Regional science in crisis: a plea for a more open and relevant approach

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MORE OPEN AND RELEVANT APPROACH

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ABSTRACT This paper explores the current state of regional science. Our principal thesis is that "mainstream" regional science is in a state of crisis. There are two major symptoms that justify the use of the term crisis: a lack of relevance and a narrowness of perspective. On the one hand, the field has not sufficiently demonstrated that it can address real-world problems. On the other hand, the openness and breadth that was the original goal of regional science is mostly conspicuous by its absence. In order to stimulate a debate on the nature and evolution of regional science, we present a set of orienting principles that indicate desirable directions for the future orientation of the field.

1. INTRODUCTION

The field of regional science is currently in a period of crisis. For the past several years, across a range of European countries (e.g., France, Belgium, Denmark, The Netherlands), regional science academic programs and research centers have experienced reductions in size or in number. In North America, while the relatively small number of existing programs and centers has not contracted, neither has it undergone any recent expansion. Since this article was originally written, of course, the University of Pennsylvania has made the decision to abolish its Department of Regional Science. At best, the field of regional science may be currently described as stagnant. In addition, voices both from within the field (e.g., Bailly 1992; Breheny 1984; Funck 1991; Jensen 1991) and from the public policy community have increasingly come to question the extent to which research in regional science is sufficiently "practical" or "relevant" — that is, capable of usefully addressing the real world and its complex set of social, economic and environmental problems.

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The present paper represents an intercontinental and personal exploration of the current state of regional science. We not only consider the dimensions of the present problem, but also offer some ideas concerning directions for reorienting the field. Although philosophical/epistemological rumination in a public forum is ordinarily reserved for such august occasions as presidential addresses, we feel that the issues involved are sufficiently important to warrant this more humble attempt to contribute to the growing debate on the future of regional science.

2. ANATOMY OF A CRISIS

In the previous section the word “crisis” was used to describe the present state of regional science. In our view, there are two major symptoms that justify the use of this term: a lack of relevance and a narrowness of perspective.

A Lack of Relevance

The relative value of basic versus applied research is a long-standing issue in all physical and social sciences. Although considered by some as contradictory and mutually exclusive approaches, basic and applied science have increasingly come to be regarded as complementary. The standard cliches notwithstanding (“nothing is as practical as a good theory”; “nothing contributes more to theory than applied research”), this complementarity is becoming increasingly important and evident. On the one hand, an explicitly applied field of knowledge (regional and urban planning, for example) that is not based upon a strong theoretical and conceptual foundation may yield results and practices that are clearly counterproductive in a public policy context. On the other hand, basic sciences whose goal is the accumulation of knowledge for knowledge’s sake are becoming increasingly marginalized, particularly in the present climate of contracting public expenditures on research.

In regional science, the past decade has seen the growth of both an increasing internal malaise due to a lack of emphasis on practical issues, and a corresponding lack of recognition in policy circles because the field has not sufficiently demonstrated that it can address real-world problems. Clearly, this statement represents a generalization that does not apply equally to all countries and to all research in the field. In certain countries, for example, regional science has developed a distinctly policy-oriented flavor; indeed, from this perspective, one can speak of “the regionalization of regional science.” Similarly, even in those countries where a concern with practical issues is the least prevalent, individual researchers do engage in applied research. It is our contention, however, that this statement is a fair and valid description of the overall state of contemporary regional science. For example, Brehaney (1984) has criticized the “deep ignorance among regional scientists of the nature of practical policy-making and implementation.” Funck (1991) observes that the field has ignored certain key issues with which contemporary society is preoccupied, e.g., energy and environment. Further, he asks if regional science has yet “overcome the sweet and intoxicating flavor of l’art pour l’art and discovered the real world.” Rodwin (1987) is similarly critical of the direction in which regional science is evolving, in particular its tendency “to give
short shrift to practical issues." He further notes the absence in the silver anniversary issue of the *Journal of Regional Science* of any significant discussion of the relationship between spatial theory, on the one hand, and issues such as power, gender, and race, on the other hand.

