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Who Shapes the Politics of the Bomb? The Role of Epistemic Communities in Creating Nuclear Non-Proliferation Policies

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1. From January 2011, Dr. Sara Z. Kutchesfahani will be a Postdoctoral Research Fellow at Los Alamos National Laboratory. This working paper is based on research for her doctoral thesis "Politics and the Bomb: Exploring the Role of Epistemic Communities in Nuclear Non-Proliferation Outcomes".

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Introduction

One of the key debates in International Relations (IR) has concerned the formation of policies and the role of an array of actors in eliciting and shaping those policies. In recent years, the role of epistemic communities – groups of experts knowledgeable in specific issue areas – in shaping international policies has attracted significant scholarly interest. In particular, much attention has been directed to examining how epistemic communities have influenced natural scientific and environmental policies (Haas 1989; 1990; 1992c, Peterson 1992, Hjorth 1994, Baark and Strahl 1995, Ringius 1997, Betsill and Pielke 1998, Lidskog and Sundqvist 2002).

What has been largely missing, however, is an assessment of the role that epistemic communities might be playing in the field of international security. Security policies stand out as one area where there is virtual absence of any examination of the role of experts in influencing the policy formation process. Indeed, the field of international security is still dominated by state-centric approaches and the role of non-state actors such as epistemic communities has been largely ignored. This paper examines the role of an Argentine and Brazilian epistemic community in the creation of the Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials (ABACC). ABACC is one of the key factors in the non-proliferation of Argentina and Brazil – two countries that could have pursued a nuclear weapons programme but chose to remain non-nuclear – because it created a bi-national system of mutual inspections and verification of indigenous non-safeguarded nuclear installations between the two states, verifying the non-nuclear weapon status of the two states.

Between the 1950s and 1980s, Argentina and Brazil were widely suspected by the international community – as well as by each other – to be pursuing a covert nuclear weapons programme for many reasons. First, both countries were longstanding regional rivals living under military leaderships and had consistently competed for regional hegemony. Even though the last time they had engaged in a bilateral armed conflict was 1825–28 (Schneider 1991: 35–36, Reiss 1995: 52, Sagan 1996/7: 61), the rivalry mainly had a distinct nuclear dimension with the potential of achieving a military dimension.[1] Second, between the 1950s and 1980s, both nations had indigenously developed some aspects of the nuclear fuel cycle, and possessed nuclear facilities that were not subject to regional or international safeguards.[2] Third, both nations refused to get involved in the international nuclear non-proliferation regime by rejecting the Nuclear Non-Proliferation Treaty (NPT), full-scope IAEA safeguards, the Nuclear Suppliers Group (NSG), and the Tlatelolco Treaty.[3]

[1] Some scholars argue that fear of war between the two nations had reached a high point in the 1960s and 1970s, when leading military officials in both countries embraced "zero-sum 'geo-political' doctrines" (Knopf 2003: 201, Selcher 1985: 26–8, 39, Carasales 1992a: 47–8, Hurrell 1998: 230–34). However, neither state had ever seen each other as enemies, nor had they envisioned a nuclear war with one another (Reiss 1995).

[2] The nuclear fuel cycle can be used to produce both weapons-grade fissile material and civilian nuclear energy. Both nations had built a uranium enrichment plant, and Argentina started work on a plant to reprocess plutonium from spent nuclear fuel.

[3] There are many components to the nuclear non-proliferation regime including the NPT (a treaty that establishes norms and supply-side controls), the IAEA (an international organisation that implements rules and inspections), nuclear weapon free zones (areas throughout the world that are protected against the use, storage, and testing of nuclear weapons), and a number of multilateral export control agreements which control nuclear technology supplies (including the NSG and the Zangger Committee). Argentina and Brazil rejected most of these: For example, both nations refused to place their facilities related to producing uranium and plutonium fuel under full-scope IAEA safeguards (IAEA safeguards prevent diversion of nuclear fuel to military uses). In addition, they refused to become parties to the NSG and they rejected the Tlatelolco Treaty, a treaty marking the prohibition of nuclear weapons and establishing a nuclear weapon free zone in Latin America and the Caribbean. It came into force in 1969 in spite of Argentina's initial refusal to ratify it. Argentina eventually ratified it in 1994. (In 2002, all 33 nations of Latin America and the Caribbean had signed and ratified the treaty. For more on the Tlatelolco Treaty, see Redick 1981.)

These reasons fuelled widespread suspicion that the two countries were indeed intent on acquiring a nuclear weapons programme (Gamba-Stonehouse 1991, Stanley 1992, Redick, Carasales and Wrobel 1995, Barletta 2000, Paul 2000).

However, neither country became a nuclear weapon state. Most studies argue that Argentina and Brazil ended their efforts to develop a nuclear weapons option when they both became democracies in the mid 1980s – Argentina in 1983, Brazil in 1985 (Carasales 1992; 1995, Lamazière and Jaguaribe 1992, Goldemberg and Feiverson 1994, Redick, Carasales, and Wrobel 1995, Solingen 1994, Redick 1995; 1996, Wrobel and Redick 1998, Wrobel 1999).[4] Although their efforts to develop a nuclear weapons option ceased when they became democracies, it is important to note that negotiations on nuclear issues between the two states had already begun in 1980, when both nations were ruled under military leaderships. These negotiations continued throughout the 1980s and early 1990s prompting the creation of ABACC in June 1991. Consequently, the focus of this paper is on the origins of ABACC. The analysis indicates that an Argentine and Brazilian epistemic community drove the thinking behind the mutual inspections and safeguards verification system that was subsequently implemented as ABACC. The creation of ABACC was a remarkable accomplishment given that the two nations had hitherto been embroiled in a century-long rivalry. It is therefore quite significant that the one sensitive area in which they were competing, mistrusting, and suspicious, in fact, brought them closer together.

