Introduction

As an introduction let me describe two recent experiences of mine.

In 2000-2002 under the auspices of Collegium Budapest Institute for Advanced Study, Professor at Susan-Rose Ackermann from Yale University and myself convened and directed a group of researchers that analyzed the following exciting topic: *Honesty and Trust in the Light of Post-Socialist Transition*. The group comprised people of various professions, including legal scholars, economists, sociologists, political scientists, scholars of political philosophy and historians. We gathered for weekly seminars to mutually report on the progress of our work. We were all perplexed by the fact that we had difficulties understanding one another. Each discipline is based on its (explicitly stated or tacit) axioms and basic assumptions. They each have their own language and vocabulary. Scholars in each discipline consider authors as “classical” who are different from those considered as such by scholars from the other disciplines. At the same time, they all think that authors considered by them as “classical” are familiar to everyone else, although the latter might not know more than the author’s name, or a few oversimplified ideas by him or her that have already become common knowledge anyway. There is great variety among the disciplines with regard to which contemporary works have become famous, whose subjects have become “hot” and their knowledge is expected by other members of the same profession.

The interdisciplinary character of the research group demanded a certain kind of self-discipline from the participants. It compelled them to speak in seminars in a manner that is also comprehensible to the others. We learned from one another and attempted to be open to ideas suggested by other disciplines.

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1 Papers elaborated in the framework of the research project are collected in two volumes: Kornai and Rose Ackerman (2004) and Kornai, Rothstein and Rose-Ackerman (2004).
In early 2005 I traveled to China. When preparing for the lectures that I was to hold there, I made efforts to become familiar with the most recent literature on the Chinese reform process. I read a number of papers by the best economists studying the area and was struck by the fact that, despite touching on the political aspects of the reform, they did not refer to any article in political science journals. Parallel to this I also read papers by the most outstanding political scientists specializing in the study of this area and I found the same one-sidedness, although from the opposite point of view. While they mentioned the reform of the economy several times, no reference was made to economic journals. There seems to be hardly any intellectual communication between these two groups of experts on China, at least according to this ad hoc impression.

In view of this I decided to take a closer look at the relationship between the various social science disciplines. Economics student Noémi Péter assisted me in this work. We focused on four disciplines, namely economics, political science, sociology and law. We selected five leading journals from each of these disciplines. We reviewed one volume of these journals, i.e. all the articles published in the year 2004.

We added up the number of references classified according to various principles. The method of calculation and the principles of classification are reviewed in the Appendix. The main results are summarized in tables. Let me only point out those data only that are the most important with regard to economics. We found a total of 316 articles on economics to which our methodology was applicable. Altogether, they published 4885 references with regard to which we were able to identify the relevant discipline where the referred paper originated. The distribution of this set of references is as follows:

- 88.9% from journals of economics
- 1.2% from journals of law
- 2.2% from journals of political science
- 1.0% from journals of sociology
- 6.6% from interdisciplinary social science journals.

The overwhelmingly dominant source of knowledge for the profession of economics is, therefore, the profession itself; in other words, writings published by other economists in economic journals. The profession is inward-looking and scarcely acknowledges products of
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other social science disciplines. Material displayed in the Appendix reveals that this does not apply exclusively to economics. A similar situation prevails in the other examined disciplines.

I would not like to overestimate the quantitative results of this miniature data collection. We would obviously obtain far more precise and reliable results if we analyzed several volumes of these journals edited in several different years, and if we involved more disciplines and journals in our analysis. On this occasion, we excluded from the summation those references where the discipline generating the source of the reference was ambiguous. E.g. when making the summations, we disregarded those cases in which the author refers to a book, rather than an article. A more precise calculation would require a great deal of work and I honestly hope that someone will carry it out at one point in the future. This pilot study may only give us a taste for subsequent and more thorough works. The unquestionable and conspicuous finding of this first insight is sad: the intellectual ties between the various branches of the social sciences are very week. They are clearly detached from one another.

Now we are ready to face the questions to be discussed in this paper.

- Where do we stand now with respect to separation and cooperation in the social sciences?
- What could be and must be done to bring these disciplines closer to one another?

In this paper I only attempt to give a partial and draft response, mainly for the purpose of inspiring the reader to think about these difficult questions. A deeper understanding of these problems requires a more thorough and extended research.