Jensen (1991) provides an excellent summary of the relevance issue, identifying two fundamental questions that can assist us in evaluating our field:

(a) Is regional science simply an academic discipline that exists for the benefit of regional scientists, or does it have other responsibilities in the form of practical responses to regional problems and concerns?

(b) Are we as regional scientists training our students in our own likeness to perpetuate the characteristics of a discipline that is living on borrowed time in an outmoded paradigm of technocracy, or are we providing our students with the skills to research real-world problems?

Jensen also identifies the fundamental philosophical tension within regional science as one between the goals of *sophistication* and *relevance*. In his view, the goal of sophistication involves the desire for more complexity and marginal detail in the theoretical and modeling aspects of the field. The goal of relevance, on the other hand, reflects a desire for theories and models that primarily serve the ends of decision-makers, policy-makers, analysts or practitioners concerned with addressing actual and real issues. Those who espouse the latter goal would claim that regional science has a primary aim of being useful, and that developments in theory and modeling should be addressed mainly to this end (Jensen 1991).

As in the case of the historical (if counterproductive) distinction between basic and applied science, the goals of sophistication and relevance are, in themselves, neither contradictory nor mutually exclusive. The problem is that many regional scientists have adopted the attitude that both marginal additions to the existing theoretical basis of the field, and the construction of more complex models are worthy ends in themselves; that is to say, there is a feeling that theories need not be validated by practical events and that models need not be empirically implementable to be of value (Jensen 1991).

It must be recognized that the emphasis upon theory, modeling and analytical rigor that mark contemporary regional science is the outcome of the general evolution of science in the post World War II period. In addition, this emphasis is also a reaction to the lack of rigor in related social sciences (e.g., geography, planning, sociology) during this period. It is undeniable that the theoretical and analytical rigor of regional science has exerted a major positive influence upon its sister fields, helping to lead certain of them out of scientific "dark ages." But, as Rodwin (1987) notes, regional science has also become susceptible to developing a bad case of "physics envy," where an overemphasis on not very operational models and methods may lead to "the tendency toward compulsive and mindless theorizing — a disease at least as prevalent and debilitating as the spread of mindless number work in the social sciences" (Hirschman 1971).

In sum, there is the danger that regional science is currently sacrificing far too much relevance in its insistent pursuit of ever increasing rigor. It must
be recognized, first, that sophistication for sophistication sake does not in itself represent progress; and, second, that certain highly sophisticated quantitative methods do not enable us to go beyond the stage of description, thus freezing us at the level of the often criticized regional approach in pre-quantitative-revolution geography.

A Narrow Perspective

One of the fundamental principles underlying the original development of the field of regional science is that of interdisciplinarity: the recognition that a single discipline such as geography, economics, or political science cannot provide the basis for a comprehensive understanding of a region (in whatever specific manner that this construct may be defined), in all of its social and economic complexity (Coffey 1992). Openness and breadth — in terms of disciplines, methods, and objects of analysis — was a major goal to which the field aspired in its early days. It is therefore somewhat ironic that one of the major weaknesses of contemporary regional science is precisely its narrowness of perspective. In spite of annual conferences which bring together researchers from a variety of fields, regional science remains largely fixed on a certain way of seeing the world — the positivist approach of spatial econometrics.

In particular, the problem is that regional science has tended to emphasize economic phenomena and processes to the relative exclusion of social and human dimensions; further, when the human dimension is included in analysis, people tend to be treated as inanimate objects rather than as beings capable of thoughts, feelings and perceptions. The use of mathematical models based upon physical analogies, especially, has created an illusion of scientific objectivity that has obscured a range of issues that are far more important from a societal perspective.

On several occasions over a period spanning two decades, Hägerstrand has alerted us to the dangers of the direction in which the field is evolving. In his view, “regional science is about people,” and their quality of life, not just about locations. It is therefore necessary to eliminate imprecise thought processes which conceptually deceive us into handling people as we handle money or goods, into treating people as a mass of particles, almost freely interchangeable and divisible. “Is it advanced or primitive social science to disregard the identity of people over time?” (Hägerstrand 1970). He more recently notes a strong bias towards studies of the purely economic landscape, neglecting other items which make up a livable world (Hägerstrand 1989).

