

## **EPISTEMIC COMMUNITIES: STUDY ON THE REGULATION OF THE USE OF STEM CELLS IN BRAZIL**

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### **Abstract**

The objective of this study is to review the literature on epistemic communities, analyzing the concept and setting out the main arguments of the authors. In the first section, we present a proof of concept and the main arguments on epistemic communities. The second section is an analysis of the role played by the academic elite. In the third and final section presents a case study on the regulation of the use of stem cells in Brazil and the participation of scientists.

### **Keywords**

Epistemic Communities, Beliefs Shared, Brazil, Stem Cells.

### **How to cite this article**

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## **EPISTEMIC COMMUNITIES: STUDY ON THE REGULATION OF THE USE OF STEM CELLS IN BRAZIL**

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### **I. Introduction**

The analysis of epistemic communities in the field of International Relations is of extreme relevance as it joins elements either second-place or not normally used in this field, such as the sharing of ideas, the structuring of networks and information as a means of power.

Information, in its broadest sense, has become a crucial means of power with professional bureaucracy and, consequently, its control and/or monopoly has been highly sought for.

Presently, epistemic communities are considered by many analysts as a relevant actor in international relations, which act systemically through knowledge networks that have national and international impact.

In Brazil, a case study was carried out on the action of epistemic communities in the approval of a law regulating the use of stem cells for research purposes. This paper is divided into three parts: the first focuses on the history of epistemic communities in the theory of International Relations; in the second a brief study will be conducted on the interaction and practice between epistemic communities and academic elites; in the third, we will analyze a case study - the approval of the law on the use of stem cells in Brazil.

### **II. The Study of Epistemic Communities in International Relations**

The term *epistemic communities* stems from the Greek word *epistemè*, which means justified and true knowledge, science. The study of the *epistemè*, epistemology, has its origin in Plato, who contrasted true and justified knowledge (*epistemè*) and belief or opinion (*doxa*).

In International Relations, the importance of networks based on knowledge was initially mentioned by Ernst Haas in his book "*When Knowledge is Power: Three Models of Change in International Organizations*", in which the author discusses how knowledge can make a difference in discussions within International Organizations, becoming a rather effective type of soft power in international politics.

However, systematic and further study of this sub-field in IR was carried out by a group of authors influenced by the constructivist approach, which focuses on social epistemology, in the role of collective knowledge in international and community social



life, where knowledge is created and through which it is spread at political and institutional levels. (Adler, 2005, p. 3)

The constructivist approach appeared as an alternative to traditional approaches, unable to interpret the mechanisms of interest mediation, of understanding diverse and complex processes

*"... often characterized by non-hierarchical interactions and a low level of formalization in terms of resources and information, as well as through the participation of new actors..."* (Faria, 2003, p. 21)

The definition of epistemic communities created by Haas in the paper *"Introduction: epistemic communities and international policy coordination"* (1992, p. 4-7) includes several features. The first refers to a group of experts from different areas and with different experiences, i.e., a network; the experts need not be from the same field - in a discussion on global warming, for example, it is possible that the meeting includes biologists, chemists, environmentalists, internationalists and social scientists.

A second feature is that the members of an epistemic community share casual beliefs, derived from their practical analyses, leading or contributing to a set of core issues in their fields, which will then be the basis for explaining the multiple connections between possible political actions and desired results. This means that the experts of a community are able to explain the really crucial issues to resolve a specific situation which will then create the expected product.

The next feature is that the community members share a set of normative principles and beliefs which provide a rational value to their social action. This feature is linked to the legitimacy granted to experts' authority through common principles they have to adopt.

The fourth feature is related to sharing concepts of validity by community members, i.e., experts adopt "validity tests" which serve as standards for further studies.

To summarize, the definition of epistemic communities is described in the following text

*"(...) a professional group that believes in the same cause-and-effect relationships, truth tests to assess them, and shares common values."*  
(Haas, 1990, p. 55)

In a specific interpretation, we defined epistemic community as a set of experts that have a common speech, shared knowledge and analysis of a specific problem area by means of published papers, conferences and other types of oral presentations, either formal or not, reports to government agencies, and have the ability to influence public policies through those public presentations.

According to Haas, the logic of coordinating international politics by means of epistemic communities occurs because present uncertainties in *policymaking* tend to foster demand in information which lead to a strong dependency among States and political options for successfully meeting the objectives and involve multiple and only partially



estimated consequences. Epistemic communities are a possible supplier of this type of information and advice.

For Emanuel Adler (2005), on the other hand, ideologies may be powerful because they tell actors which objectives are most relevant, which may be implemented, the importance of those objectives when compared to others, while they identify allies and opponents to the cause valued by the actors. Ideologies are important variables to understand political and economic behavior because their origins do not lie solely in material development and they may have substantial and independent effects and may even become a powerful political force.