**Five encouraging examples of interdisciplinary approaches**

The paper started with the description of two negative examples. The general picture is slightly more favorable than that. I would like to give you five examples of scientific work that found their way from economics into other disciplines.

1. **Theory of rational choice.** As is well known to every economist, this theory constitutes the core of neo-classical economics. Its rigorous discussion starts with Walras, and it was Arrow and Debreu who worked it out in greater detail.
Although the theory evolved within the framework of economics, it has become widely used in other disciplines as well. Just to name an outstanding pioneer of the efforts for extension, let me mention Gary Becker (1993), who was awarded the Nobel Prize for his work. The basic idea is as follows: motives of human behavior may be properly described in many cases under the assumption that there is a decision-maker who makes a choice from various alternatives, and he/she will choose the one that guarantees him/her the most favorable combination of benefits and disadvantages. This decision-maker is a consistent person and his/her preferences fulfill certain consistency requirements. Subject to certain assumptions, it also implies that this decision-maker maximizes a utility function; in other words, he/she attempts to make the optimal choice from the alternatives.

If we apply this approach, i.e. the model of rational choice, then we are not only able to describe economic decisions, e.g. a producer’s choice from among various technologies, or a consumer’s choice between two commodities, but also to a wide array of other problems, such as crime, or suicide, or starting a family or a political election.

Let me make a subjective remark here. My book Anti-Equilibrium (1971), discussed in much detail my criticism of the theory of rational choice. I am certainly not an uncritical supporter of the theory, but someone, who tries to understand the limits of this model. I should also stress, however, that it would be a grave mistake to simply throw it away. What we should also avoid is to degrade the problem to a conflict between disciplines or sub-disciplines, saying things like “we sociologists, or political scientists, dislike the theory of rational choice and you, economists want to force it upon us.” No, the point lies elsewhere. There is no such a thing as the sociologist, or the economist. There are several kinds of sociologists and several kinds of economists. The latter includes people, like myself, who are critical of this theory, but who know that it has significant explanatory power. Therefore, it needs to be used and applied. We should, however, also understand the limits of its validity, rather than only its benefits.

The clumsy users of the theory of rational choice (and there are a lot of them) believe that it is a key to understanding all phenomena. They believe that no human behavior exists that could not be described (perhaps, with some slight strain) with the help of this model. In contrast to them, people who apply the theory sensibly and with sobriety (and there are lot of them) know that this theory is able to properly explain a certain circle of phenomena, but it is unable to explain other phenomena. They also know that the relevant explanation is only
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partially valid even in those cases where it has an explanatory power. It is unable to shed light on the entire phenomenon, but it is able to point out certain important elements. Therefore, on my part, I only like using it with caution and within appropriate limits. If I am faced with a phenomenon that needs explanation, especially if it is a complicated social phenomenon, I do think it is worth asking the question of what the decision-makers’ motives are, what objectives are driving them and whether they have easily understandable interests (these may be non-financial interests, such as motives to obtain power, or emotional motives). It is worth analyzing what inspires them for action, because it helps us to understand the reason for the event that takes place as a result of their choices and decisions, be these conscious or unconscious.

I am against the “imperialism” of the theory of rational choice, its aggressive diffusion and the practice of imposing it on researchers. I consider it, however, very important and desirable to meditate about it, and use it wherever it is possible. It is clear that by now none of the social science disciplines have become capable of escaping the impact of this theory.

2. **Game theory.** In the case of rational choice, it is about the spread of a *fundamental assumption* (“a decision-maker makes an optimal choice”) beyond the disciplinary boundaries of economics. In the case of game theory, it is a *form of description*, a possible technique for describing situations that goes beyond the confines of a discipline. As is also demonstrated by its name, the first illustrative examples to which the game theory appeared to be applicable were social games. Neumann’s and Morgenstern’s classic work (1944), however, started to successfully apply game theory to economic phenomena shortly after. It soon became clear that the theory could be used for the analysis of any social phenomenon, rather than being confined to the field of economics. More specifically, it is applicable to every situation with interaction among social actors, or at least where an interaction might emerge (either they are cooperating, or standing in conflict, or harmonizing their behavior, or acting against one another). People may be connected by a wide variety of social links. In any case, if there is some kind of a link between them, then most phenomena related to their interaction can be described with some kind of a game theoretical model, and with the aid of the model we might reach interesting conclusions. Phenomena analyzed this way may emerge in the sphere of politics, in family life, in military situations, in urban transportation and in countless other contexts.
If we attempt to locate scholars involved in game theory work within universities, we will find that most of them work in departments of economics. But this has remained the only link of this theory to economics. Game theory has grown beyond the confines of economics and has become a general analytical technique applied in the social sciences.

