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On Fatalism in Nuclear Proliferation Studies: Questioning a Tenacious Historical Reading*

Benoît Pelopidas

Abstract

The works of most experts in the field of nuclear military issues suggest that the number of nuclear-weapon actors is rising as if it were a law of history. This study shows how the metaphor of "proliferation," transposed from biology to nuclear weapons, could be considered as a source of this belief or as a tool that reinforces it. It then explores the consequences of this reified use of the metaphor, namely the historical narrative that is built upon it and its flaws. Finally, it exposes some of the political consequences of such an approach of nuclear history and proposes new research pathways to investigate other sources of "fatalism" in nuclear proliferation issues and the possibility of a paradigm shift among experts in the field.

KEYWORDS: nuclear proliferation, nuclear disarmament, metaphor, historical narrative, forecasting, epistemic communities

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"A growing number of countries are seeking advanced weapons, including nuclear […] ones […]. As international awareness of the problem increases, countries are becoming more clever, devising networks of front companies and suppliers to frustrate export controls and to buy what would otherwise be prohibited to them." (Woolsey 1993:9) This verdict, delivered to the US Senate on 24 February 1993 by James Woolsey, then Director of the CIA, continues today to be the focus of some concern. Indeed, at least since the time of Woolsey's remarks, decision-makers have been in the habit of portraying proliferation as an imminent prospect in order to show that political action remains of the utmost urgency. In this study, however, our focus will be the biases of the international community of experts in the field of nuclear proliferation, including the intelligence services, where we have detected a similar tendency to believe that a rise in the number of nuclear-weapon States constitutes a fundamental trend in nuclear history. After having expounded the numerous different versions of that predominant analysis, we shall turn to the expert community's systematic use of the metaphor of "proliferation", which has prevailed at least since Albert Wohlstetter applied the term to nuclear weapons in his classic article of April 1961 (367), as the cognitive framework through which this interpretation of nuclear history has been imparted. Whilst the role which metaphors play in our understanding of historical processes has already been established (for an overview of this matter, see Stambovsky 1988; Hook 1984; Mutimer 1997, 1998, 2000), we shall demonstrate here how the proliferation metaphor, when reified, can lead to the general consensus which we have just outlined. Finally, we shall assess whether that metaphor has been borne out by nuclear history as a means of unearthing any hidden bias contained within it. To conclude, we shall outline a number of political effects resulting from this specific interpretation of the past, express reservations concerning an alternative viewpoint which has reappeared in recent literature, and offer three possible avenues for future research.

1. Nuclear teleology as a widespread perception within the community of experts in the field of military nuclear activity and its variants

Is there a general principle according to which the number of actors with nuclear weapons increases throughout the history of armament, slowly rising from zero in 1945 to the nine known to us today? Over the last fifteen years or so, scientific research (for the most recent contributions, see Hymans 2006a; Solingen 2007; Rublee 2009) has challenged this view, but it is nonetheless one which remains widely held and continues to inform predictions for the future.

Thus, the failure on the part of the intelligence services to foresee Soviet and Chinese nuclear tests, or India's second test series in 1998, or the scale of the

Iraqi nuclear program prior to 1991 (Russell 2005:468-473; Froscher 2006; Richelson 2006) does nothing to refute our hypothesis regarding their general perception of nuclear history.[1] They failed to identify the proliferators and underestimated the scope of certain programs, and yet they continued to assume that history was moving towards proliferation, predicting that proliferators would be more numerous than they actually were. A *National Intelligence Estimate* dating from 18 June 1957 (available on the CIA's website at http://www.foia.cia.gov), for example, listed around ten proliferators expected to appear within ten years, when in fact fewer than that had been verified fifty years after the original prediction. Similarly, when De Klerk announced on 24 March 1993 that the South African arsenal had been dismantled, intelligence services were suspicious. They remained so long after the end of the IAEA inspections (Richelson, 2006:373-400). The public reports are non-teleological in their approach to accusations of foul play, and avoid descending into any clear-cut brand of fatalism. Nonetheless, the fact that the inevitable element of doubt is couched in such suspicious terms shows that the authors' vision is one of proliferation.

This verdict now includes non-State actors, which are suspected to have the inclination and the ability to go for the bomb. Following fears surrounding the security of the former Soviet arsenal, the dismantling of the A. Q. Khan network revealed that technology transfer was less difficult than had been anticipated (Corera 2006; for an approach which suggests that significant constraints remain, see Montgomery 2005). If, then, most analysts are agreed that specifically nuclear terrorism is the least likely form of terrorism of mass destruction (Le Guelte 2003; Daguzan and Lepick 2003; Ferguson et al. 2004), the debate among experts has now turned away from issues of nuclear capabilities and ambitions in favor of a third matter, namely that of preventing the acquisition and employment of nuclear