Using data collected primarily from interviews with Argentinean and Brazilian decision makers (conducted face to face, over the phone, and via email from December 2008 – October 2009) as well as information accessed from open sources (including conference proceedings and the ABACC website), this paper analyses the process of how an Argentine-Brazilian epistemic community influenced Argentine and Brazilian decision makers to implement ABACC.

It should be noted that it is not the intention of this paper to suggest that the epistemic community's role in persuading state decision makers to pursue a nuclear non-proliferation policy is a monocausal explanation. In fact, the epistemic community framework is not being used as an alternative explanation per se, but as an intervening mechanism in a larger process. Many scholars working on understanding why and how Argentina and Brazil did not pursue a nuclear weapons programme agree that no single factor alone can explain the non-proliferation outcome (Potter 1995, Reiss 1995, Paul 2000, Levite 2002/3, Doyle 2008). This paper therefore appreciates the possibility of equifinality (in other words, the notion of multiple causality and several explanatory paths that lead to the same outcome) in explaining their non-proliferation outcome given that alternative processes and several other explanatory factors were at play (e.g., transition to democracy and economic liberalism). However, what remains unexplored in the literature is the role of an epistemic community in creating ABACC. The first part of the paper outlines the epistemic community framework, including a discussion on its key features, emergence, and influence mechanisms. The second part of the paper applies the epistemic community framework to the case of ABACC illustrating the important role of an epistemic community behind the non-proliferation outcome of Argentina and Brazil.

The Epistemic Community Framework

[4] Other notable texts include Levanthal and Tanzer (eds.) 1992, Stanley 1992, Marzo, Biaggio, and Raffo 1994, Serrano 1994, Reiss 1995, Hirst 1998, Barletta 2001, Hymans 2006, Doyle 2008.

The application of the epistemic community framework has been particularly prevalent in the realm of natural scientific and environmental policies (Haas 1989; 1990; 1992c, Peterson 1992, Hjorth 1994, Baark and Strahl 1995, Ringius 1997, Betsill and Pielke 1998, Lidskog and Sundqvist 2002). In the field of international security however, the epistemic community approach has been relatively under explored.[5] In order to gain a more complete understanding of non-proliferation outcomes and to supplement existing explanations, there is a need to broaden explanations to include more actors (including scientists and experts) as key actors in non-proliferation, moving away from traditional state-centric approaches. The epistemic community approach is a useful avenue for doing so because it focuses on the role of a community of experts behind policy formulation (and subsequent implementation). Consequently, it provides a crucial insight into the link between actors and nuclear non-proliferation policy. The process of where and from whom the idea behind ABACC came from is currently lacking within the existing literature. As such, the epistemic community framework provides an interesting and useful framework with which to analyse and trace the origins of this nuclear non-proliferation agreement.

The term "epistemic community" has been defined or used in a variety of ways, most often to refer to communities of (scientific) experts (Foucault 1970, Holzner 1972, Ruggie 1975, Haas 1989; 1992b, Antoniades 2003). Etymologically derived from the Greek word "ἐπίσταμαι" (episteme), the term refers to knowledge or science. Over the years, the concept of episteme evolved from referring to a shared faith in the scientific method as a way of generating truth (Holzner 1972), as a dominant way of looking at social reality (Foucault 1970, Ruggie 1975), as a way to explore global governance (Haas 1989; 1992b), and as a way to dominate social discourse and social practice (Antoniades 2003). As a framework, it was introduced to IR scholars by Peter M. Haas (1989; 1992b) to study the role and impact of ideas in international relations and in international policy coordination.[6]

In a seminal issue of the journal *International Organization* entitled "Knowledge, Power and International Policy Coordination", scholars suggested that the concept of an epistemic community should be treated as an alternative approach to the study of international policy coordination and change along with neorealism, neoliberalism, dependency and post-structural approaches (Haas 1992a). They argued that the epistemic community approach analyses relations between the epistemic community and the behaviour of states in international policy coordination (Haas 1992a; 1992b, Adler and Haas 1992). The epistemic community framework was therefore a further model used to explain patterns of international cooperation and policy change in world politics. Described as a

[5] The application of the epistemic community approach to international security issues include Adler 1992 (nuclear arms control), Mendelson 1993 (changes to Soviet foreign policy), Wright 1997 (conventional arms control), and Barth 2006 (nuclear arms control).