3. Multivariate analysis of long time-series of national statistics. In my third example the factor bringing the various branches of the social sciences closer to one another is the abundance of data and the acceleration of computing.

First, let us go back to the 1960s when South Korea, Brazil and a few other countries performed remarkably fast economic growth. Researchers of the time started thinking about the possible reasons and found that all of these countries were, in fact, governed by authoritarian, oppressive and dictatorial regimes. Some of them expressed the view that dictatorship fosters growth, it creates far better conditions for economic development than democratic systems do. The typical technique of argumentation was referring to one of the aforementioned countries and attempting to draw some kind of a generalized conclusion from that particular country, or perhaps from one or two more such countries.

If we make a 30-year long leap forward in the history of research, we can see the following changes: first of all, huge databases have been created in the meantime with data series of 100 to 150 countries – data that reflect a long period. Some of these time series cover economic data, for example GDP, but a number of other data are also available for other, non-economic phenomena. The other significant development that has taken place in the meantime is the appearance of extremely efficient computers that allow for a very fast solution of giant equation systems, multivariate regression computations and other mathematical-statistical analyses. They are able to smoothly carry out a task that requires a hundred thousand computations in one single series.

There are nowadays many projects making use of the newly found possibilities offered by huge data banks and fast computers. Among the pioneers was Robert Barro (see e.g. his study published in 1991). In the last fifteen years this kind of analyses has become an „industry” by now with hundreds of researchers dealing participating².

² About these tendencies and researches, see Djankov et al. (2003) and Knack and Keefer (1995).
The typical procedure is as follows: We are attempting to find an explanation for an economic phenomenon (e.g. growth rate), or income inequality, or for a non-economic phenomenon (e.g. the level of illiteracy). We may consider a wide variety of explanatory variables, ranging from obviously quantitative economic statistical data, such as investment rate, or a country’s openness to foreign trade, to various qualitative social characteristics, such as the extent of democracy or dictatorship prevailing within a political system. We may take into account the legal order of a country and see if it is Anglo-Saxon or German-type. Further questions in this respect may be: How frequently does corruption occur in a country and if so, how serious are those cases? What is the dominant religion of a country?

Thus, if we include the most diverse set of phenomena into the set of explanatory variables, then we are able to respond – with more than a few examples the questions of which factors affect growth rate (or income inequality or level of illiteracy etc) not just by referring to the experience of a few arbitrarily chosen countries. We have at our disposal data of a very large number of countries, and long statistical series of their historical development. Following the careful analysis of this type of multi-variate calculations we may not always receive clear and unambiguous responses. The procedure may not always lead to conclusive results. Sometimes it does, while other times it does not. But whatever the outcome is, we have made a long step forward in learning. And to get back to my topic, I must say that it is no longer mere economics. It is social science, as it investigates – with the tools of statistics – the casual relations prevailing among a wide variety of economic and non-economic phenomena, thereby going beyond the borders of economics.

This approach raises a lot of serious methodological difficulties. Its application is disquieting in many cases. People often abuse it and draw irresponsible conclusions from the analysis that is problematic from a statistical-econometric point of view. Yet, despite these problems, we have a method that, if applied cautiously, might prove to be valuable help in understanding complicated interrelations.

Regardless, let me express a warning about this method. Once I read an ironical article with the title: “I Just Run Two Million Regressions” (Sala-i-Martin, 1997). Computers today are so fast that one may even carry out experiments randomly. Anything can be put on the
right-hand and left-hand side, and then, we shall see from the results of millions of calculations, whether we find a well-fitting equation.

The truth is, in fact, that the warning by Tjalling Koopmans remains valid: There is no reassuring measurement, or any really enlightening quantitative analysis without having been thoroughly substantiated by an underlying theory (Koopmans, 1947).

4. Use of "soft" data. With regard to the fourth phenomenon, the limits were expanded by the character of the applied data.

Some two or three decades ago, an economist would only have taken those empirical analyses seriously that contained ex post statistical data. He/she would have thought that founding an economic analysis on interviews could not be serious. They would have thought that only market researchers, or, perhaps, sociologists would do something like this, rather than a respectable economist. It is not true any longer.