[1] We take US intelligence into account here because covert dissemination of nuclear material for military purposes was considered unlikely until the 1990s due to IAEA monitoring, which dissuaded other intelligence services from engaging specifically in that activity. In France, for example, covert dissemination only appears in the National Intelligence Plan in 1993 (Hayez 2008:8). The structure of intelligence services in other Western states is not so well known, but two factors suggest that services specifically dedicated to foreseeing proliferation were created late on. Firstly, the United States developed a counter-proliferation strategy under the Clinton administration, whilst in January 1992, the President of the United Nations Security Council declared proliferation a threat to international peace and security. These two circumstances led governments to accord greater importance to the issue and to acquire specific expertise in this domain. Secondly, the fall of the Eastern bloc led to a restructuring of activities: the intelligence services continued to be responsible for following up defence matters, and, like the German BND, began at this point to focus on the matter of 'weapons of mass destruction' rather than traditional battle orders (e-mail correspondence on 18 March 2009 between the author and Philippe Hayez, a senior civil servant who occupied various posts in the French foreign intelligence service and who now conducts research in the field).

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weapons (Levi 2007). This reveals an implicit belief in the extension to non-State actors of the alleged general principle of an inevitable increase in the number of actors with nuclear weapons.

The primacy of this view of history is all the more noteworthy when we consider that the opposite perspective, according to which tomorrow's world is one in which nuclear disarmament looms in the foreseeable future, is still excluded from the mainstream. Nuclear disarmament and even the abolition of nuclear weapons have admittedly come once again to feature in the outlook presented by political discourse following a call issued by four high-ranking former U.S. officials (Kissinger, Nunn, Perry and Schultz 2007, 2008), which has since been reiterated by both political leaders and society at large. Examples include the positions adopted by Barack Obama in his presidential campaign and reiterated since (Obama 2008a, 2008b), the speeches which Gordon Brown gave in Delhi on 21 January 2008 and in London on 17 March 2009 (Brown 2008, 2009), the speech which Nicolas Sarkozy delivered on 21 March 2008, as well as his letter to the Secretary General of the United Nations dated 5 December 2008 at the end of the French presidency of the European Union (Sarkozy 2008a, 2008b), and, finally, three days later in Paris, the launching of the Global Zero action group, founded by 100 leading personalities who declared their support for the prospect of a world without nuclear weapons. In spite of such developments, analysts do not see the world of tomorrow as one of nuclear disarmament. Instead, they sometimes see such declarations as rhetorical devices which play on the ambiguity of the word "disarmament", which denotes at once a process occurring at an unspecified rate and the end of that process (Pélopidas 2009); elsewhere, they suggest that these are the sincere expression of preferences as to how the global nuclear order *should* develop (Pélopidas 2008b) rather than indications of how it actually *will* do so. Thus, there are still those who see the future as one of proliferation (de Champchesnel and Kazprzyk 2008:84, as well as all those who foresee a new nuclear era, be it the second or the fourth, depending on the chronological analysis to which they subscribe), and those who do give some credit to the disarmament theory predict a decrease in the size of arsenals as being more probable than a reduction in the number of nuclear-weapon States (Pélopidas 2008c). The least pessimistic forecasts suggest only that the number of nuclear-weapon States will not increase (Walker 2009), or see abolition as a "distant destination" (Acton et Perkovich 2009:315). Even this brief overview shows the extent to which disarmament as a descriptive rather than a prescriptive view of the future remains beyond the mainstream.

The conception of an inevitable increase in the number of actors with nuclear weapons is maintained by the metaphorical clock which has appeared on the cover of the *Bulletin of the Atomic Scientists* since 1947 (volume 3 number 6), known as the "Doomsday Clock". Midnight represents nuclear apocalypse, and

the clock displays the time which has yet to elapse before that moment arrives; according to this logic, the world is slowly but surely nearing destruction. A rise in the number of actors with nuclear weapons is one of the reasons for which time elapses on the clock in question.[2] Following the end of the Cold War, the clock was put back and mankind was said to move away from the symbolic moment of its own obliteration by eleven symbolic minutes in two years. At that time, some members of the governing body of the *Bulletin* suggested that the clock should be replaced by a different symbol, but the proposal was rejected. This illustrates the permanence of a desire to imagine a teleological history (Vuori 2009:22).

This is the pessimistic side of nuclear teleology. Kenneth Waltz's assertion that a steady and adequately managed rise in the number of nuclear-weapon States increases international security by establishing new situations with mutual deterrents (1981; Sagan and Waltz 2003: chapters 1 and 3) seems no less teleological, then: Waltz considers this trend to be as necessary as its pessimistic counterpart, even though he points out that a general theory of international relations cannot predict a phenomenon as complex as proliferation (1995:803).

The fact that such teleology can occasionally also be found in the work of some critical constructivists, whose research agenda consists precisely in not treating national interests as a given, does much to demonstrate the weight which this view has come to carry (Mutimer 1998:123).