Adler's argument is that ideologies may form consensus and these serve as a "beacon" to understand human behavior in groups or institutions. Institutions tend towards collective understandings, which help to meet the objectives, making these understanding pre-conditions for institutional changes.

As far as their ability to influence policies are concerned, epistemic communities, according to Haas's argument, should institutionalize that influence and promote their points of view in international politics. They influence *decision-makers*, who can influence interests and behaviors of other States. This may lead to an increased probability in convergence in political behavior and coordination. Communities can, thus, contribute to the creation and maintenance of social institutions which are at the forefront of international behavior.

The following scheme summarizes the influence process of epistemic communities on bureaucracies.

*Increase in professional bureaucracies and in the technical nature of issues*



*Increase in technical expertise, in particular, scientific expertise*



*Cognitive authority (Epistemic Communities)*



*"Permission" of the scientific community*



*More rational policymaking*

The chart above shows that epistemic communities are an intermediary in the *policymaking* rationalization process, legitimating policies.



For Goldstein and Keohane (1993, p.3), an epistemic community is formed through consensus on a certain issue among a community of experts. This consensus is decisive to provide this actor its unity of action and strengthen its influence in the definition and carrying out of national policies, influencing *policymakers* on the practicality of a certain policy.

Studies based on the approach of epistemic communities are representative. The book "*Communitarian International Relations*" by Emanuel Adler presents case studies carried out by the author in the 1990s, such as the on the Brazilian computer industry and the control of nuclear weapons in the USA.

In the case of the Brazilian computer industry, Adler points out that the behavior of relevant political actors to the design of policies in Brazil could be described as "*guerrillas*", a rather predictable behavior because ideologically oriented. It started with a small group of actors radically engaged with an anti-dependencia ideology, the process of discussing this policy induced and co-opted the economic and political elites both in Brazil and in Argentina to close ranks around a proposal of market reserve policy which would protect the local industry and allowed for its development.

### **III. Epistemic Communities and Academic Elites**

We can, therefore, say that the behavior of the elites is heavily influenced by cognitive factors and linked to restraints imposed by the institutional structure. Adler (2005, p. 147) states that

*"Ideological elites such as Brazil's pragmatic anti-dependency guerrillas have the ability to mobilize the collective beliefs, expectations, and concepts that are ultimately responsible for institutional action."*

Thus, decision-makers have turned to specialists to minimize uncertainties, help them understand the current issues and anticipate future trends. Without the help of experts, their choices could not only overlook the links with other issues but also high future uncertainty which could compromise future choices and threaten future generations. (Haas, 1992, p. 4)

The concept of uncertainty is important in Haas's analysis. Firstly, because, in the face of uncertainty, many conditions which would make focus easy are lacking. Secondly, because misunderstood conditions may lead institutions without any functions, impractical. There will be no power, no institutional clues for behavior and this can lead to new action patterns.

For Nelkin (1975, p. 36) scientists play an ambivalent role in politics - they are both "necessary" and "biased", as their technical knowledge is a source of power. According to the author, the authority of scientists lies in the rationality their analyses, interpretations and predictions are conducted. Their actions are perceived as being based on objective data obtained through rational processes, assessed by the scientific community through a strict control process.

Haas also proposes that scientific rationality becomes an alternative knowledge paradigm as a model for decision-making. This process stems from the proliferation of ministries and governmental agencies aimed at coordinating several new tasks, making



regulation an important bureaucratic function and expertise came into demand in many disciplines as never before (Haas, 1992, p. 8).

According to Nelkin, some *policymakers* state that it is more efficient and comfortable to name decisions technical rather than political. Scientific knowledge becomes, therefore, a basis for substantive planning and in particular a "defender" of legitimizing specific decisions. The author furthers her argument stating that the practicality of a bureaucracy depends much more on control and monopoly of knowledge in a specific field (Nelkin, 1975, p. 36-37).

For Amitav Acharya, on the other hand, the elites are important for the process he calls *localization*, which refers to the process of disseminating regulations, i.e., local agents reconstruct foreign regulations to ensure those regulations are in accordance with the agents' priorities and identities. The elites would then be intermediary in the process, supplying the necessary information to carry it out (Acharya, 2004, p. 241-242).

However, we must consider that, in accordance with Haas's argument, the knowledge conveyed by experts is not necessarily the *truth* but rather consensual knowledge. This means that expert advice includes experts' interpretation of their own knowledge, their perspective of reality and their ideas of validity (Haas, 1992, p. 21).

To discuss epistemic communities is also to discuss the potential power the elite of knowledge holds in influencing policies. Therefore, the ability that the elite of knowledge has of influencing policies is a type of Soft Power, being used as parameters in the carrying out and structuring of new policies.