Thomas (1977) suggests that regional science should substitute the term “space-society” for the traditional “space-economy” because we should be increasingly concerned with social phenomena not normally dealt with explicitly in theories related to the more restricted yet integral subconcept of the space-economy. Czamanski (1976), in his seminal article on the epistemology of regional science, noting that the spatial behavior of people cannot in most cases be satisfactorily explained with the help of theories derived from any one of the traditional social sciences, observes that progress in the area of individual and societal motivation will be fundamental to our improved comprehension of location theory. In this connection, Czamanski argues that psy-
chology, and social psychology in particular, ought to be heavily drawn upon. More recently, Bailly (1992) argues that regional science must open itself further to the social sciences and interest itself more in human beings and their often nonrational motivations. In his view, the role of human perceptions and mental representations, in particular, must be taken into consideration when seeking to explain both individual and collective human spatial behavior. At the disciplinary level, it must be recognized that every study in regional science constitutes an implicit mental representation of the real world on the part of the researcher. As in physics, our most rigorous models and theories are colored by the fact that they are our own creations. Regional science is thus not a science of space, but a science of the mental representations of space, and of the practices that result from these representations. Hence, it is necessary to make explicit the partial nature of the image created.

With certain exceptions, the above pleas for a more open and human-oriented regional science have generally been ignored. Regional science continues along its well-worn and comfortable path, oblivious to the major portion of the real world that it fails to address (or even to perceive) in its adherence to a narrow definition of acceptable approaches, methods, and objects of analysis. Further, regional science has failed to recognize that it is steadily being left in the epistemological wake of other sciences — not only social sciences, but physical sciences as well — that, although not identifying themselves explicitly as interdisciplinary fields, have come to recognize both the value of a broad perspective and the important role played by human attitudes and perceptions.

3. TOWARD A MORE OPEN AND RELEVANT REGIONAL SCIENCE: SOME ORIENTING PRINCIPLES

Due to the two problems identified in the preceding section, the field of regional science, as a whole, is currently far from thriving. In France, for example, human geographers — even economic geographers — have almost completely withdrawn from participation in regional science meetings, citing the minor relevance of the field for their own research interests. In certain other countries, regional science is flourishing precisely because the field has developed a local flavor that is far-removed from the "mainstream" approaches. For example, several Mediterranean countries (Spain, Italy, Portugal) have large regional science associations, but only a very few members of these organizations have chosen to become affiliated with the Regional Science Association International. Similarly, the French Language Regional Science Association (l'Association de Science Régionale de Langue Française), which encompasses researchers across francophone European, African and North American countries, constitutes by itself an international regional science association that is based upon a conception of regional science that differs from that generally espoused by the RSAI. In Canada, the country in which questions of regional disparities and regional economic development have historically occupied the most prominent position, the Canadian RSA is highly oriented toward applied research on issues of public policy.

If one is willing to accept the proposition that all is not quite as right as it could be in regional science, the logical question that must be posed
concerns the measures that can be taken in order to improve the situation. In this section we attempt to identify a set of principles that may perhaps guide us in attempting to orient the field of regional science in alternative directions. It is clear that the decision to engage in research that is both more relevant to society and more receptive to noneconomic phenomena involves a highly personal choice; one either accepts that this orientation is desirable or one does not. Further, once the decision to espouse this approach is made, it will be implemented in very personal ways. Yet, there are certain common threads running through the multitude of possible individual approaches.

The set of "orienting principles" that follows is both selective and incomplete, primarily reflecting our own concerns and biases. Nevertheless, we believe that, in spite of these limitations, it can serve as a basis for initiating a much needed debate on the nature and the current status of regional science, and on desirable directions for the future evolution of the field.

**PRINCIPLE 1:** It is necessary to close the gap between the subject of regional science and the subject of its practice.

This notion of the subject of a science versus the subject of its practice may be ascribed to Vining (1988), who employs the example of medical science to illustrate certain problems of contemporary economics. "One can scarcely conceive of the possibility of medical science getting off or being off the track — in the sense of its identifying and primary subject of study becoming something other than the basic subject of the practice" (Vining 1988:1). In the case of regional science, Principle 1 has four major implications.