The most radical variant of this analysis of nuclear history, which sees it as being inevitably linear, views the historical trend in terms of speed: only the rate of the increase in the number of nuclear-weapon States can be altered, and not the direction of the trend. Marie-Hélène Labbé couches the possible alternatives in the following terms: "can we put the brakes on this trend, or is it set to speed up?" (1995:15, our translation). This idea, however, is an old one, and can be found in the work of Bertrand Goldschmidt, an eminent French chemist, contributor to the Manhattan Project, co-founder of the French atomic energy commission (CEA) and French representative on the Board of Governors of the International Atomic Energy Agency from 1958 to 1980. Goldschmidt regularly quipped that "nuclear proliferation is like teenage sexuality: you can postpone it, but you cannot stop it."[3]

A more moderate—and widespread—variant maintains that the trend is necessary, but is less emphatic where its linear development is concerned: it recognizes that there are periods of stagnation and even times when arsenals and

[2] This is true to the extent that an increase in the number of actors with nuclear weapons is a factor in the rise in the number of nuclear weapons in existence in the world. Separate aspects of nuclear security are climate change and biosecurity. http://www.thebulletin.org/content/doomsday-clock/overview (accessed on 16 May 2010).

[3] I obtained this quotation from Georges Le Guelte during an interview in Paris on 24 October 2008. Goldschmidt pens the same idea in less vivid terms in (1967:303).

the number of nuclear-weapon States decreases, but sees these as moments of deviation in a wider increasing trend. Advocates of this variant have recourse to a wave metaphor whereby the size and number of waves which provoke an increase in the number of nuclear-weapon States are greater than the size and number of those in the opposite direction. This vision therefore points towards a new "wave" of nuclear proliferation (see, in particular, Tertrais 2003; Campbell et al. 2004; Samaddar 2005:435; Langewiesche 2007; Courmont 2008). Triggered by North Korea and Iran, the likes of Japan, Egypt and Turkey, undoubtedly followed by Indonesia, Australia, Brazil and Saudi Arabia, are seen as potentially nuclear States in the near future, which would make a nuclear "swell", to extend the metaphor further, quite likely. But the attraction of this metaphor is to be found in its imagistic power rather than its heuristic potential or its factual rigor.

2. The metaphor of proliferation as a cognitive framework for nuclear teleology

It is important to observe that familiarity with a particular research topic leads the expert to adopt an incomplete perspective of it. Wittgenstein described this process by stating that "the aspects of things that are most important for us are hidden because of their simplicity and familiarity. (One is unable to notice something—because it is always before one's eyes.) The real foundations of his enquiry do not strike a man at all." (2001:43) This common process of obfuscation, to which nuclear specialists presumably also fall prey, also applies to the use of metaphors in the description of phenomena or the formulation of historical narratives. As Bertrand de Jouvenel suggested, "metaphor is a consistently dangerous servant; it begins by modestly illustrating an argument, but it eventually becomes its master and dominates it." (1945:86, our translation). In other words, metaphors, even more so than analogies, rearrange the attributes of the tenor and apply to it conditions which are valid for the vehicle, where tenor and vehicle are A and B respectively in metaphors of the type A is B or where A represents for C what B represents for D. In so doing, metaphors bring certain attributes to the fore while adding or deleting others; they limit the cognitive framework through which we conceive of the phenomenon in question. By describing a battle using terms taken from chess vocabulary, for instance, we remove the emotional facet of war (Black 1962:42, 44-45).

Thus, we cannot accept a neutral approach to lexis and simply suggest that the sense of the term "proliferation" is broader than that of "dissemination" (applying only to an increase in the number of nuclear-weapon States) when in fact "proliferation", in its so-called vertical meaning, also includes any other increase in the size of arsenals (Le Guelte 1997:8). The shift from the term "dissemination" to "proliferation" establishes the metaphor which will shape the

most prevalent interpretation of the phenomenon. The "problem of the N+1 country" began to be addressed in university circles between 1958 and 1962 (Potter and Mukhatzhanova 2008:160) at the exact time when the term "proliferation" was transposed by Wohlstetter into its new domain. Usage then spread in French, English, German, Italian and Russian, and what might have remained a mere simile was concentrated into a metaphor: the increase in the number of actors with nuclear weapons is not *like* proliferation; it *is* proliferation. Once we take into account the need for a certain distance between the respective register of tenor and vehicle, Perelman admits that "since expressions with metaphorical meaning are employed in a spontaneous and straightforward manner, we need only find some appropriate means of investing them with their full analogous effect for them to start fashioning our thought and manipulating our sensibilities with the utmost effectiveness" (1989:399, our translation).

We still need to examine the extent to which the metaphor of proliferation, as it has been applied specifically and systematically to nuclear weapons through an expression which has gone on to be adopted into official language, can be said to be effective.

We shall begin by offering an indication of the metaphor's effectiveness. Perelman asserts that in the sciences, in addition to being more common than metaphors, analogies can never have the last word, and "are always replaced by some model, diagram or general principle which encompasses both tenor and vehicle [the two elements of the analogy], preferably in mathematical terms" (1989:400, our translation). This, then, should also be the case for the issue of developments in the number of actors with nuclear weapons.