The profession has understood in the meantime that not only those phenomena must be observed that do, in fact, take place and are measurable by hard figures, but also those that take place in peoples’ minds. Economists also need to know peoples’ expectations, hopes, perceptions, the values affecting their way of thinking, and the levels of their optimism or pessimism. Welfare has, in fact, always been among the variables considered by economists to be important, but it used to be exclusively measured by the volume of consumption. It has become quite common by now to attempt to measure the level of satisfaction and happiness by asking people about their feelings in that respect.³

Today studies are prepared in large numbers by authors who rely on techniques that had not been applied by economists (apart from a few special fields, such as market research) before, but by sociologists, who used to apply them regularly and as a routine. Such data may be obtained from a number of sources, including opinion polls, interviews, and responses to written or oral questions. Communication might take place by a personal meeting, or via telephone, e-mail or another kind of Internet connection.

Evaluation criteria of the collected information are not “soft” or “hard”, but careful or careless, consistent or inconsistent, representative or ill-selected.

³ Let me refer to the illustrious article of Frey and Stutzer (2002): What Can Economists Learn From Happiness Research.
5. "System" approach. It will hopefully not make an impact of immodesty, if, as a last item, I list a characteristic approach that I usually apply to my own works, and what I call “system paradigm” (Kornai, 2000).

Let us take as an example the historical period in which the Soviet Union and Eastern Europe were under the communist dictatorship for several decades. Describing exclusively the political regime (the political monopoly of the communist party) would generate a one-sided presentation of the region and the era. On the other hand, it would also give a biased picture if we only demonstrated the characteristic features of the economy by explaining that private ownership in production was eliminated, all productive assets were nationalized, the market was squeezed out, and a central management of economic processes was introduced. It would be wrong not to describe the sphere of ideologies, the dominance of Marxist-Leninist ideals, the persecution of alternative views, as well as the rhetoric and propaganda of the communist regime.

There are people who emphasize that the aforementioned political and economic system had a military character and that it was on a constant war alert. There is truth in the statements that we faced a particular kind of a steady war economy and that it was reasonable to talk about “Soviet imperialism”. But also these statements only gave a partial description of reality.

The only possible way to understand the reality of this region before 1990 is to attempt to study the system as whole. We should attempt to simultaneously comprehend all spheres and dimensions of the system, and understand how the various elements affected one another, what interactions prevailed among them and how mutual interdependence emerged.

System paradigm has rich intellectual traditions. I would consider Karl Marx as its first pioneer. Other remarkable scholars involved in it include Karl Polanyi, Friedrich Hayek and Joseph Schumpeter.4

The application of system paradigm is not only needed for the study of socialism, but also when we aim at understanding the capitalist system as a whole, rather than only one or another of its spheres. This approach has become especially important now, when a change of system, or as Karl Polanyi puts it, the Great Transformation is underway in the formerly

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4 Consider the following notable publications: Hayek (1935, 1944), Marx (1867-94) [1978], Marx and Engels (1948) [1962], Polanyi (1944) [1962] and Schumpeter (1942).
communist countries. Those who, over the last 15 years, have specialized in studying changes in the area of the former Soviet Union, in Central Eastern European countries, China or Vietnam, the so-called “transitologists”, including experts of the World Bank, the IMF and the EBRD, have a proper understanding of this. Even if they do not use the term “system paradigm”, the character of the task compels them to apply this approach.

Even from the brief description it must be clear that the "system paradigm" cannot be applied within the narrow borders of one or the other social science discipline. The very essence of the approach is its interdisciplinary character.

I have listed five examples for intellectual streams, scientific positions and methods that have crossed the confines of traditional disciplines and promoted convergence and cooperation between them. I am convinced that many other examples could be found demonstrating the same.

Desirable directions

There are disappointing and encouraging phenomena side-by-side. What are the directions of desirable changes?

I do not suggest destroying the border-lines of disciplines. I do not suggest that at the universities the formerly separate departments of economics, of sociology and of political science be united into a huge and fully comprehensive “Department of Social Sciences”. I am not a merger maniac, and not only for reasons of tactics, i.e. in order to prevent struggles for power usually following mergers. (These struggles are, unfortunately, usual scenarios after mergers in the world of business.)

I am convinced that formerly separate professions are rich in valuable traditions, methodologies and the various approaches to the individual tasks. Members of each profession have a refined knowledge of a subset of the giant set of the literature in all social sciences. It would be a grave mistake if, in the future, only “universalists” conducted research and taught students in social sciences.

