presupposes Public Choice nor suggests the constitutional stratum for his more elaborate version of the monetary rule.

Let me add that the inaccuracy of the economic aggregates by itself (see Georgescu-Roegen, exhibit 1) gives more weight to Meltzer's thesis. And it cannot be forgotten that economic and physical observations differ, not only in the observer's higher propensity to falsification, but also in the potential lies of the observed (Morgenstern 1965, p. 26) -- this is the source of another indetermination, as was discussed in Silveira (1984b).

The causes of the addiction are not specifically addressed by Schumpeter, who just indicates lack of knowledge -- historical sense, philosophy and sociology --, and suggests that the attention of economists was deviated, since Cairnes, Sidgwick and Weber, from the piece of wisdom to the question of value judgments (Schumpeter 1986, pp. 471-3, 540-1).

Hayek (1973; 1975; 1978; 1981) does not discuss the Vice, but my reading of his work leads me to interpret him as disavowing any normative conclusions whatsoever, as they all involve no more than "Pretense of Knowledge", as his Nobel Conference is termed; this is going too far, as is evidenced by the normative conclusions that Hayek himself derives from his evolutionary theory. Going instead to the root of the matter, ascendant specialization emerges as the first cause of the Vice.

The second cause, which may be called the urge to participate, is in Schumpeter (1949, p. 346) also, but in his Presidential Address: "most of us, not content with their scientific task, yield to the call of public duty and to their desire to serve the country and their age". Together the two factors account for a large part of the phenomenon, but one must remember that scientists are not "economic eunuchs", as Buchanan would put it.

Human beings are mixed in action, even here the selfish interest plays a role: status, prestige and income, and research funds as well, particularly for the maintenance of the massive manpower which the development of knowledge demands, whatever the level of abstraction and the school of thought. So, interested behavior is the third cause.

A further exemplification of pure and socio-economic approaches is evident here. "Mixed behavior" may be understood in terms of Freud's structural model: superego (rule-following behavior, the pure sociological man is enclosed here), ego (purpose-seeking behavior, the economic man here), and id (spontaneous behavior). To say that human beings are mixed in action is to say that actual behavior usually involves the three dimensions of the personality.

In this perspective, the economic man is clearly in a higher sphere of abstraction than the "psychological man", since the latter encompasses other observable dimensions of human behavior; the economic man is a simplified version of Freud's ego and, as such, is a limiting case which tends to predominate in specifiable phenomenological domains, such as business. Freud calls attention to unconscious determinants of behavior, and so the fourth and perhaps the most important cause of the Vice becomes evident, namely the scientific blindness (Kuhn 1971, pp. 37, 61).

Let me conclude this section with another example of the distinction between pure and socio-economic treatments of a problem, namely a brief sketch of an abstract alternative to the applied approach developed here. Matters may be really simplified. The Indetermination of Senior may be restricted to its first part, "the propositions of abstract economics, whatever be their generality and their truth, do not authorize normative conclusions".

Pure economists know nothing about reality (a first approximation, a clean classification, no vagueness, no "loose talking"). Human beings are economic men everywhere, including the sciences; Occam's requirements (generality, logical consistency) dictate this. So, one may as well forget about Ricardian Vice and go straight to the point, calling the latter by its name, charlatanism. And charlatanism proliferates because the stakes are high and the cost of being caught low (low because the complexity of the phenomenon allows many intelligent ways of pretending knowledge). I do not doubt that even the most blinkered pure economist would prefer the socio-economic approach here.

## 5 - NORMATIVE CONCLUSIONS

To derive normative conclusions from the Indetermination of Senior is a somewhat scary initiative. Let me first reinforce my view of socio-economics with two cases, one from management science and another from Marxist economics. I will then abide by the community tradition of finishing a paper with derived policy recommendations, a tradition associated with the condition of being addicted to the Ricardian Vice.

To say that management science is socio-economics goes too far. It is true for some chapters of management, in the same way that others are socio-psychology or, despite the awkwardness of the term, others are socio-sociology. On the other hand, management (production) shares with engineering sciences (industrial engineering) a nebulous overlapping frontier encompassing many beautiful models, which are extremely sophisticated in the use of mathematics and may be viewed as applied economics but not as socio-economics (as is the case of the money multiplier).