#### **IV. Case study: The regulation of the use of stem-cells in Brazil**

In March 2005, the Law regulating the use of stem cells in Brazil was approved by the National Congress and sanctioned by President Luís Inácio Lula da Silva. The Law on Biosecurity (Lei da Biossegurança), as it was named, authorized and regulated research with human embryo stem-cells and allowed the growing and trading of genetically modified organisms. However, this was not a simple process, it involved discussions with scientists, society and the media.

Considered a borderline case, the use of stem-cells has been researched all over the world. In Brazil, in particular, the scientific community has required that politicians regulate research so as to avoid the misuse of stem-cell potential and avoid abuse. "Abuse must be avoided and, at the same time, infrastructures should be provided to scientists", declares Mayana Zatz, Coordinator of the research Centre, Centro de Estudos do Genoma Humano, and assistant rector at Universidade de São Paulo (USP) in an interview with journalist Karla Bernardo for the website *Ghente*.

According with the geneticist (Zatz, 2004<sup>1</sup>), stem-cells are

*[...] progenitor cells that keep the ability to differentiate in several tissues/blood, muscles, nerves, bones, etc...) of the human body. They are totipotent when they have the ability to become any human tissue and pluritotent when they manage to become some but not all human tissue.*

This ability may be used in the treatment of genetic diseases such as diabetes, Alzheimer's or Parkinson's. According to the scientist Radovan Borjevic,



*"you can (sic) use embryo stem cells to correct a genetically malformed organism. Implanting these embryo cells in the organism (upon laboratory manipulation), they will potentially have the ability to become other cells and promote the regeneration because they do not have the genetic defect the rest of the organism suffers from."*<sup>2</sup>

As in other countries, the process of regulating this type of research was rather long in Brazil. Several actors were involved in discussing the approval of the law regulating the use of stem cells. The main actor in the approval of the Law on Biosecurity at the National Congress were the scientists.

Scientists were mainly involved in public hearings, presenting didactic outlines on the use of embryo stem cells, having informal talks with senators, besides writing papers and scientists and patients being present at sessions in which the law was voted.

A specialist on stem cells of Faculdade de Farmácia e de Medicina da Universidade Federal do Rio Grande do Sul (UFRGS), Patrícia Pranke, declared that she was in Brasília at least 20 times when the law was being discussed in the Congress."<sup>3</sup>

Talking to the journal *Revista de Pesquisa FAPESP* on 15 August 2008, geneticist Mayana Zatz stated that

*"My pilgrimage to Brasilia has begun. I started participating in the public hearing and talking to senators because the law has returned to the Senate for rewording. We visit senators, one by one, to explain the relevance of this law. And it was eventually approved in the Senate at the end of 2004, with 96% in favor".*

The first time the law was presented at the Senate, in February 2004, it was rejected. The proposal, after being approved in the Senate, would be returned to the House of Representatives for approval. At the time, Severino Cavalcanti, president of the House of Representatives, was not completely sure the project should be submitted to vote because he belonged to the Catholic wing of the Congress. Some scientists, led by Mayana, had a meeting with Cavalcanti and thoroughly explained the potentials in terms of research for curing chronic diseases. The scientists left the meeting with the House president's promise he would submit the law to vote.

The main difficulties for approving the law was its scope and the fear of human cloning. The first draft of the law sent to Congress included both the use of genetically-modified organisms and the issue of embryo cells. Due to the resistance of both the Catholic and Evangelical benches in terms of the use of stem cells and of the environmentalist bench as far as Genetically Modified Organisms (GMOs), the report's author Renildo Calheiros (representative of PCdoB-CE) vetoed therapeutic cloning and limited the competences of the commission on biosecurity Comissão Técnica Nacional de Biossegurança (CTNBio) to authorize research and granted another institutions, Instituto Brasileiro de Meio Ambiente e Recursos Renováveis (IBAMA) and Agência Nacional de Vigilância Sanitária (ANVISA) the power to decide on the growing and trading of GMOs.

Meanwhile, the issue of human reproductive cloning, i.e., the attempt to produce a copy of the individual, is condemned by all scientists. The document *A Propósito da Ação Direta de Inconstitucionalidade da Lei que Autoriza a Pesquisa em Células-Tronco Embrionárias* (2005, p. 5) clearly reflects this point of view, when it states that





*"In accordance with the guidelines advocated by the world academic community, the Brazilian scientific community also explicitly condemns all experiments aimed at human reproductive cloning."*

To evidence the Brazilian position on the issue of human cloning at world level, The Brazilian Academy of Sciences asked Mayana Zatz to help write a document which was being drafted by researchers from several countries suggesting the ban of reproductive cloning. Together with other scientists, Zatz helped to write a document, ratified by 63 countries, which condemned human cloning but defended research with embryo stem cells

The main arguments used by the scientific community included the possible use of stem cells on chronic diseases, on preventative therapy (in the case of parents who decide to freeze their children's embryo stem cells for possible future use) as well as the status of research in the rest of the world. The argument referring to the status of research in the world is visible in the table below, which is included in the document written by Mayana *et alli* (2005).