I have three suggestions. They are more modest, more confinable and, perhaps, have a greater chance of being fulfilled.
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**Suggestion #1.** Whatever your special discipline is, get a minimum knowledge concerning the other disciplines of social science. If you are an economist: Max Weber is not the only name to be known outside economics.

There is a minimum knowledge of mathematics and statistics absolutely required from an economist at the Ph.D. level. Similarly, minimum requirements should be set with respect to all social sciences and history.

This is what I suggest with regard to the education of students. As for “adult” researchers: ourselves, we have no other choice than educating ourselves. We should read far more works produced within the frameworks of the other social science disciplines, and we should follow their latest achievements and debates.

Getting back to teaching, the question arises of whether we should set mandatory minimum requirements, or we should content ourselves with a recommendation by the university to expand the attention, and to give credits for learning the material of courses run beyond the basic discipline. I am not sure what the right answer is; therefore, it would be worthwhile to continue this discussion. But this is not the most important thing. The really important thing is the atmosphere prevailing within a university, and peers’ expectations from one another. There is a term used by members of the Hungarian intelligentsia: "professional barbarian". It implies those people who are excellent experts of a narrow field, but who do not know anything else and are uneducated in fields beyond their discipline. We would need an atmosphere where a professional barbarian is ashamed of being uneducated, however professional he/she is in his/her field.

**Suggestion #2.** We should encourage interdisciplinary work and cooperation between experts of two or more disciplines. It has become more frequent by today in comparison to a few decades ago, but it has not yet become usual. It would be desirable to have more interdisciplinary research projects and more interdisciplinary courses at universities.

“Interdisciplinary scholar” – this description of a person does not convey high respect today. "He is the best philosopher among economists" -- not a high rank… It is not completely hopeless to change this assessment.

There is a handful of journals covering two neighboring disciplines (e.g. economics and sociology, or economics and law.) But there is not a single prestigious English-language academic journal covering the whole body of social sciences. When writing the
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aforementioned *System Paradigm* article, I failed to find one single journal in whose profile it could fit. If I were younger, I would initiate the foundation of a large, comprehensive social science journal.

**Suggestion #3.** Let us allow for and encourage the appearance of a particular kind of a scholar: the ”Social Scientist” in the academic sphere. Not all scholars have such an ambition. And that is perfectly all right. One should remain an econometrician, or an experimental psychologist, or an empirical social anthropologist, if he/she wishes. However, a small group of those researchers and teachers is needed who aim at a more comprehensive approach to problems. And such comprehensive minds are not only needed in the capacity of a new Hayek or a new Schumpeter, but also in more modest categories. Just to mention an example, let me point out to this: presidents or prime ministers of countries need advisors who have more comprehensive knowledge than the current (often rather one-sidedly trained) ones do; new advisors who are familiar with many disciplines. They should be people with thorough knowledge of history, political science, economics, sociology, and social psychology. They do not need to have detailed encyclopedic knowledge, but they need to be able to orientate within these disciplines and to know which books to read. All this might help leading politicians obtain better pieces of advice than they have received so far.

As a conclusion, let me point out once more that there are no ready recipes for the solution of problems described in this paper. But it might be useful in drawing attention to a difficult problem that has not yet been handled properly.

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5 I am happy that the volume to be published by World Bank will include this paper. It does, in fact, not fit into any specialized journal, either, let alone the fact that this paper would only fulfill its aim if it could be published in the journals of the various disciplines. But the policy of editing prohibits such a practice by adhering to the right of first publication. A journal proud of its reputation would never become a second publisher. I only mention this with an ironical purpose and to describe the current situation in which, despite the dumping of journals, there is not one adequate journal-forum for comprehensive messages covering all social science disciplines.
Appendix

The analysis covered four social science disciplines, including economics, law, political science and sociology. The following method has been applied to this interdisciplinary analysis: five journals, considered to be relevant, have been selected from each of these disciplines. We analysed every single article of these 20 journals that were published in a particular year. We examined, based on the references, how often the articles published in the journals of the individual disciplines referred to articles published in a journal of another discipline. This rate may tell a lot about the rate of interdisciplinarity.