Behavioral Theory of the Firm is clearly within the realm of socio-economics, and, as such, within economics -- it is not a view shared by Edward Mason, Fritz Machlup, and Milton Friedman, as Simon (1979, pp. 276-7) reports. The Theory of Corporate Strategy is also socio-economics. H. Igor Ansoff is its chief protagonist.

The evolution of Ansoff's work shows how he was able to overcome applied economics and to develop a socio-economic model, to overcome economic rationality and to develop socio-economic rationality, to overcome the Ricardian Vice and to develop a very good understanding of the Indetermination of Senior -- there is no indication that Ansoff read Senior and Mill, or even Schumpeter, Georgescu-Roegen or Knight: he seems to have learned by doing. In the terms here developed, he may be viewed as a more pragmatic socio-economist who works from the know-how upwards (his model is within the nebulous frontier between applied science and art of science: it is dated and located).

Ansoff's model focuses on strategic decisions only, leaving aside those of operation and capital investment -- this parochialism is as expected. But the first version ("strategic planning") was an extension of behavioral economics in the light of the neoclassical theory. The resulting failures in real world applications led the author to develop a second version (strategic management), encompassing and intertwining relevant propositions of other social sciences -- Exhibit 3 attempts to convey this in his own words.

The case of Marxist economics is equally impressive. Uno Kōzō reconstructs the theory, separating the logical from the dialogical spheres, the pure economic theory (pure capitalism or *gengiron*) from the socio-economic model (stage theory or *dankairon*). Uno condemns empiricism (real world questions have to be dealt with in the light of both theories) but he equally emphasizes the importance of the time-space specificities. Finally, Uno seems to accuse not only the Marxists but Marx himself of being addicted to the Ricardian Vice -- Exhibit 4 attempts to summarize Morris-Suzuki's appraisal in her own words.

Let me finally consider the "Report of the Commission on Graduate Education in Economics" (Krueger et al 1991), in the light of the Indetermination of Senior -- Exhibit 5 summarizes the relevant aspects of the Report through a series of quotations. Twelve well-known economists confirm that the central problem of graduate teaching today is the distance between theory and economic reality. But this is the theme of the Ricardian Vice and the Indetermination of Senior, and the Report shows no awareness of both -- indeed, it confirms Schumpeter's

assertion: "this piece of wisdom was forgotten".

Well above half of the market for new economics doctorates -- the nonacademic and the "sister disciplines" -- indicates that the demand is not for pure economists, and give weak signals of recognition of the socio-economist. On the other side, the preference of the undergraduate economics students is clear. The Report recommends marginal changes in the pure curriculum only. What is in demand is the capability of dealing with economic dialogic, but the Commission manifests concern about mathematics replacing economic logic.

In the light of the Indetermination, the apparent "growing chorus of complaints" means that the market for pure economists is below half of the total market. It also means an ascendant paradigmatic conflict between the pure and the social economist. This is not new. It may be embarrassing that "fields" like economic development (but for its logical dimension, i.e. growth theory), economic thought (but for its logical dimension), and economic history (but for its quantitative dimension), no longer fit the hegemonic doctoral program.

What is new and perhaps critical is that economic policy and institutions are no longer treatable in the pure curriculum. One cannot put together the core curriculum of physics (pure economics) with fields of engineering sciences (socio-economics). It is not "less rigorous" to teach Newton physics in the core curriculum of the doctorate program in mechanical engineering, instead of quantum mechanics and Newton as a limiting case -- so, the economic analysis of the applied departments will not become "less and less rigorous" (Krueger et al 1991, p. 1039): what they need is rigorous socio-economic analysis.

No one would dream of calling the physics (pure economics) doctorates "idiot savants", and that would also be the case in economics if the "piece of wisdom" had not been forgotten. The Commission's suggestion of incorporating real world issues in the pure program, with no extension of its duration, would just fuel the Ricardian Vice. Let the Smithean community recognize the division of labor instead. And the recognition of the paradigmatic conflict between the pure and the social views seems to be the only hope of finding means of overcoming it, and being then able to absorb all the synergy and benefits of integrated schools or departments.

## CONCLUSION

The art of economics presupposes attention to the specificities which characterize the time-space individuality of the phenomenon; in principle, or by definition, specificities are outside the scope of theories. The art of economics also presupposes socio-economic theories which dialogically connect all sciences which are relevant to the understanding of the phenomenon. Socio-economic theories are positive branches of knowledge which authorize normative conclusions when suitable attention is given to specificities. Pure theories do not authorize normative conclusions, but cannot be ignored. This formulation was called the Indetermination of Senior.