[6] While Haas's model is the most widely accepted and applied in IR, it should be noted that the epistemic community framework was originally introduced to IR scholars by Ruggie (1975). Ruggie borrowed the term "episteme" from Foucault (1970) and combined it with Holzner's concept of the "'proper' construction of reality" (1972: 60–71). Neither Ruggie nor Foucault provided a clear definition of an epistemic community, but instead focused their explanations on the term episteme. They described an episteme as "a dominant way of looking at social reality, a set of shared symbols and references, mutual expectations and a mutual predictability of outcomes" (Ruggie 1975: 569–570). They therefore associated epistemic communities with broader and more-widespread social beliefs rather than with the more limited set of shared beliefs held by experts. Ruggie defined an epistemic community as "interrelated roles which grow up around an episteme; they delimit, for their members, the proper construction of social reality (1975: 570, emphasis in original). In other words, epistemic communities create a discourse that creates and carries out standards of "normal" behaviour (Ruggie 1975: 570). By constructing social reality, Ruggie maintains that political actors develop ideas and norms that underlie an issue area. Moreover, the actors are conscious of the construction of these ideas and norms.

"network of professionals with recognised expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue area" (Haas 1992b: 3), epistemic communities can often influence state decisions.[7] Through their knowledge and expertise in niche issue areas (e.g., in highly technical and complex issue areas) and their access to decision makers, members of an epistemic community influence decisions when decision makers are faced with conditions of uncertainty and complexity. When uncertainty and complexity constrain state decision makers' actions, they often demand particular sorts of scientific or technical information and expertise. Meeting these demands can require considerable technical or scientific expertise. Epistemic communities are one possible provider of such information and advice because they are capable of producing and providing this information due to their possession of policy-relevant knowledge. Therefore, uncertainty provides both an opening and an opportunity for an epistemic community to influence state decision makers.

The epistemic community framework has been used to empirically study the role and impact of ideas in international relations and in international policy coordination, which can be conceptualised through three key themes identified from the existing literature. First, the key features of an epistemic community; second, the uncertainty and complexity of the issue area, which prompt the emergence of an epistemic community; and third how it influences state decisions – i.e., how it creates the policies and subsequently influences their implementation as policy.

Key Features

According to Haas, an epistemic community is "a network of professionals with recognised expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue area" (1992b: 3). Epistemic communities represent networks of knowledge-based experts that help articulate cause-and-effect relationships of complex problems, define the self-interests of a state, or formulate specific policies for state decision makers. In short, they assist the policy process. They may consist of professionals from a variety of disciplines, but they usually have a shared set of principled beliefs, common causal beliefs, shared notions of validity, and a common policy enterprise (Haas 1992b). Haas argues that these features distinguish members of an epistemic community from members of other groups often involved in policy coordination.

Emergence

The increasingly complex and technical nature of the ever-widening range of issues on the international agenda confronts national policymakers with severe uncertainties (Haas 1992b). Decision makers obliged to deal with issues of greater complexity rely increasingly on experts to "ameliorate the uncertainties and help them understand the current issues and

[7] Haas defined the concept of an epistemic community as: "a network of professionals from a variety of disciplines and backgrounds. They have (1) a shared set of normative and principled beliefs, which provide a value-based rationale for the social action of community members; (2) shared causal beliefs, which are derived from their analysis of practices leading or contributing to a central set of problems in their domain and which then serve as the basis for elucidating the multiple linkages between possible policy actions and desired outcomes; (3) shared notions of validity – that is, intersubjective, internally defined criteria for weighing and validating knowledge in the domain of their expertise; and (4) a common policy enterprise – that is, a set of common practices associated with a set of problems to which their professional competence is directed, presumably out of the conviction that human welfare will be enhanced as a consequence" (1992b: 3).

anticipate future trends" (Haas 1992b: 12–13). As a result, the consensus view within the epistemic community literature has been that "under circumstances of complexity and uncertainty, governments will consult with expert communities in search of new ideas that make sense of the problem" (Drake and Nicolaïdis 1992: 41).[8] Within the epistemic community literature, "uncertainty" refers to periods when state decision makers are faced with an international agenda of complex and technical issues and they lack specialist knowledge in these issue areas. Complexity refers to the nature of the issue areas, whether they are political, social, economic, or scientific. In past studies of epistemic communities, the nature of such issue areas have included security (Adler 1992, Mendelson 1993, Wright 1997), population (Drake and Nicolaïdis 1992), monetary/economic (Hopkins 1992, Verdun 1999, van Daele 2005), macroeconomic (Ikenberry 1992), plant genetics (Sauvé and Watts 2003), biodiversity (Raustiala 1997), innovation and technology (Sharif 2006), and environmental (Haas 1989; 1990; 1992c, Peterson 1992, Hjorth 1994, Baark and Strahl 1995, Ringius 1997, Betsill and Pielke 1998, Lidskog and Sundqvist 2002) issues.

Influence Mechanisms

Adler and Haas argue that an epistemic community influences state decisions through the following four processes: policy innovation, policy diffusion, policy selection, and policy persistence (Adler and Haas 1992: 375–387). During policy innovation, members of an epistemic community decide the policy objectives and frame the issue (by relating it to state interests). This marks the first stages of exchanges between all members of the epistemic community. During policy diffusion, members of an epistemic community actively engage in information exchange and share policy ideas on both a national and transnational level.[9] Once members of an epistemic community have framed an issue and diffused their ideas within the community, they recommend certain policy suggestions to decision makers, who then participate in policy selection. The epistemic community recommends the policies it thinks decision makers should select. An epistemic community facilitates policy selection through its ability to present policy alternatives as well as policy recommendations. Through their authoritative knowledge in highly technical and complex issue areas, members of an epistemic community influence and persuade decision makers to subscribe to particular policy recommendations. Policy persistence, in which the continuation of the consensus of ideas, beliefs, and goals over time among the epistemic community members contributes to their credibility and authority, can determine how long an epistemic community remains influential.