The metaphor persists, however, and is indeed linked to the general principle of a rise in nuclear weapons; in fact, it no longer appears as a metaphor, which demonstrates how thoroughly effective it really is. Whilst the legitimacy of using metaphors in scientific discourse has been acknowledged (Jones 1982), this requires either that nothing be deduced from the components of the metaphor or that the scientist continue to maintain a reflexive relationship with it (Ascher 2005). We can recall in this sense Alan Sokal's objection to the rash transposition of vocabulary and processes observed in physics or mathematics to the fields of philosophy or human sciences (Sokal and Bricmont 1999). Besides this, by endeavoring not to make further deductions from the metaphor employed, in one sense we limit its scope to one of pedagogy and bear this status in mind whenever we deal with it.

To understand how the metaphor of proliferation lays the foundations for a belief in an inevitable increase in the number of nuclear-weapon States, then, it is important to examine what exactly can be deduced from it.

Firstly, it is worth addressing the strictly pathological connotations of the term "proliferation" as employed in the lexical field of biology, where it is

associated very early on with cancer. Use of the term in English spread in the 1860s, but the notion that cancer was caused by the proliferation of cells was confirmed by the Imperial Cancer Research Committee in 1905 (Santoro 2008:4-7). In French, the term was adopted by botanists to refer to that which engenders a supernumerary organ (Rey 2000:1771). The process of cellular reproduction is monitored from outside, and when this monitoring fails, degeneration occurs and cancer develops, sometimes to the point of killing the organism in question. Pessimistic teleology can therefore find a starting point in this aspect of the metaphor. Its appropriation into the political domain is found in measures used to monitor weapons, and appears in its literal form in the strategy which Trudeau presented to the United Nations Disarmament Commission in 1978, known as the "strategy of suffocation" (Mutimer 1997:202).[4] This pathological connotation related to the circulation of weapons then spread to those States which sought to acquire nuclear weapons following the Cold War (Klare 1995; Mutimer 2000).

Secondly, it must be noted that the expression "proliferation of nuclear weapons", the exact equivalent of which has thus far also been employed in French, German, Italian, Spanish and Russian, and which has also sometimes been extended to the domain of weapons of mass destruction (Martin 2004), underlines the element of self-begetting present in the phenomenon in question. This meaning appears in English even before the pathological element is introduced; indeed, the *Oxford English Dictionary* offers the following definition, which appears in the 1860s: "the formation or development of cells by budding or division" (1983:1448). When transposed into the nuclear domain, the term retains the connotation of an automatic process and leaves no room for the political factor which evidently had no place in cellular reproduction. Do weapons beget further weapons? It seems unlikely, but the metaphor disregards this fact. The same characteristics are to be found in French, where, beginning in the 1880s, the term "prolifération" refers in biology to that which reproduces quickly (Rey 2000:1771). The biological metaphor of proliferation applied to the nuclear domain therefore results in a purely quantitative approach to the phenomenon, and ultimately leads to a type of technological and economic teleology. This is the primary source of such teleology in nuclear history. We encounter a particularly eloquent example in Frank Barnaby, who states that "a country with a nuclear-power program will *inevitably* acquire the technical knowledge and expertise, and will accumulate the fissile material necessary to produce nuclear weapons" (1993:2, our italics). This reasoning crops up again in contemporary diatribes against the sale of reactors and a refusal to distinguish such reactors, which only produce steam, from uranium-enrichment and plutonium-processing plants, which produce fissile material which can be used for military purposes. If we accord the

[4] The strategy included a comprehensive nuclear-test-ban treaty and a cut-off in the production of fissile material.

metaphor its full value, civilian nuclear programs serve as a halfway house in the multiplication of military nuclear arsenals. Such technological and economic teleology or determinism can be interpreted in two ways. On the one hand, it could be suggested that this attitude is born of prudence. In this case, since nuclear proliferation is a threat to international peace and security as underlined by the declaration of the President of the United Nations Security Council on 31 January 1992, the most reliable policy for achieving the goal of non-proliferation is to prevent actors from acquiring the means to build a bomb by erecting technical barriers to that process. This option removes the need to identify the proliferators and to uncover their motives. On the other hand, we could suggest that the effectiveness of the metaphor of proliferation in the political domain is even greater if we maintain that it implies that the bomb is seen as intrinsically desirable.[5] However extreme it may seem, the latter interpretation of the metaphor, which is tantamount to asserting that states do not proliferate merely because they are able to do so, is not uncommon (Ogilvie-White 1996:44).[6] This analysis is compatible with the two main versions of the realist approach, one of which sees the bomb as being thoroughly desirable, while the other recognizes that it has drawbacks as well as advantages. Indeed, as Jacques Hymans has it, "soft" realism can readily become "hard" realism to the extent that the security guarantee will always be treated with some degree of suspicion (2006b:456). The economic approach of Brito and Intriligator also demonstrates the desirability of the bomb when the authors state that "as the cost of nuclear weapons falls, […] there will be new nuclear States unless new policies increase this cost" (Brito and Intriligator 1993:301). A variation on this same theme is to be found in the widespread belief that chemical and biological weapons are the poor man's atom bomb (Mutimer 1997:213).