This formulation updates Senior and Mill and is consistent with, among others, Schumpeter and Knight. It promotes the vision of a general pattern of division of labor in learning or knowledge: abstract science, applied science and art of science are three distinct spheres of knowledge, whether the field of inert matter, or life, or society is in question. The dialogic boundary-lines between spheres and fields evolve as knowledge increases, and may collapse (or emerge) here and there; nowadays, a unified science is "in heaven".



The growth of knowledge means progressive division of labor or ascendant specialization across all fields and spheres of abstraction. The semi-experimental nature of economics means conflicting demands on pure economists, hinders specialization, and feeds the paradigmatic conflict between pure and social views. The growing complexity of the phenomenon as one moves from inert matter to society contributes to the above effects.

Debreu exemplifies the pure economist as typically as Kuznets exemplifies the social one. Schumpeter and Knight move easily and consciously on both levels, and the former crosses over the social-sciences frontiers. These frontiers lose sense in the case of Simon, but his insistence on the importance of the know-how shows a predominance of the social bent.

Most of behavioral economics and institutionalism fit into the concept of socio-economics as developed here. On the whole, mainstream and Marxist economists are addicted to the Ricardian Vice, which is how Schumpeter calls the habit of ignoring the Indetermination of Senior, the habit of conducting and applying pure logical analyses as if all crucial elements of reality were being illuminated.

Constitutional-rule proposals which ignore the multiplicity of schools of economic thought, or the limited substitutability between moral and legal precepts, or the perverse effects of rules on behavior are examples of addiction to the Vice; in the case of the monetary rule, monetarist proposals which additionally ignore the level of structural transformation of the economy, or the changing character of the financial institutions, or the bankers' requirement for compensating balances are more specific examples of the same fault. Four causes of the Vice were alluded to: ascendant specialization, the urge to participate, interested behavior and scientific blindness.

The Vice was recognized and overcome in two reported cases, Ansoff's theory of corporate strategy, and Uno's Marxist Theory. A criticism of the "Report of the Commission on Graduate Education in Economics" was conducted in the light of the Indetermination of Senior. The prospect of losing more than half of the market for new economics doctorates may induce the recognition of socio-economics and, what seems today a dream, may lead to integrated departments of pure and socio-economics -- this might be an objective of SASE.

The general reference framework here developed may be restated as follows. Mathematics is a general and logical capital good for the construction of empirical science. Pure empirical science (e.g. Growth Theory, Theory of the Firm, Uno's *Gengiron*) is a logical but specific capital good for the construction of applied empirical science (Socio-Economics). The latter (Development Economics, Corporate Strategy, Uno's *Dankairon*, as corresponding examples) is a dialogical and specific capital good for the improvement of the art of science.

The complementarity among these distinct spheres of knowledge is obvious. It is, however, obscured by the Ricardian Vice. The assimilation of this framework by the scientific economics community could be one of SASE's chief reasons for being. It shows a comprehensive and less conflicting view of economics, and it may reduce the negative-sum game derived from the scientific blindness of both pure and socio-economists. And so, it may greatly enhance the social contribution of economics.

## **EXHIBIT 1 -- GENERAL REFERENCE FRAMEWORK: A DIVISION OF SCIENTIFIC LABOR**

### **ABSTRACT OR PURE SCIENCE (physics, pure economics) -- Debreu (1984, p. 46):**

Yet a scientist knows that his motivations are often weakly related to the distant consequences of his work. The logic rigor, the generality, and the simplicity of his theories satisfy deep personal intellectual needs, and he frequently seeks them for their own sake.

### **APPLIED SCIENCE (engineering science, socio-economics) --**

Ohlin (1972, p. 299) on Kuznets:

Kuznets, of course, makes use of models which demonstrate the connections between strategic elements in the economic system, but he shows a very limited sympathy for abstract and generalizing models... He chooses and defines concepts which correspond as closely as possible to what can be observed... Within the framework of these models, regard is also paid to institutional and non-economic factors -- for example changes in population growth, in technology, in industrial structure and in market forms.