Applying the Framework to the Case of ABACC

As stated in the introduction, Argentina and Brazil were widely suspected by the international community to be pursuing a nuclear weapons programme. However, contrary

[8] See also Haas 1989; 1990; 1992a, Mendelson 1993, Hjorth 1994, Baark and Strahl 1995, Liftin 1995, Radaelli 1995, Yee 1996, Raustiala 1997, Ringius 1997, Thomas 1997, Wright 1997, Betsill and Pielke 1998, Verdun 1999, Toke 1999, Zito 2001a, Simon 2002, Lidskog and Sundqvist 2002, van Waarden and Drahos 2002, Antoniades 2003, Sauvé and Watts 2003, Howorth 2004, Jacobs and Page 2005, van Daele 2005, Sharif 2005, Barth 2006, Trommer and Chari 2006, Mitchell et al. 2007, Dobusch and Quack 2008, Marier 2008, Dunlop 2010.

[9] Diffusion refers to the "spread of expectations, values, and other types of ideas to other nations" (Adler 1992: 104). Transnational refers to the "interaction across national boundaries when at least one actor is a non-state agent or does not operate on behalf of a national government or an intergovernmental organization" (Risse-Kappen 1995: 3).

to these fears, the two former rivals did not become nuclear weapon states. Scholars have offered a number of reasons as to why Argentina and Brazil did not proliferate. These include both countries' transition to democracy in the mid 1980s (Solingen 1994, Paul 2000, Levite 2002/3, Müller and Schmidt 2010), the pursuit of economic liberalisation in the mid-late 1980s (Solingen 1994), trust building through confidence building measures (Redick 1995, Reiss 1995, Wheeler 2009), and the psychology of the leadership (Hymans 2006). In fact, the end of Argentina and Brazil's rivalry was marked by a gradual nuclear rapprochement process, which can be traced back to the late 1960s/early 1970s. Even though this period marked an intense rivalry (particularly in the nuclear sphere), the development of a common position during the negotiations on the Tlatelolco Treaty in the mid 1960s and a shared hostility to the international nuclear non-proliferation regime in the 1960s/1970s emerged between the two states, facilitating the process of nuclear cooperation.[10]

Since the first joint nuclear agreement of May 1980 to the policy which led to the creation of ABACC in July 1991, a total of ten nuclear cooperation agreements were signed between the two states. A close analysis of all the agreements reveals six common elements that were always included. These comprised a reaffirmation of the exclusively peaceful character of the Argentine and Brazilian nuclear programmes; a strengthening of mutual confidence (seen through initiatives such as joint projects, exchange of information, and reciprocal visits to secret nuclear facilities); advancing the peaceful uses of nuclear energy for the benefit of the population of both states; considering the potential for expanding cooperation in the nuclear field to other countries throughout Latin America; coordination of a common foreign policy in the nuclear energy sphere; and fostering concern for peace and security in the region (Carasales 1992: 76–77). It can be argued that these common elements – the *shared normative, principled, and causal beliefs* – facilitated closer nuclear cooperation between Argentina and Brazil.

Based on my research and analysis, I argue that the creation of ABACC involved three distinct phases: (1) May 1980, (2) 1983–1989, and (3) 1990–1991.[11] Phase one saw initial steps taken by the military governments of President Jorge Rafael Videla of Argentina and President Joâo Baptista de Oliveira Figeuiredo of Brazil in May 1980, when the Cooperative Agreement was signed between the two nations for the Development and Application of the Peaceful Uses of Nuclear Energy. Phase two saw these steps pursued and strengthened by the countries' first democratic governments when President Raúl Alfonsín of Argentina and President José Sarney of Brazil signed five nuclear cooperation agreements. During phase two, the Joint Working Group on Nuclear Affairs (JWG) was created (1985), which then became more permanent as the Permanent Committee on Nuclear Affairs (PCNA) (1988).[12] It is also important to note that in this period, Argentine and Brazilian scientists began calling for bilateral nuclear cooperation and mutual inspections. For example, in November 1983, the Brazilian Physics Society (SBF) and the Argentine Physics Association (AFA) issued their first joint declaration, which contained a paragraph asking both governments to exchange nuclear information and to establish mutual inspections of nuclear facilities. For the first time, both physics societies began to share the view that some (bi)national control over their

[10] In addition, scholars have remarked that the resolution of territorial disputes in the late 1970s helped influence the rapprochement (Redick 1995, Resende-Santos 2002, Kupchan 2010).

[11] It is important to note that the 1980–1983 period was marked by a lull, given the broad international problems facing the two states. Argentina was preoccupied with the Malvinas/Falkland Islands War against the UK in 1982, and, at the same time, the Brazilian economy suffered a crisis.