The connotation implied by the self-begetting mechanism brings about a depoliticization of the phenomenon, which either leads us to overlook the political aims of the proliferators or unthinkingly to associate them with a particular goal through the notion of the intrinsic desirability of the bomb.

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[5] This extreme interpretation is not necessary for our initial hypothesis to hold water. Indeed, in order for the number of states with nuclear weapons to increase continually throughout history, it is not necessary for each state to desire nuclear weapons and to succeed in acquiring them. The number of those which do cross the nuclear threshold must simply remain higher than the number of those which renounce the bomb. In other words, the system of beliefs which we are analysing assumes only that the bomb is more widely desired than renounced when all states are taken into account. It does not suggest that all states desire nuclear weapons, and certainly does not seek to maintain that they manage to acquire them.

[6] Furthermore, it is noteworthy that analysts suggesting that states develop nuclear arsenals as soon as they have access to the necessary technology often come from states with a nuclear history that backs this theory up. Our thanks go to an anonymous reviewer from the *Swiss Political Science Review* for this observation.

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This depoliticization is fuelled by another element in the metaphor, namely its connotation of a chain reaction, which seems to appear in 1968 in the writings of Sir John Cockcroft (Walsh 2001:5). Just as cellular proliferation is a phenomenon which continues to occur following an initial division, nuclear proliferation is imagined in terms of a chain reaction once one party crosses the nuclear threshold. This also marks the beginning of a linear approach in terms of speed, which presents a series of waves as periods of temporary acceleration in the phenomenon of proliferation. When a State proliferates, the most widespread analyses argue that other States in the region will do the same in order to maintain a certain strategic balance: "proliferation begets proliferation", in the words of George Schultz, Secretary of State in the Reagan administration (1984:18). Nowadays, most experts subscribe to the image of the "strategic chain reaction" (Sagan 1997:58-59). William Potter asserts that it is "hard to find one who predicts the future without reference to metaphors such as proliferation, chains, cascades, dominoes, waves, avalanches" and acknowledges that he, too, is "guilty of the same tendency" (Potter and Mukhatzhanova 2008:159). Even Etel Solingen, who criticizes the approach, occasionally succumbs to the fear of a chain reaction of proliferation in South-East Asia (2007:288-289).[7]

Now that we have demonstrated how the reification of the metaphor of proliferation represents at least the cognitive framework through which teleology has been applied to proliferation, we must put this theory to the test. It is important to note, however, that this does not require us to specify whether an historical discourse devoid of all metaphor is actually possible.[8] Rather, we need only posit that a reflexive approach to the metaphor in question remains a possibility.

[7] Only a handful of quantitative studies, most of which remain unpublished, posit that the presence of a rival pursuing a nuclear program or in possession of an arsenal makes it less likely that the state in question will also undertake a military nuclear program. We are not willing at this stage to comment upon the validity of such conclusions (cf Bleek 2009:10-12).

[8] For an approach which defends the intrinsically metaphorical nature of thought, cf. Lakoff and Johnson 2003. For one which suggests, rather, that the value of metaphors is to be found in their ability to give shape to scientific discoveries, cf. Ricœur 1975, who believes that scientific knowledge becomes stable when the ambiguity of metaphor gives way to unequivocal concepts. He nonetheless situates the process of interpretation somewhere between concept and metaphor. For an approach which sees metaphors as a means of dealing with and understanding political issues, cf. Miller 1979. Finally, for a brief overview of uses of metaphors in historic discourse, cf. Stambovsky 1988.

3. Unravelling a metaphor: nuclear teleology in the light of nuclear history

Before examining the political effects which result from the teleological view of proliferation, it will be useful to address each of the deductions arising from the metaphor which leads to that approach, namely the pathological connotation related to the phenomenon of proliferation and transposed to those entities which represent it, the self-begetting nature of the phenomenon, which ultimately becomes a sort of general principle of technological and economic teleology, and, finally, the logic of a chain reaction, which suggests that the bomb represents the most appropriate response to a security threat posed by proliferation on the part of a neighbor.

Firstly, proliferating regimes can alter their strategic approach before and after they have crossed the nuclear threshold. This throws into relief the limitations of the pathological aspect which the metaphor attributes to the bomb, whereby the proliferators are the hotbed which allows the disease to spread. The illness, then, can regress. Furthermore, most proliferating States have not succeeded in crossing the nuclear threshold (see Table 1 below), and South Africa dismantled its entire nuclear arsenal after having built six nuclear warheads and having had a fully operational nuclear weapon at its disposal for ten years (Reiss 1995:8-12, 32-35; Masiza 1993). Similarly, Ukraine, Belarus and Kazakhstan, which came into being with considerable portions of the Soviet arsenal within their borders, all returned those arsenals to Russia under the Lisbon Protocol, signed on 23 May 1992, and all three arsenals had been dismantled by 1996 (Potter 1995; Skootsky 1995; Schields and Potter 1997). Even Libya, which supported terrorist groups until the late 1980s and tried to acquire weapons once Qaddafi came to power in 1969 (Bowen 2006:8; Müller 2007:78; Braut-Hegghammer 2008:59-63; Solingen 2007: 213, 215; Rublee 2009:152), completely reconsidered its strategy from 1992 onwards, when it included its weapons of mass destruction program in negotiations with Washington and London (Jentleson and Whytock 2005-2006; Bowen 2006: chapter 3; Müller 2007:77).[9] After lengthy talks and a revival of the nuclear weapon program in the mid-1990s, Libya officially announced that it was renouncing nuclear weapons in