Kuznets (1961, p. 119):

In the social sciences field, in particular, the foremost aim of ordered [and tested] knowledge is to enrich the direct experience of current generations with those of the past, and to widen the horizon of experience of a given nation by the experience of others.

Simon (1979, p. 289):

But the important thing about the search and satisficing theory is that it showed how choice could actually be made with reasonable amounts of calculation, and using very incomplete information, without the need of performing the impossible -- of carrying out this optimizing procedure.

Georgescu-Roegen (1967, pp. 23-4) on economic concepts:

we must accept that in certain instances at least, B is both A and non A is the case... Though they are not discretely distinct, dialectical concepts are nevertheless distinct. The difference is this. A penumbra separates a dialectical concept from its opposite.

Georgescu-Roegen (1967, p. 122) on economic data:

In proper use, an index or an aggregate is not a fine bullet, but a piece of putty which covers a dialectical target, such as the standard of living or the national product, better than a bullet.

### **ART OF SCIENCE (professional engineering and professional economics) -- Pasinetti (1986, pp. 411, 414) on the moral philosophers and on Galiani:**

They [the moral philosophers] were not aiming at proposing theories. They were trying to state standards of ethical behavior and -- given this purpose -- it was not contradictory for them to try to set out, not one, but many separate arguments, provided that they all helped, in various cases and occasions, to achieve the final effect. Far from considering these various arguments as contradiction with one another, they regard them as enriching their discussions.

Carried away by our modern theories we tend to see contradictions among the various principles he [Galiani] has so remarkably anticipated.

## EXHIBIT 2 -- PARADIGMATIC CONFLICT, SCIENTIFIC OR PROFESSIONAL BLINDNESS

ABSTRACT SCIENTIST -- Solow (1989, pp. 37-8)\*:

Colander and many critics would have us go back to earlier days when philosophy and other social sciences were intertwined. He even argues that we should go back to the vague generalizations of Adam Smith. I yield to a dozen people or so in my admiration for Adam Smith, which is not unbounded. I do not regard *The Wealth of Nations* as a theory; I do not regard it as anything with policy implications... I need something more precise -- something less amorphous, less vague...

APPLIED SCIENTIST -- Buchanan (1985, p. 14)\*\*:

As it is practiced in the 1980s, economics is a 'science' without ultimate purpose or meaning... In a very real sense, the economists of the 1980s are illiterate in the basic principles of their own discipline... Their interest lies in the pure intellectual properties of the models with which they work, and they seem to get their kicks from the discovery of proofs of propositions relevant only for their own fantasy lands... I do deplore the waste that such investment of human capital reflects.

PROFESSIONAL ECONOMIST -- Friedman (1952, p. 456)\*\*\*:

And the only relevant test of an hypothesis [or theory] is comparison of its prediction with what occurs.

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\*Fuks (1992, pp. 34-40) has investigated Solow's Ricardian Vice. This additional evidence is remarkable. Solow reverses things: normative conclusions are derivable not from socio-economics but from pure economics. But he is certainly correct in viewing Smith as a socio-economist.

\*\*Buchanan is here attacking the mathematical economists, who are still indirectly called frauds, conscious parasites on the community etc., and also ideological eunuchs, because their motivation is not normative. He puts himself in the position of applied scientist, but his theoretical contribution ranks in the highest level of abstraction. As Hicks (1980, p. 214) says, "the first cattallactists were poor mathematicians, but were thinking mathematically" -- Hicks is referring to the first marginalists, but the dictum holds good here.

\*\*\*This really sounds like the talk of a professional economist who works, for instance, in the strategic unit of a large corporation, and who may consistently put aside the macro-theories when, as happens, mechanical forecasting procedures work as well as, or as poorly as, economically founded ones. It is also pertinent to recall Popper (1961, p.61), "I therefore wish to make it clear that I consider the theorist's interest in explanation -- that is, in discovering explanatory theories -- as irreducible to the practical technological interest in the deduction of prediction". I confess that there is a lot of teasing here, but there is also an attempt to convey the idea that the classification of an author as positivist, realist, instrumentalist and the like, must be linked with the level of abstraction of his theoretical work. And this is a criticism of most of Friedman's critics.