[12] The JWG and PCNA were established respectively through the 1985 Foz de Iguaçu and 1988 Iperó joint declarations on nuclear policy.

respective nuclear programmes was desirable, and that they should work together to establish this objective (Wrobel and Redick 1998: 176). In the following year, in November 1984, the two physics societies released a further joint declaration stating their opposition towards nuclear weapons, considering "morally unacceptable the participation of physicists in the development of nuclear weapons" (quoted in Fabbri 2005: 175).[13]

In addition, during the 1983–1989 period, the high-level presidential and technical reciprocal visits to unsafeguarded and sensitive nuclear facilities began. In July 1987, President Alfonsín invited President Sarney to an exclusive tour of Argentina's unsafeguarded Pilcaniyeu pilot uranium enrichment facility. In response to Alfonsín's invitation to visit Argentina's enrichment plant, in April 1988 (nine months after Alfonsín's invitation), Sarney invited Alfonsín to the navy-controlled Aramar uranium enrichment facility in the Iperó nuclear complex, São Paulo. Similar to the Pilcaniyeu pilot uranium enrichment facility in Argentina, the Aramar uranium enrichment facility had served as a secret nuclear installation (Marzo 1997: 36). Sarney made the final of the presidential visits to the Ezeiza nuclear facility, near Buenos Aires, in November 1988.

Phase three brought the initial May 1980 steps to full conclusion by President Carlos Menem of Argentina (elected in 1989) and President Fernando Collor de Mello (elected in 1990) – the successors of Alfonsín and Sarney. Presidents Menem and Collor adjusted previous nuclear policies to align them with broader foreign policy objectives (Reiss 1995: 67) and signed a further four nuclear cooperation agreements, including the Guadalajara Agreement (18 July 1991), which established ABACC.

The Emergence of the Epistemic Community behind ABACC

Based on my understanding and research on the creation of ABACC, the epistemic community that was involved in the creation of ABACC was borne out of an incipient epistemic community that had began to develop during the 1965–1980 period. That is not to say that the epistemic communities were one and the same. Rather, the incipient epistemic community had started to develop in the 1965–1980 period based on Argentine and Brazilian common positions taken against the international nuclear non-proliferation regime, that by the 1980–1991 period, it had realigned in ways that made a process of cooperation, and by extension, ABACC, possible. Further, the epistemic community was given greater legitimacy when the 1985 Joint Declaration of Nuclear Policy established an ad-hoc Joint Working Group on nuclear issues (JWG), which by 1988 had been institutionalised as a Permanent Committee on Nuclear Affairs. The JWG/PCNA – the institutionalised epistemic community – was comprised predominately of Argentine and Brazilian scientists (including representatives from CNEA and CNEN – the nuclear energy commissions in both states) and government officials (including representatives from the foreign ministries). These experts frequently participated in periodic meetings where they engaged in a mutual exchange of information, regular scientific, technical, and military consultative exchanges, and participated in discussions surrounding the nature of the mutual safeguards system. It can be argued that they, in part, helped to change the Argentine-Brazilian nuclear relationship from one of rivalry to that of cooperation. Over the years, they stressed the

[13] Official statements were circulated simultaneously by both societies in Rio de Janeiro and Buenos Aires. This declaration was released in a meeting of the Latin American Federation of the Physics Societies (Federación Latino-Americana de Sociedades de Física) held in São Paulo, Brazil. The declaration was submitted jointly by the societies of Argentina, Brazil, and Mexico in favour of nuclear disarmament and mutual controls in Latin America and the Caribbean (Wrobel and Redick 1998: 176).

importance of a bilateral mutual inspections regime, which would verify Argentina and Brazil's non-nuclear weapon status. Their proposals were adopted and implemented by the presidents of both Argentina and Brazil (Menem and Collor, respectively), culminating in the establishment of ABACC in December 1991.

The Epistemic Community behind ABACC

Using Haas' definition of an epistemic community outlined earlier, it can be argued that the Argentine and Brazilian representatives from the JWG/PCNA comprised an epistemic community. Based on my understanding and research, these experts included both the scientific community *and* government/state officials (especially representatives from the foreign ministries). Both clusters of groupings were equally important in the thinking behind the creation of ABACC and its subsequent establishment.

A Brazilian diplomat explained that a "combination of political leadership and physicists" was behind the thought process of ABACC (Interview D). As many interviewees explained, "the scientists offered the structure behind ABACC" (Interview A), "ABACC was the idea of scientists" and "the scientists played a very key role" in the establishment of ABACC (Interview D), yet the decision to create ABACC was, ultimately, "a political decision" (Interview L), "a government decision" (Interview J), and that the "main impulse for opening up [the nuclear programmes] came from the highest authorities in government" (Interview O). In addition, according to an Argentine diplomat, "there was an excellent communication between all sectors of both countries", "there were no closed segments just for scientists or diplomats", and that "communications among all those sectors were very fluid and interactive" (Interview O) Another Argentine diplomat remarked that "the communication between our delegations was both among diplomats, and mixed, with scientists from the two countries" (Interview P). A former Brazilian ABACC inspector explained that the epistemic community was "very influential and their role was fundamental" in the creation of ABACC (Interview G).