[9] In March 2006, Colonel Qaddafi made a public speech in which he insisted that democracy and political parties were mistakes and should be condemned. This speech is particularly significant given the extent to which most states in the world have embraced democratic rhetoric; even Libya did so in 2001 (Martinez 2007). Furthermore, the argument that authoritarian regimes are intrinsically and unavoidably attracted by the bomb does not hold water. In addition to the Libyan example, we can mention Jordan, which saw its first parliamentary elections take place as late as 1993; the status of its democracy is still a subject for debate (Robinson 1998), and the peace treaty with Israel only dates back to 1994. The country seems, however, never to have sought to acquire nuclear weapons (Solingen 2007:252).

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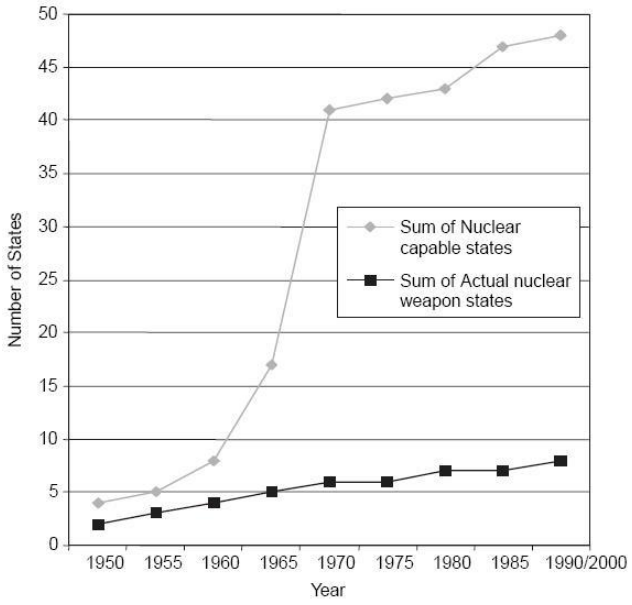
December 2003 and that it would dismantle its existing facilities under IAEA control and within a very tight deadline (Bowen 2006: chapter 4; Cirincione, Wolfstahl and Rajkumar 2005:317). Harald Müller considers Libya to be "one of the most spectacular cases of successful, peaceful deproliferation in history" (2007:73).

Secondly, the general principle of technological teleology maintains that any State which is able to acquire nuclear weapons will do so. There are at least two versions of this view.[10] One posits that there is a constant desire to go for the bomb but that this desire can be tempered by technological barriers. The other agrees that this desire exists, but maintains that the networking of proliferation channels as confirmed by the discovery of the A. Q. Khan network considerably reduces the number of technological barriers in existence, so that countries which want to acquire the bomb "will always find the financial and human means to take whatever steps will lead them to nuclear technology" (Asencio 2005:60, our translation; see also *inter alia* Jo and Gartzke 2007). The desire for the bomb is present in both of these variants, then; they diverge only in their stances on the possibility of taking action and limiting it. This pseudo-principle is increasingly undermined by historical fact (see Graph 1, taken from Hymans 2006a:4).

If internal political debate sometimes sees the argument of capacity as a means of persuasion for crossing the nuclear threshold, as was the case in India (Lavoy 2006:440), this does not always have to be the case. Singapore is a fitting example of a technologically advanced State which, as far as we are currently aware, has never attempted to acquire nuclear weapons. Other technologically advanced States such as Switzerland (Winkler 1981) and Sweden (Cole 1990, 1994, 1996) have engaged in military nuclear activities at one time or another, but have never crossed the threshold. Japan and Germany also fit into this category, and are even more relevant here since eminent nuclear experts have predicted that they would go nuclear (for Germany, see Mearsheimer 1990:38 and for both of these States, see Layne 1993:37; Waltz 1993:54). Furthermore, if the general principle in question were valid, no nuclear-weapon State would have relinquished the bomb, including South Africa. One final argument to submit here might be that, of all the States which have engaged in nuclear activity, those which put an end to their nuclear activities after acquiring a research reactor are more numerous than those which did so before acquiring such a facility. In other words, such a considerable technological advance does not make it more likely that a State will cross the nuclear threshold (Müller and Schmidt 2008:25).

[10] In 1984 already, Stephen Meyer offered a trenchant critique of the "technological imperative" in his *Dynamics of Nuclear Proliferation*, (Chicago, University of Chicago Press, 1984) but such an implicit assumption has not disappeared.