**Principle 1.1:** It is necessary to more closely integrate the basic and applied elements of the field. On the one hand, as noted above, a regional science that is out of touch with the real world is not only vulnerable, but also fails both to live up to its responsibilities and to realize its full potential. On the other hand, the practical impact of the field will be greatly reduced unless our interventions are informed by sound theory and backed up by powerful techniques. In sum, our teaching and research activities must more closely overlap with the needs and concerns of society.

**Principle 1.2:** It is necessary to more closely integrate the entire spectrum of research levels. Four different levels of research may be identified within regional science:

(a) A theoretical-technical level, in which concepts and theories are established, models are constructed and calibrated, and analytical techniques are developed and refined. In certain cases, research at this level may be entirely independent of real-world events and phenomena (e.g., the establishment of an input-output accounting framework).

(b) A descriptive-analytical level, in which the dimensions of the phenomena under study are identified and measured (e.g., an analysis of the nature and extent of regional disparities in Canada).

(c) An explanatory level, which attempts to identify the factors that underlie the phenomena in question (e.g., why do such disparities exist?).
(d) A policy level that addresses ways of ameliorating situations or solving problems (e.g., on the basis of our understanding of both the nature of regional disparities and the factors that produce them, what types of interventions might help to narrow the gap in well-being between regions?).

We need to be aware, first of all, of the existence of these four levels, and of the complementary relationships between them. While it may not always be possible or desirable to work simultaneously at all four levels, we must recognize that no single level is entirely self-sufficient as an approach to research, and we must strive to become more proficient at integrating the four levels.

**Principle 1.3: It is necessary to reaffirm regional science’s inter- and pluridisciplinary perspective.** The intellectual and psychological baggage that we acquire in the process of becoming active participants in a particular field of knowledge imposes major limitations upon both our ability to perceive the world and our ability to study it. Our understanding of a given phenomenon or process will necessarily become more comprehensive if we are able to incorporate into our analysis a diversity of individual disciplinary perspectives. The recognition of this fact was the *raison d’être* for the creation of the “interdisciplinary field” of regional science in the post World War II era. Due to this self-avowed interdisciplinarity, and due to the multiple disciplinary origins of regional scientists (the number of “pure” regional science programs being relatively modest), a “melting pot” effect has occurred. Regional science has indeed embraced a variety of perspectives and approaches coming from other fields. On the other hand, however, the melting pot has become a two-edged sword (our apologies for mixing metaphors): the various disciplines with which regional science has been cross-fertilized have perhaps been in the pot too long. In spite of our various origins and approaches, the ways in which we practice the field have become increasingly indistinguishable. While continuing to integrate the perspectives coming from individual disciplines, we need to be very careful not to create a homogenized, undifferentiated product. Perhaps, in order to assure this desired diversity, it would be appropriate to give added emphasis to the prefixes “multi” and “pluri,” rather than “inter.” The following principle amplifies further upon the notion of a pluridisciplinary perspective.

**Principle 1.4: It is necessary to integrate, in a more comprehensive fashion, regional science’s avowed primary object of analysis — human spatial behavior in a regional context — into the manner (both basic and applied) in which we practice the field.** More precisely, regional science must open itself to the analysis of a broader range of human phenomena and processes. The field has historically placed too much emphasis upon economic aspects, to the exclusion of political, social, cultural and psychological factors. The latter are not only significant in themselves, but also often exert an important influence upon economic phenomena and processes. In short, we must become more responsive to the question posed by Hägerstrand (1970) more than two decades ago: “What about people in regional science?” Principle 2 expands upon this notion.
PRINCIPLE 2: In our models and theories, we must make a greater effort to recognize the human dimension and to treat people as people.