The scientific community in both states, particularly nuclear physicists and engineers, played an important role in actively promoting Argentine-Brazilian nuclear cooperation. In both states, scientists and their professional societies (e.g., the Brazilian Physics Society, SBF, the Brazilian Society for the Advancement of Science, SBPC, and the Argentine Physics Association, AFA) promoted public discussions on the need for regional nuclear arms control.[14] In 1987, Naren Bali, president of the AFA, urged nuclear commission officials to open up facilities that were still off-limits (Graham 1987: A18). These professional scientific societies were key lobbying elements before the Argentine and Brazilian congresses and presidents. It can be inferred that their impact was felt because, according to a former Brazilian ABACC inspector, from 1987, the "Argentinean and Brazilian nuclear delegations began to develop their joint inspection programme between country and country, and amongst scientists and scientists" (Interview G), paving the way for the creation of ABACC.

How ABACC was Created

[14] The Brazilian Physics Society is a translation from the Portuguese Sociedade Brasileira de Física (SBF), the Brazilian Society for the Advancement of Science is a translation from the Portugues Sociedade Brasileira para o Progresso da Ciência (SBPC), and the Argentine Physics Association is a translation from the Spanish Asociación Física Argentina (AFA), taken from Wrobel and Redick 1998: 174; 176.

Having explained who was behind ABACC, it is important to analyse how the theoretical framework of the epistemic community approach sheds light on the origins of ABACC In this section, I examine how – notably through the role of knowledge and expertise and having access to decision makers – the Argentine-Brazilian epistemic community outlined above facilitated the creation of the ABACC and its subsequent implementation as policy.

a) The Role of Knowledge and Expertise

An important stage of the epistemic community's influence in the creation of ABACC was the role of knowledge and expertise. According to an Argentine diplomat,

On how to implement these new policies of openness [opening up nuclear facilities to the other for inspection], the "epistemic community" played a key role by analysing different alternatives and eventually designing ABACC and the Quadripartite Safeguards Agreement, as well as the ratification of both the Treaty of Tlatelolco and NPT (Interview O).

The experts behind ABACC – particularly the scientists – were crucial in designing the system of verification and mutual safeguards and inspections. As an Argentine diplomat remarked, "the scientists were abundant in the delegation leading towards ABACC" (Interview A). This was corroborated by a Brazilian diplomat who said that scientists dealt specifically "with the nuclear issue per se, i.e., the mutual inspections" (Interview D). Although they did not engage in scientific tests per se, the scientists involved in setting up the mutual inspections regime shared and disseminated collective knowledge through an intensive period of engagement and discussions through the JWG and PCNA. They used this knowledge in order to "internally define criteria for weighing and validating knowledge in the domain of their expertise" (Haas 1992b: 3).

In an interview, a former ABACC inspector (Interview G) explained that the "defined criteria" was the verification that both Argentine and Brazilian nuclear facilities were of a peaceful nature. This would be validated through the creation of a common system of safeguards and a verification system. These were both established in November 1990, under the Foz de Iguaçu Declaration, which created the common system for accounting and control of nuclear materials. After the Declaration, Argentina and Brazil exchanged their entire list of facilities (including descriptions of each facility) and an inventory of nuclear materials, thereby validating that their nuclear programmes were of a peaceful nature (Interview G).

A Brazilian diplomat explained that the idea of the mutual inspections regime was due to the "crucial influence of the scientists". This was because through their knowledge and expertise, "they knew how to do it" and "they knew what to do" (Interview D). A former Brazilian representative of the PCNA explained that the scientists involved in the PCNA undertook a "regional safeguards training [programme] in Rio in 1988" in order to share collective knowledge and expertise (Interview G). The same representative remarked that the scientists were influential in the creation of the mutual safeguards inspection regime because of "their credibility" and their knowledge and expertise. An Argentine representative from the PCNA remarked that the expert technical groups within the PCNA "shared inventories, learnt lessons, to try to make their systems compatible" (Interview J). An Argentine diplomat remarked that the scientists "played a very important role from the technical point of view" in establishing ABACC (Interview L).

Moreover, it can be argued that the experts' knowledge was diffused, particularly through communication, within the JWG/PCNA setting. Meeting every 120 days, alternating between venues in Argentina and Brazil (as mandated in the nuclear agreements), the JWG/PCNA exchanged technical information and assured each other that their respective nuclear programmes were only for peaceful purposes. In particular, they developed specific measures on notification and assistance in all areas of nuclear safety, exchanged information on security of nuclear installations, and began joint research and information exchange relating to safeguards (Redick 1988: 5–9) – all of which required extensive knowledge and expertise. As a former Argentine Director of Nuclear Affairs explained,

We had very frequent encounters with our Brazilian counterparts, and we even integrated a joint binational delegation to negotiate with the IAEA. Both national delegations were headed by diplomats with the technical support from the respective nuclear agencies (Interview P).