GRAPH 1
Historical comparison of the number of States with the technological capacity to acquire the bomb and the number of States which have done so



Thirdly, the bomb has not necessarily been seen as the most effective security guarantee against a proliferator, which casts the image of the chain reaction in a considerably different light. Egypt serves as a useful example here (Solingen 2007: chapter 11; Rublee 2006, 2009: chapter 4; Walsh 2001:254). In the 1950s, Cairo launched a military nuclear program in order to fend off any potential trouble from Tel Aviv and establish Egypt as a regional leader. The Israeli program was in its first days at the time, and Egypt's conventional capacity was significantly higher than that of Israel. When, at the beginning of the 1970s, Egypt abandoned its nuclear ambitions, Israël had built nuclear weapons, its neighbors were aware of its nuclear activities (Rublee 2009:108; Solingen 2007:234), and the balance of conventional capacity had tipped against Egypt: Iran, Iraq and Libya, all racing against one another for leadership of the region, were suspected of proliferation. Finally, Cairo was still not enjoying security guarantees coming from Moscow. Some Egyptians believed that the Soviet Union would commit to protecting their country if Israel acquired a deterrent, but other sources flatly deny that such an agreement was in place. In addition, Nasser publicly rejected its existence (Solingen 2007:233-234). If the general principle discussed above held true, the significant degeneration of Egyptian security between the mid-1950s and the 1970s, including the defeat of 1967, should have led Egypt to take steps towards proliferation had a response to proliferation been

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necessary at the time. But it did not.[11] Scientifically, however, Egypt was the best equipped of all Arab nations; the desert would have proved an excellent site for testing, and in the 1960s, Egypt's resources were equal or superior to those of Israel or Pakistan when those States began their nuclear programs (Rublee 2009:107, 112). This is only one example, but a quantitative study recently confirmed that a State with proliferating rivals is neither more nor less likely to launch a nuclear program than any other (Bleek 2009).

The three deductions which can be drawn from the metaphor of proliferation are therefore excessive when we consult nuclear history. We can now turn to the effects which this has exerted upon the historical narrative that has resulted from the teleological view of proliferation.

In general terms, the history of the teleological view of proliferation is characterized by excessively pessimistic predictions which have not come true.

[11] To refute further the concept of 'reactive proliferation', it might be tempting to state that, as of 7 June 1981, the belief that proliferation represented the most effective means of protecting against a proliferating neighbour probably began to fade. Indeed, on that day, the Israeli air force bombed and destroyed the Osiraq reactor, which marked the beginning of a period of preventive strikes against suspected proliferators in times of peace. (During the Second World War as well as the Iran-Iraq war, nuclear facilities have been attacked; see Reiter 2006a, 2006b) Next came the bombing of Iraq itself by the US and Great Britain from 16 to 19 December 1998, known as Operation Desert Fox, Operation Iraqi Freedom in March 2003, and the Israeli air force's bombing of a Syrian building on 6 September 2007. (For this last event, which continues to pose problems of interpretation, see in particular Razoux 2008; Tertrais 2008; Delpech 2008. On the unprecedented nature of this for the US, which had abstained from taking action against the Soviet Union, China and North Korea, see Silverstone 2007: chapter 6). We can assume at first glance that this crucial development would undoubtedly go on to affect how candidates for proliferation assessed this opportunity. Indeed, if preventive strikes against proliferators are anticipated, even if the bomb is considered to be the best means of protection against a proliferating neighbour, the time which elapses between the beginning and end of the process of proliferation (which, as we will see shortly, is extremely uncertain), far from making the proliferating party safer, in fact marks it out as a potential target for preventive strikes. This argument is bolstered further when we take into account the fact that the relationship between security and the bomb stems from a belief in classical deterrence theory. The proliferator, then, needs not only to succeed in building a bomb but also to acquire a second strike capability, or at least to convince the party being deterred that this capability exists. This further requirement only serves to prolong the period during which the would-be proliferator is exposed to the threat of a potential strike. These arguments seem rather shaky, however. Indeed, strikes considered throughout the period in question do not concern all the proliferators involved, but rather Iraq and Syria alone. Iran can also be added to this list if the reciprocal strikes on nuclear plants during the Iran-Iraq war are analysed as counter-proliferation strikes. Nonetheless, Iran has not been targeted by a single strike in recent years in spite of the expectations of many experts (Hersh 2006; Laurent 2007; Tertrais 2007). In addition, India, Pakistan and North Korea have all succeeded in carrying out nuclear tests without being bombed. The selective nature of preventive strikes against proliferators therefore discourages us from seeing them as a factor, or at least an unequivocal one, in determining the central belief that the bomb is such a strong security guarantee that the business of proliferation should be attempted.

Besides this, the Doomsday Clock[12] has had to be put back on several occasions—in 1960, 1963, 1969, 1972, 1988, 1990 and 1991. If we look at horizontal proliferation, the teleological approach obscures three crucial phenomena in nuclear history.

Firstly, the vast majority of States simply have not tried to acquire nuclear weapons. The most pessimistic studies show that only 39 States have engaged in nuclear activities at one time or another, regardless of any decisions to go for the bomb.[13] This statistic does little to corroborate any belief in the intrinsic appeal of

[12] The Clock displays nuclear risk in general, but we assume that proliferation is an essential component in such risk.