It is undeniable that, through the use of macro-scale models and theories (e.g., gravity, entropy, diffusion and programming models), regional science and related fields such as geography and economics have achieved considerable advances in describing, and, to a lesser extent, understanding human spatial behavior. While the importance and utility of such approaches cannot be denied, it must be recognized that they represent a highly generalized and selective view of reality. People are not molecules and do not behave as such. Rather, they think, feel, and perceive in very individual and unpredictable ways, that, in turn, shape their behavior in space. In order to achieve the goal of a more relevant and open regional science, such macro-scale approaches need to be complemented by more micro-level, behavioral forms of analysis. In this context, the study of mental representations, so successfully employed in francophone human geography (Bailly 1988, 1992; Bailly and Greer-Wooten 1983), proves especially instructive.

Principle 2.1: Reality only exists as a function of our perceptions and mental constructs; the latter, in turn, constitute only a partial image of reality. It is useful to distinguish between "sciences of nature" (Naturwissenschaften), which study material reality and directly analyze physical phenomena themselves, and "sciences of the spirit" (Geisteswissenschaften). The latter can attain only a "second-degree" level of knowledge (Prieto 1975), since they do not study material phenomena themselves, but, rather, human representations and practices that involve these phenomena. Since it is universally accepted, first, that the region — the basic concept around which regional science is organized — is a human mental construct having no physical preexistence beyond the mind of the regionalizer (Grigg 1967; Coffey 1992), and, second, that the field's object of analysis is human economic and social practices in space, it therefore follows that regional science falls into the category of "sciences of the spirit." For this reason, we must more explicitly recognize that even our most "rigorous" theories, models and techniques involve, in the final analysis, not only human mental representations of reality, but also the ideological positions of their creators. Mental representations influence scientific behavior, which in turn influences mental representations, in a feedback effect. It is thus necessary to abandon the fallacy of objectivity and neutrality in regional science, and to recognize the role of both subjectivity and the human dimension. This notion has long been accepted in physics, regarded as the most rigorous of all sciences.

The implication of this principle is not, however, that we must completely abandon our macro-scale approaches and devote ourselves to the detailed study of unique individuals. Rather, we must become more aware that the collective behavior that we observe and analyze from a macro-perspective results not from causal or probabilistic "laws of nature" based upon physical analogies, but rather from a multitude of individual actions. The latter, often seemingly "irrational," are the product of human mental representations, combining perceptions, values, preferences, motivations and attitudes. In this way,
we can begin to address the "causes" underlying the generalized macro-scale "effects."

Principle 2.2: The role of human agency in economic phenomena and processes merits much more attention. In regional science, we often treat economic (and, to a lesser extent, social) phenomena and processes as if they were completely disembodied from the human beings that make them function. Interregional trade, firm structure, interindustry linkages, or regional economic development policies, for example, are frequently analyzed in a manner that negates the existence of people. Perhaps the most striking example of the importance of incorporating the human dimension into our economic analyses is the recent concern with the process of local development. This approach to regional economic development represents a veritable paradigm shift in the field because factors such as human resources, social institutions, community animation, culture, and a sense of regional identity are recognized to be of an importance at least equal to that of natural resources, capital stock, infrastructure, and government grants (Coffey and Polèse 1984; 1985). Due to this paradigm shift, certain researchers have begun to look beyond inanimate objects, and to consider the role of human wants, needs, capacities, and preferences. The basic lesson to be learned from this approach is that economic development is as much a social (sociological, psychological, cultural) process as an economic one.

PRINCIPLE 3: In a more comprehensive and relevant regional science, the concepts of space and time must both be considered, and must both be treated in the context of varying scales of analysis.

In regional science, time matters as well as space. The historical or process-oriented dimension is often overlooked in our spatial models and explanatory frameworks. To the extent that the present is simultaneously the culmination of past events and the precursor of the future, it is essential to include the dimension of time in our analyses. Similarly, we must be aware of the manner in which the scale employed, both temporal and spatial, is able to exert an influence upon our findings.