The reciprocal visits, public declarations, institutionalising nuclear dialogue and cooperation through the PCNA all provided a structural space to encourage diffusion. These activities served as reassurance to the international community (as well as to each other) that the Argentine and Brazilian nuclear programmes were of a peaceful nature. In addition, they also served as a precursor to establishing the mutual safeguards inspection regime. Even though Solingen remarks that institutions cannot be credited with initiating cooperation in the Southern Cone (1998: 276–277), once the process of nuclear cooperation had begun, an institutional setting such as the PCNA played a crucial role in expounding knowledge and exchanging and sharing ideas and information. Over time, the regular technical and political exchanges under the remit of the PCNA contributed to the transformation of Argentina and Brazil's nuclear policy from one of cooperation to one of verification. Marco Marzo, a former Brazilian senior planning and evaluation officer at ABACC, observed this when he said,

The way in which Argentina and Brazil came together in the nuclear field is astounding. […] If you said to me at that time, in 1984 or 1985, that there would be a rapprochement between Argentina and Brazil, that the Bilateral Agreement would be signed in ten years, I would have said that you were crazy. […] The first steps were very small steps. The rapprochement did not start with visits to secret enrichment plants. We started with small working groups in various areas […] At the beginning, we never discussed secret facilities, enrichment, or reprocessing (1997: 33–34).

In other words, the PCNA was responsible for turning ideas into concrete measures. It was also responsible for reciprocal visits, maintaining steady contacts at the political and technical levels, and consultation to increase mutual knowledge of each other's respective nuclear programmes (Fabbri 2005: 173). This was corroborated by an Argentine scientist who remarked that the PCNA "helped facilitate the joint visits and increased transparency mechanisms" (Interview J). The constant attempts by diplomats, scientists, and government officials to work on cooperative projects, and to maintain that commitment over a number of years was crucial in establishing the mutual safeguards inspection regime.

The work carried out by the PCNA facilitated political support in favour of progress towards mutual and international inspections. When the political decision to establish ABACC was taken, two respected and experienced nuclear physicists, Jorge Coll from the

CNEA representing Argentina, and Carlos Feu Alvim, a professor of physics, representing Brazil, became the director and deputy director, respectively, of ABACC (Wrobel and Redick 1998: 177).

b) Access to Decision Makers

The extent to which the experts had access to decision makers was arguably another crucial factor in the creation of ABACC. Earlier, it was explained how the JWG/PCNA was created through the 1985 and 1988 nuclear agreements agreed between the two presidents. Representatives from the foreign ministries and the scientific community of both countries were tasked to explore all avenues for nuclear cooperation. One of their main roles was to further negotiations and propose directions for further nuclear collaborative projects (Wrobel and Redick 1998: 169). Given that the JWG/PCNA were set up by the presidents, it can be assumed that those within the JWG/PCNA had access to decision makers. In fact, the Collor administration hired one key member from the JWG/PCNA – a scientist – to implement the mutual inspections regime. From 1990–1992, Professor José Goldemberg was the Brazilian Minister of Science and Technology. A nuclear physicist, Goldemberg was formerly the President of SBPC (1975–1979). In fact, as a Brazilian former representative from the PCNA remarked,

The President at the time, Fernando Collor, was a rather inquisitive mind and developed a good relationship with me asking frequently questions about Science and Technology (S&T). (Interview E).

It can therefore be assumed that if one member from the JWG/PCNA had access to their country's president (in this case Brazil), other members of the JWG/PCNA could have also been granted access to the other country's president.

According to Adler and Haas, the extent of an epistemic community's role in policy selection involves two factors: decision makers' unfamiliarity with policy issues and the timing of policy choice (1992: 381–383). In the case of ABACC, while it is not clear to what extent Argentine and Brazilian decision makers were familiar with the issue of mutual safeguards (from a scientific and technical perspective, rather than from an interest perspective), it is quite clear that the two countries' presidents closely followed the issue, given the frequent release of joint declarations stressing their countries' common nuclear policies. In addition, as explained earlier, the JWG/PCNA was set up through a presidential initiative.

The second factor in assessing an epistemic community's role in policy selection involves *timing* (Adler and Haas 1992: 383). It may be easier for decision makers to accept ideas and advice from epistemic communities after political, military, or economic conditions have changed (Adler and Haas 1992: 383). In the case of ABACC, timing was important, especially the transition to democracy. From 1985 – once both states were democracies – there was a greater exchange of information, leading to nine Joint Nuclear Declarations. However, in terms of selecting the policy of mutual safeguards, the role of Argentina was especially important. Argentine representatives took on the role of policy "broker" in taking and leading the initiative on a cooperative and collaborative joint nuclear partnership – steps that led to the establishment of ABACC. In fact, according to Resende-Santos, who conducted extensive archival research in Brazil on Argentina and Brazil's

emerging security cooperation, the initiative for a nuclear accord – i.e., that of May 1980 – originated with Argentina (2002: 116). Furthermore, an Argentine diplomat explained that,

The first move towards ABACC [was] started by us when President Alfonsín met President Sarney. We invited them to our enrichment plant in Pilcaniyeu. From there on, we started a process of conversation towards the acceptance of full-scope safeguards with the IAEA. We started to be satisfied with the bilateral reciprocal visits to each other sensitive facilities. The evolution was part of a natural process where we both discovered the advantages of a bilateral mechanism (Interview L).

This was corroborated by a former Head of International Affairs for CNEA, who explained,

The idea to create ABACC was initially brought about from Argentinean technical nuclear authorities and was very well received by the Brazilians and by the respective diplomatic levels (Interview K).