### EXHIBIT 3 -- NEOCLASSICAL THEORY OF THE FIRM (Pure or Abstract Economics)

and the THEORY OF CORPORATE STRATEGY (Social or Applied Economics)

The Ricardian Vice and Ansoff (1965), by Ansoff himself (1980, pp. 5-6):

**Corporate Strategy** (published in 1965) is a prescriptive logical analysis of how business firms should think through their adaptation to the environment... many practical applications of prescriptions similar to mine have come to grief, the spread of strategic planning has been slowly, and it is only now, ten years later, that the practice of genuine strategic planning is emerging.

The Indetermination of Senior and Ansoff (1980, 1987):

Strategic planning is focused on business, economic and technological variables. Strategic management broadens the focus to include psychological, sociological and political variables (1987, p. 265).

Both experience and literature on psychology show that individuals will resist change when it makes them insecure... Political science literature, as well as common observations, shows that groups: coalesce and act as power centers within the rest of the organization... Both sociological literature and practical experience show that: groups of managers who share common tasks and preoccupations develop, over a period of time, commonalities of behavior and outlook... [and] a consensus, which sociologists call a model of reality, on which behaviors produce desirable results and which do not... (1987, pp. 241-2)

Seen from the point of view of a strategy analyst, resistance is a manifestation of the 'irrationality' of an organization, a refusal to recognize new dimensions of reality, to reason logically, and to carry out the consequences of logical deductions. But seen from the viewpoint of a behavioral or political scientist, resistance is a natural manifestation of different rationalities, according to which groups and individuals interact with one another (1987, p. 238).

Our concern in this book is with the behavior of complex organizations in turbulent environments... Most available theoretical insights are partial, refracted through the optic of a particular theoretical discipline from which they are derived, be it economics, psychology, sociology, political science, or general system theory... The major aim [of this book] is to bridge the gap between theory and practice by providing an explanatory science... In natural sciences such explanations go under the name of **applied theory** -- an intermediate level of knowledge between pure science and engineering... The theory is **multi-disciplinary** in the sense that it seeks an optic appropriate to the problem and not to a particular scientific discipline. There are two paths to such an optic. One is to attempt an integration of the available disciplinary insights into a coherent whole. The other is to work back from the 'real world' problem, abstract the features which appear critical to explanation of behavior, and then selectively borrow from theoretical insights which may be available (1980, pp. 1-3).

EXHIBIT 4 - THE INDETERMINATION OF SENIOR AMONG THE MARXISTS -

MORRIS-SUZUKI (1991) ON UNO KŌZŌ:

The most important and controversial new element to enter Japanese Marxist economics in the 1950s, however, was Uno Kōzō theory of levels of analysis (p. 116)... The main aim of Uno's theory was to free Marxist thought from the logical and semantic traps in which it had become enmeshed (p. 117).

In Uno's view, the main cause of confusion in analyses of Japanese capitalism (both by Kōza school and Rōnō school economists) was the failure of Marxist theorists to distinguish between pure theory, the study of historical development, and the study of contemporary economic conditions (p. 117).

At the deepest and most abstract level, there is 'pure theory' (gengiron) which generates the concept of 'pure capitalism' (p. 117)... The second, and somewhat more concrete, level of analysis is what Uno termed 'stage theory' (dankairon) (p. 118).

Whereas the concept of pure capitalism involves focusing in a highly abstract way on the law of value, and excluding such institutional factors as the joint-stock company or the nation-state, stage theory allows the economists to readmit these factors to consideration, although discourse still remains at a fairly high level of generalization. Last, there is the 'analysis of contemporary conditions' (genjo bunseki): the understanding of economic systems past and present, with all their wealth of complexity and contradictions. Such understanding is, of course, the ultimate object of economics, but Uno argued that it must necessarily be built on the firm foundations of pure theory and stage theory (p. 118).

By distinguishing between pure theory, stage theory, and the analysis of contemporary conditions, Uno showed that it was possible to escape from the trap of rigidly imposing Marx's and Lenin's views on present-day political circumstances. At the level of stage theory, Uno recognized that the configuration of class antagonisms will take different forms in different phases of capitalist development. Through the analysis of contemporary conditions it becomes clear that practical political campaigns must also pay attention to a host of temporary and local circumstances (p. 121).

Uno saw Capital as an attempt to extract from the complex realities of mid-nineteenth century Britain, a theory of pure capitalism, but an attempt that was flawed because of Marx's perpetual tendency to slip from abstract analysis to discussion of economic minutiae of the real world (p. 118).