We selected the economics journals ourselves based on various surveys on „leading journals”. As for the other disciplines, we sought for advice of experts in these disciplines. Although most of these journals are published in the United States, we made sure that our set of samples contains at least one non-US journal in each discipline. Ultimately, the selection was rather arbitrary, although it appears to be certain that each of the selected journals rank among the leading 10 to 15 journals of their disciplines. For the selection of journals, see Table 1.

<table>
<thead>
<tr>
<th>Economics</th>
<th>Law</th>
<th>Political science</th>
<th>Sociology</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Economic Review</td>
<td>American Journal of International Law</td>
<td>American Political Science Review</td>
<td>American Journal of Sociology</td>
</tr>
<tr>
<td>Economic Journal</td>
<td>Columbia Law Review</td>
<td>Comparative Politics</td>
<td>American Sociological Review</td>
</tr>
<tr>
<td>Review of Economic Studies</td>
<td>Yale Law Journal</td>
<td>World Politics</td>
<td>Sociology</td>
</tr>
</tbody>
</table>
We analysed every single issue of the aforementioned journals published in 2004. We essentially based our counting on the references of independent articles published in the regular issues of these journals. Sometimes we also took into account special issues. We have, for example, included into our analysis the Papers & Proceedings issue of the *American Economic Review*, the Conference Papers of the *Economic Journal*, the Symposium as well as the Supreme Court 2003 Term of the *Harvard Law Review*. With regard to *World Politics* we have also included the last issue of 2003, because the journal only published three issues in 2004.

In this way, we took into account a total of 99 issues containing a total of 721 articles. They served as bases for a total of 37,983 references. For their disciplinary composition see Table 2.

<table>
<thead>
<tr>
<th></th>
<th>Economics</th>
<th>Law</th>
<th>Politics</th>
<th>Sociology</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Journals</strong></td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td><strong>Number of issues</strong></td>
<td>27</td>
<td>32</td>
<td>18</td>
<td>22</td>
<td>99</td>
</tr>
<tr>
<td><strong>Articles</strong></td>
<td>316</td>
<td>65</td>
<td>164</td>
<td>176</td>
<td>721</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>8637</td>
<td>9952</td>
<td>6567</td>
<td>12827</td>
<td>37983</td>
</tr>
</tbody>
</table>

We assigned the individual references to one of the following categories: economics, law, politics, sociology, interdisciplinary, other. If the referred article appeared in a journal of one of the four analyzed disciplines, then we assigned it to the respective category. Thus, if, for example, the referred article appeared in *Comparative Political Studies*, then we listed the reference in the category of politics. We applied a broad interpretation of the individual areas of science. In this way, journals on foreign affairs and international relations belong to the category of politics, journals about Genders fall into the category of sociology, articles on criminology have been assigned to the category of law, etc. References to articles in journals specialized economics, industrial organisation, finance, industrial relations, business and political economy have been classified under the category of economics.

The process of establishing the interdisciplinary category was as follows. In a favourable case, the title of the journal unambiguously identifies the disciplines whose
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borderline areas it covers (e.g., *The Journal of Law & Economics*). In less fortunate cases (for example, in the case of the *Theory and Society*) we attempted to judge on our own whether the given journal is considered to be interdisciplinary, or not.

If the referenced article was published in a journal, then the relevant category is usually clear; in other words, it is possible to establish that it is clearly related to one discipline, or it is clearly interdisciplinary.

Every other reference, the classification of which could not be clearly established, fell under the category of „others”. The category of „others” comprised the following publications:

- Books
- Working papers
- Internet sites
- Articles of journals falling outside the first 5 categories
- Newspaper articles, publications, others.

The difficulty of classification makes us cautious about the interpretation of the research results. We might have been able to identify the relevant disciplines within the category of „others” if we had made further efforts.
### Table 3. Distribution of references