Principle 3.1: Time and space must be considered jointly. Where Democritus viewed nature as composed of a set of objects in the void, Heraclitus argued that all things are in a state of flux and that becoming is the essence of being. The latter was perhaps the earliest attempt to reconcile time flow with space. The work of twentieth century physicists such as Einstein notwithstanding, a good deal of further progress in reconciling space and time was not made in the social sciences until the recent development of chronogeography (Hägerstrand 1973; Carlstein, Parkes and Thrift 1978). It has now become axiomatic that both human and physical processes must be analyzed in a continuum of space-time. In this context, it is necessary for regional science to consider both stock and flow variables, the former measuring phenomena at a single instant, and the latter measuring their passage over time. Further, as Boulding (1985) notes, just as regions in space are defined and divided by boundaries at which the parameters of systems change, there also exist regions of time, bounded by dates at which the parameters of a spatial region change. The
social sciences, and econometrics and statistics in particular, have been slow to recognize this problem. "When we cross over into a new region of time, the immediate past is usually a poor guide to the future, and we need to look for corresponding episodes in the more distant past" (Boulding 1985:19).

**Principle 3.2: When treating space and time, it is necessary to recognize the effects of employing varying scales of analysis.** The conceptual framework and the methodologies that we utilize, as well as the nature and the results of our analyses, can vary considerably depending upon the particular scale employed — either temporal or spatial. In the case of time, for example, the choice of a short, medium, or long term perspective will have a considerable impact upon our findings. To cite a simple example, the impact of net inter-regional outmigration upon the level of economic development of a particular region may prove to be positive (in the sense of reducing disparities) in the short term, but negative in the medium or long term. Similarly, the choice of spatial scale can exert an important influence upon our work. Possible interpretations of migration flows in North America, for example, may be diametrically opposed depending upon the scale of analysis selected. At a national scale, migration may best described in terms of centralization, that is, movement toward major urban areas. At a metropolitan scale, however, the flows may take the form of decentralization, that is, movement away from the central city toward suburban and exurban areas. Indeed, the flexibility of spatial scale associated with the concept "region" needs to be treated carefully. Consider, for example, the practical implications of formulating and implementing regional development policies in Canada, a vast country with 10 traditional administrative regions, and in Switzerland, a tiny country in which regional policy is administered in over 100 regions! Consider, too, the implications of implementing regional policy in the "New Europe," composed of German Länder, French Départements, and Swiss Cantons. Further, we must learn to treat micro and macro scales as complementary, rather than as mutually exclusive. The economic performance of a given region, for example, will be the result of the combined effect of forces originating from world economic conditions, from the local economic-social-political environment, and from all levels between these two extremes.

4. CONCLUSION

The crisis of contemporary regional science may be ascribed to two fundamental problems. First, the view that regional science is primarily an exercise in academic elegance and sophistication has become very widely accepted, at least on an implicit level. In contrast, the notion that the field has a responsibility to address those practical issues that concern society has not been overtly espoused by a major proportion of our colleagues, who perhaps feel that such mundane matters would be better left to "less scientific" professions such as architecture, city planning and social work.

Second, regional science tends to be too rigidly fixed upon the notion of the "space-economy." Isard's (1960) broad definition of regional science as an interdisciplinary field that examines the locational dimension of all human activities relevant to society — economic, political, social, and so forth — has not been well reflected by research conducted in the field. The set of objects
of analysis with which regional science is concerned has been largely restricted to economic phenomena. The field has not been sufficiently open to the study of other types of human activities, or to the disciplines that specialize in the analysis of these activities.

In making these observations, we are not advocating the abandonment of either basic research in regional science, or research on economic activities. Rather, what we are advocating is a more balanced and open approach in regional science, one with a higher degree of sensitivity toward the possibility of operationalizing theoretical and methodological advances in the field for the good of society, and toward the possibility of treating people as thinking, feeling, often irrational beings.

The two problems identified here need to be addressed in order for regional science to become a vital and dynamic field, rather than suffering the fate of an academic dinosaur, doomed to extinction because it is unable to evolve in step with its environment. It is time to reevaluate the foundations and the goals of regional science. As in many other fields, we as individuals pursue our teaching and research without a great deal of thought to more philosophical considerations. We rarely have the time or the energy to ponder questions concerning the directions in which we — as persons, as a field and as a society — wish to be moving. For example, is it more important for us to construct better models or to contribute to a higher quality of life? It is our hope that the self-criticism that we have engaged in here, as well as the set of principles that we have identified, will contribute to a more general reflection upon the state of regional science and upon the directions in which we desire it to move.

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