FUNDAÇÃO GETULIO VARGAS  
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EXHIBIT 5 - "REPORT OF THE COMMISSION ON GRADUATE EDUCATION IN ECONOMICS", Krueger et al (1991):  
(MOTIVATION)

The Commission was formed [by the then-President of the AEA] in response to what seemed like a growing chorus of complaints about the nature of economic research and training in economics departments at most universities (p. 1035)... we [the twelve members: A. O. Krueger (Chair), K. J. Arrow, O. J. Blanchard, A. S. Blinder, C. Goldin, E. E. Leamer, R. Lucas, J. Panzar, R. G. Penner, T. P. Schultz, J. E. Stiglitz, L. H. Summers] have thought to provide a coherent statement to which all could subscribe (p. 1037).

(CENTRAL PROBLEM)

In part because of the attitudes of non-academic employers and the growth of competitor programs and training of Ph.D.'s to teach in them, in part because of responses to surveys, but in part because of our own observations, our major concern focus on the extent to which graduate education in economics may have become too removed from real economic problems... [we] shared the perception that it is an under-emphasis on the 'linkages' between tools, both theory and econometric, and 'real world problems' that is the weakness of graduate education in economics. The weakness is not an excessive use of mathematics (p. 1039)... Our concern is that, as each successive generation of economists becomes more skilled at mathematics, each demands more of the next... If this trend continues... We might teach the language of mathematics but not the logic of economics, and end up valuing the grammar of the discipline, rather than its substance (p. 1041)... It appears that mastery of techniques has supplanted mastery of the kind of intuitive analysis that was once called 'Chicago-style micro' (p. 1044)... The Commission's fear is that graduate programs may be turning out a generation with too many idiots savants, skilled in technique but innocent of real economic issues... The question is, rather, one of priorities, balance, and timing (pp. 1044-5).

(CURRICULUM)

Too often, it seems, faculty members ignore the fact that the core curriculum [micro, macro, econometric] has aspects of public good (p. 1045)... Although the Commission believes that even the core sequence should include real-world applications, it is the field courses that carry the primary responsibility for linking theory and empirical techniques with real-world applications... we consider 'fields' to include, for example, labor, international trade, industrial organization, development, public finance, and economic history... Students and faculty both noted the absence of facts, institutional information, data, real-world issues, applications, and policy problems [in the fields] (p. 1046)... Many of the respondents to the questionnaires lamented the absence of history of thought in the curriculum (p. 1048). Any substantial extension of the time to complete course work seems an unattractive option, given another of our concerns that the Ph.D. programs is already too long (p. 1043).

(EFFECTS IN THE MARKET FOR NEW ECONOMICS DOCTORATES)

One of the apparent reasons for the continued strength in the market for economists in the 1970s and 1980s was that nonacademic demands increased enough to compensate for relatively sluggish academic demands: the proportion of new economics doctorates taking their first job in academia declined from 68 percent in 1968-72 to 56 percent in 1978-87 during the contraction in academic hiring... Our unease on this score is intensified by two additional sources... interviews with non-academic employers generally revealed fairly deep dissatisfaction with the training of new economics Ph.D.'s... [We] fear that if changes are not made, nonacademic employers will cut back on hiring new economics Ph.D.'s (p. 1038). Some view it as a concern that the supply of new Ph.D.'s from 'competitor' disciplines appears to be increasing rapidly and may be replacing economics Ph.D.'s... it would be a great mistake to conclude that the training of applied economists should be left entirely to our sister disciplines (pp. 1038-9)... To date, programs such as public policy competing with economics in teaching undergraduates have relied predominantly on economics departments to supply most of the Ph.D. economists teaching in these programs. There is some evidence, however, that the applied schools are increasingly producing their own Ph.D. economists... Should this trend continue it will not be good for economics departments, and it would probably also be undesirable for applied schools, as they run the danger of having their economic analysis become less and less rigorous (p. 1039)... A major determinant of demand for Ph.D. economists still is the 'marked' to instruct undergraduates, and the number of economics B.A.'s awarded each year has grown slowly since the 1970s... (p. 1039). Whereas the group of major liberal arts colleges covered by the Kasper report used to send an average of 9 to 12 majors a year on to graduate schools, that number has diminished to 2 to 3... (p. 1041).

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