<table>
<thead>
<tr>
<th>Origin of the reference in</th>
<th>Economics</th>
<th>Law</th>
<th>Politics</th>
<th>Sociology</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Economics</td>
<td>4344</td>
<td>256</td>
<td>341</td>
<td>625</td>
<td>5566</td>
</tr>
<tr>
<td>2. Law</td>
<td>60</td>
<td>3428</td>
<td>70</td>
<td>190</td>
<td>3748</td>
</tr>
<tr>
<td>3. Politics</td>
<td>109</td>
<td>84</td>
<td>1379</td>
<td>286</td>
<td>1858</td>
</tr>
<tr>
<td>4. Sociology</td>
<td>50</td>
<td>15</td>
<td>110</td>
<td>3077</td>
<td>3252</td>
</tr>
<tr>
<td>5. Interdisciplinary</td>
<td>322</td>
<td>296</td>
<td>197</td>
<td>497</td>
<td>1312</td>
</tr>
<tr>
<td>6. Number of references identified as originated in a specific discipline or in the interdisciplinary category (from 1 to 5 in total)</td>
<td>4885</td>
<td>4079</td>
<td>2097</td>
<td>4675</td>
<td>15736</td>
</tr>
<tr>
<td>7. &quot;Others&quot;</td>
<td>3752</td>
<td>5873</td>
<td>4470</td>
<td>8152</td>
<td>22247</td>
</tr>
<tr>
<td>8. Subtotal</td>
<td>8637</td>
<td>9952</td>
<td>6567</td>
<td>12827</td>
<td>37983</td>
</tr>
</tbody>
</table>
### Table 4. Distribution of references identifiable as originating in a specific discipline (in percentage)

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Economics</th>
<th>Law</th>
<th>Politics</th>
<th>Sociology</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Economics</td>
<td>88.9%</td>
<td>6.3%</td>
<td>16.3%</td>
<td>13.4%</td>
<td>35.4%</td>
</tr>
<tr>
<td>2. Law</td>
<td>1.2%</td>
<td>84%</td>
<td>3.3%</td>
<td>4%</td>
<td>23.8%</td>
</tr>
<tr>
<td>3. Politics</td>
<td>2.2%</td>
<td>2%</td>
<td>65.8%</td>
<td>6.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>4. Sociology</td>
<td>1%</td>
<td>0.4%</td>
<td>5.3%</td>
<td>65.8%</td>
<td>20.7%</td>
</tr>
<tr>
<td>5. Interdisciplinary</td>
<td>6.6%</td>
<td>7.3%</td>
<td>9.4%</td>
<td>10.6%</td>
<td>8.3%</td>
</tr>
<tr>
<td>6. Distribution of references identifiable as belonging to the specific disciplines in percentage in total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The 100 percent figures in the last row refer to that subset of all references that are displayed in row 6 of table 3. Thus, of the references of economics articles, the 4885 identified references constitute the 100 percent displayed at the bottom. A total of 88.9 percent of these 4885 references referred to articles in economics reviews.

Tables 3 and 4 reveal that the proportion of references to one’s own discipline is very high if we consider the references classified into the five categories (what is more, it is the highest in the papers published in economics journals). The percentage figures in the diagonal entries are reflecting the high degree of "inward-looking" in all the disciplines under scrutiny.

One direction of a more detailed and subtle processing could be a finer segregation of the residual category „others“. We have only attempted to do this with regard to one discipline: economics. We have singled out further five disciplines: history, mathematics and statistics, psychology, philosophy, and anthropology. The question arose of how the 3 752 references, classified into the category of „others“, as displayed in Table 3, is distributed with regard to relation to the disciplines listed now.
For the results of the experiment targeted at a finer segregation of the category of „others” see Table 5. It is obvious that the disciplines listed here for closer examination are also no favourite reference targets by economics articles.

<table>
<thead>
<tr>
<th>Category of „Others” in total</th>
<th>pieces</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of these, identifiable as originating in certain disciplines:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) History</td>
<td>4</td>
<td>0,1%</td>
</tr>
<tr>
<td>(ii) Mathematics, statistics</td>
<td>87</td>
<td>2,3%</td>
</tr>
<tr>
<td>(iii) Psychology</td>
<td>103</td>
<td>2,8%</td>
</tr>
<tr>
<td>(iv) Philosophy</td>
<td>10</td>
<td>0,3%</td>
</tr>
<tr>
<td>(v) Anthropology</td>
<td>3</td>
<td>0,1%</td>
</tr>
<tr>
<td>(vi) References identified supplementarily</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[in total from (i) to (v)]</td>
<td>207</td>
<td>5,5%</td>
</tr>
<tr>
<td>(vii) Those remaining unidentified, in total</td>
<td>3545</td>
<td>94,5%</td>
</tr>
</tbody>
</table>

The proportion of „others” and the other categories is also interesting with regard to the explanatory power of our analysis. We managed to classify a total of 56.56 percent of all references in economics, while these proportions are as follows in the other disciplines: 41 percent in law, 32 percent in politics and 36.45 percent in sociology.
REFERENCES