**Table 1 - summary of the status of stem cell research in several countries**

<b>Summary of the status of derivations of new stem cell lines and nuclear transfer in some countries</b>
Countries which allow derivations of new stem cell lines and nuclear transfer (therapeutic cloning)
<i>United Kingdom, China, Belgium, Israel, Japan, South Korea, Singapore</i>
Countries which allow derivations of new stem cell lines but do not allow nuclear transfer (therapeutic cloning)
<i>Australia, Brazil, Canada, Denmark, Estonia, Finland, France, Greece, Hungary, Iran, Latvia, Netherlands, Czech Republic, Russia, Slovenia, Spain, Taiwan, Switzerland</i>

The head of the laboratory, Laboratório de Genética Molecular do Instituto de Biociências at USP, Lygia Pereira, adds to the list of presented arguments the issue of assisted reproduction, in use in Brazil since 1978, [...] perhaps without even realizing it, by accepting assisted reproduction techniques in 1978, we have accepted the destruction of the embryo, of this form of human life. Yes, for almost 30 years, this medical technique has generated human embryos that are not used for reproductive purposes and end up being frozen or disposed of - and we have lived with this fact very well.

The scientists is referring to the fact that the Law on Biosecurity allows research of stem cells only with embryos which were frozen up to March 2005 and for over three years, resulting from assisted reproduction procedures that were not used for fertilization.

Scientist' participation was decisive for the approval of the Law on Biosecurity by the Brazilian National Congress and subsequent ratification by President Luís Inácio. What can be inferred from the analysis of epistemic communities is the issue of sharing casual beliefs, because it is based on scientists' daily experience through research and with their patients that they define what are the core issues in their research and





contribute to establishing links with political actions in the area and producing a specific result. For example, Mayana Zatz declares that she decided to get involved in stem cell research due to her experience with patients with neurological diseases, specifically with diseases causing progressive muscle degeneration.<sup>4</sup>

Another important topic that evidences how the regulation of the use of stem cells in Brazil can be understood by means of the study of epistemic communities is that of the "validity test". When referring to the results obtained by the group of Catherine Verfaillie on the identification of bone marrow stem cells with properties similar to those of embryo stem cells, which cannot be reproduced by any other researcher in the world, Brazilian scientists working in the field wrote the following

However, more important is yet to inform that the studies conducted by Dr. Verfaillie could not be reproduced by several laboratories of renowned scientists all over the world, thus making these findings in need of evidence and confirmation by several research groups to be accepted as scientific truth. In any case, at the moment this population of cells, if it exists, cannot be separated and studied, so its use in terms of treatment is not viable.<sup>5</sup>

Thus, there are indicators that an epistemic community was formed around the debate on the use of stem cells in Brazil. The first indicator is the diversity of participating actors in the group advocating the approval of the Law on Biosecurity. The fact that the group was interdisciplinary, i.e., includes professionals from several areas: doctors, computers engineers, biologists, mathematicians, educators, physicists, among others. This is the major important feature of an epistemic community: include members from different academic fields.

The second indicator is linked to its influence in the planning of public policies and in the establishment of an agenda for that specific area; the group can influence policymaking in a certain area in the country. This indicator is proven when we analyze the scientists' travels to the Brazilian National Congress so try to convince Brazilian MPs of the importance of approving the Law on Biosecurity through educational lectures and the presentation of case studies.

The third indicator is the establishment of international discussion agendas or even direct influencing the use of Brazilian techniques in the use of stem cells to treat degenerative diseases in other countries, fostering simple solutions for unsolved problems.

The fourth indicator is the consensus in terms of decisions and strategies within the group of scientists so as to convince policymakers to approve the law. Consensus is usually seen as fundamental for the process of influencing in policymaking in studies on epistemic communities. Consensus is decisive to provide unity in action of the actor epistemic community, to reinforce its influence in defining and carrying out national policies and influence policymakers on the practicality of a certain policy.

## **V. Final Considerations**

An important legacy of the study on the role of ideas and specifically of epistemic communities is that ideas inspire policies. And epistemic communities would work as channels through which new ideas would flow from society to governments, from country to country.



In this process, information consists in describing physical or social processes, their interrelation with other processes and the probable consequences for actions requiring the use of scientific or technical expertise. Information is, therefore, neither hunches nor raw data. It is a product of human interpretation of social and physical phenomena. Epistemic communities are a possible supplier of this type of information and advice. From a retrospective and bibliographical analysis on the action of epistemic communities, we were able to assign four features of those actors to the community of professionals linked to the use of stem cells in Brazil, allowing us to state that there is an epistemic community in the country in the area of stem cells.

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