Earlier, it was explained that official negotiations of a mutual safeguards inspection regime began in 1987. However, the idea of a bilateral/common system of nuclear inspections was first put forward in 1985. Argentine President Alfonsín proposed to Brazilian President Sarney that they should negotiate a bilateral system of control of nuclear materials and installations and a bilateral verification system of nuclear facilities.[15] However, Brazil was not prepared to enter into negotiations at that time because the military was opposed to any form of control. In an interview, a Brazilian diplomat observed that Argentina was "much more open to progress" and that President Alfonsín was more open to improve bilateral relations than President Sarney, because of the terrible defeat of the Malvinas/Falklands War and the abrupt end to the Argentine dictatorship (Interview D). As Sarney was an appointed president, he lacked the legitimacy and even the will to exert presidential control over the Brazilian nuclear programme (Wrobel and Redick 1998: 169). As a Brazilian representative of the PCNA explained in an interview, "Brazil did not accept Argentina's proposal because Brazil wanted to cooperate and not be controlled" (Interview G). Nevertheless, soon after Alfonsín's proposal, the JWG was created in November 1985 to discuss nuclear issues. Three years later, its institutionalisation – as the PCNA – not only furthered nuclear negotiations but also facilitated the presidential and technical nuclear installation visits. The strength of the idea of bilateral inspections gradually emerged by these visits, by which time Brazil was more willing to participate in bilateral nuclear initiatives.

Conclusion

From the uncertainty over Argentina and Brazil's nuclear programmes to the creation of a mutual inspection safeguards regime, it can be argued that the role of an epistemic community is an important factor to consider in examining the creation of ABACC – a bilateral policy coordination effort, which verified the non-nuclear weapon status of Argentina and Brazil. In the process of creating ABACC, Argentina and Brazil embarked on a number of confidence building measures which provided assurances to each other and to

[15] A *Washington Post* editorial remarks specifically that "the initiative has come from Argentina" (March 1985: A26).

the international community that neither country were pursuing nuclear weapons. From nuclear rivalry to nuclear cooperation, an epistemic community emerged and engaged. This community comprised a network of professionals with recognised expertise in the area of mutual safeguards and inspections that had access to decision makers.

ABACC is the world's only bi-national safeguards agency responsible for verifying that the nuclear materials existing in both countries are being used exclusively for peaceful purposes. It is vested with the power to designate inspectors, carry out and evaluate inspections, and take legal action. It is made up of an equal number of Argentines and Brazilians. Dr. Marco Marzo, a former ABACC Senior Planning and Evaluation Officer described everything in ABACC as "symmetric, with a Brazilian and Argentine counterpart" (1997: 62).

Today, Argentine and Brazilian nuclear physicists continue to conduct mutual inspections at nuclear facilities on a cross-national basis through ABACC.[16] These inspections include verification of inventories of nuclear materials, unannounced and short-notice inspections, and inspections carried out along with the IAEA (Paul 2000: 103). In addition, their work is undertaken with the full support of both governments.[17]

The international policy coordination outcome of the Argentine and Brazilian epistemic community's efforts in creating ABACC is six-fold. Since the establishment of ABACC in 1991, Argentina and Brazil have adhered to many international non-proliferation norms and commitments, shown below in Table 1.

Table 1:
Argentina and Brazil Nuclear Non-Proliferation Agreements

Agreement	Argentina	Brazil
Bilateral Agreements		
SCCC	July 1991	July 1991
ABACC	December 1991	December 1991
Quadripartite Agreement (full-scope IAEA safeguards)	December 1991	December 1991
Treaty of Tlatelolco	January 1994	May 1994
Nuclear Suppliers Group	1994	1996

[16] These inspectors render their services to ABACC only during the periods encompassed by the missions for which they are appointed. Brazilian inspectors verify the Argentine facilities, and Argentine inspectors verify the Brazilian facilities. According to ABACC's website, there are 86 Argentine and Brazilian inspectors, in exactly equal proportions.

[17] The structure of ABACC involves a Secretariat, which includes six sectors (four technical, one administrative, and one devoted to institutional relations). The Secretariat carries out day-to-day activities, and consists of technical and administrative officers and support staff (designated by the Commission). Each nationality takes turns in acting as ABACC's Secretary (Marzo 1997: 62). A Commission (the highest organisational level in ABACC) – made up of two representatives from Argentina and Brazil – supervises the Secretariat's performance.

NPT	February 1995	September 1998

While both nations were initially hostile to the non-proliferation regime, it is interesting to note that after their rapprochement, and *after the institutionalisation* of ABACC, Argentina and Brazil became fully integrated within the non-proliferation regime. First, they signed the Quadripartite Agreement between themselves, ABACC, and the IAEA; second, they signed Tlatelolco in 1994; third, they became signatories to the Nuclear Suppliers Group; and, *lastly*, they acceded to the NPT. Therefore, it can be argued that the creation of ABACC is an important factor to consider in explaining the non-proliferation of Argentina and Brazil.

The analytical framework presented in this paper guided investigation of the role of epistemic communities in the creation of nuclear non-proliferation policies – a hitherto unexplored area. One of the main strengths of the epistemic community framework can be found in the way it helps to think about where the ideas behind implemented policies come from. As such, the framework calls attention to the relevance of thought leaders and expert communities. This matters for the study of International Relations, particularly international security, an area teeming with many issues that need to be resolved. Furthermore, given that debates within the field of international security are dominated by state-centric approaches, the epistemic community framework provides a new lens through which to understand policymaking in the field of international security.

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