[13] Ariel Levite identifies 38 proliferators if the four which he lists as ambiguous are included. (Levite 2002-2003:62). They are as follows: Algeria, Argentina, Australia, Belarus, Brazil, Canada, China, Egypt, Finland, France, Germany, Greece, India, Indonesia, Iran, Iraq, Israel, Italy, Japan, Kazakhstan, Libya, the Netherlands, North Korea, Norway, Pakistan, Romania, South Africa, South Korea, the Soviet Union/Russia, Spain, Sweden, Switzerland, Taiwan, Turkey, Ukraine, the United Kingdom, the United States and Yugoslavia. We add Syria, in light of the suspicion surrounding the facility which Israel bombed on 6 September 2007 (Razoux 2008; Tertrais 2008; Delpech 2008).

We are reluctant to label Ukraine, Belarus and Kazakhstan as proliferating states since they were not independent when a portion of the Soviet arsenals was set up within their borders. The fact that all three states have had a separate seat at the United Nations General Assembly does not seem sufficient grounds on which to cancel out this fact. These states inherited an arsenal which had seen nuclear activity, but they are not proliferators.

Harald Müller and Andreas Schmidt, meanwhile, maintain that 36 states have undertaken nuclear activities at some point in history, regardless of which states had or had not explicitly decided to make a bomb (cf. Müller and Schmidt 2008). It is important to note that some studies put forward a significantly lower total of proliferating states, but Müller and Schmidt argue convincingly against those theories in the work cited above. We will nonetheless take into account studies by Sonali Singh and Christopher R. Way (2004) and Dong-Joon Jo and Erik Gartzke (2007).

Ariel Levite describes Spain as an uncertain case, while Müller and Schmidt include it in their list. Jo and Gartzke do not, and nor do Sonali and Singh, but the latter pair refer to rumours surrounding Spanish nuclear activity and a possibly sporadic interest in such matters on the part of the country in question.

Müller and Schmidt mention Nigeria in the study cited above, relying on Clement Eme Adibe, 'Nigeria: The Domestic Basis of a Proactive Non-Nuclear Policy', a paper given at a workshop of the same name which was held at the Rockefeller Center in Bellagio from 29 September to 3 October 1997. The other three studies mentioned do not include Nigeria.

Müller and Schmidt see Chile as a proliferator from the early 1960s to the early 1990s (2008:39), whereas Levite, Jo/Gartzke and Singh/Way do not mention it. Müller and Schmidt rely upon the fact that Chile had a significant nuclear research program, but did not sign the NPT until Argentina did so too. There was a significant amount of tension between Santiago, under a dictatorship, and Argentina, and the two countries nearly went to war in the late 1970s. Müller and Schmidt nonetheless acknowledge a lack of conclusive evidence (2008:14).

Ariel Levite mentions the Netherlands, Finland, Turkey and Greece as uncertain proliferators, but this is not true of the other three studies cited above.

the bomb. In interpreting it, it is admittedly important to take into account the fact that a significant number of what were effectively proliferating States came into being following the process of decolonization. Any comparison which gives all States the same amount of time in which to proliferate would require that those States which gained their independence most recently be given a little more time. Bearing this in mind, of the 192 world States currently recognized by the United Nations, the most pessimistic figure for the number of States which at one time or another have engaged in nuclear activity stands at 20.3%. Naturally, the number of States having crossed the threshold is even lower (4.7%, including North Korea).

Secondly, the general principle of a linear rise in the number of nuclear-weapon States is undermined by the period 1991-1998. Over the course of this period, not one State crossed the nuclear threshold, and no new proliferating State came on the scene (Müller and Schmidt 2008:8).[14] This was not merely a period of *status quo* or non-proliferation, but rather the golden age of deproliferation if we speak objectively rather than focusing exclusively on States which were acknowledged as having nuclear weapons.[15] From this perspective, South Africa dismantled its nuclear arsenal fully between 1990 and 1991. The new government of Nelson Mandela, who was elected in 1994, chose not to go back on that decision (see, for example, Burgess and Purkitt 2005: chapters 6, 7, 8). Similarly, it is worth repeating that Ukraine, Belarus and Kazakhstan, all of which came into being with significant portions of the Soviet arsenal on their territory, would all return those arsenals to Russia under the framework of the Lisbon Protocol, which was signed on 23 May 1992, and the dismantling of all three countries' arsenals was complete by 1996 at the latest (Potter 1995; Skootsky 1995; Schields and Potter 1997). The fact remains that between 1991 and the end of the dismantling of the arsenals, those three States were, objectively speaking, nuclear; at the time, Ukraine and Kazakhstan had (in purely quantitative terms) the third- and fourth-

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Finally, Jacques Hymans raises objections to the notion that the Argentinean nuclear program involved military ambitions, but his view is not shared by the majority (2006a: chapter 6). The three other studies cited see Argentina as a proliferator (see also Reiss 1995: chapter 3).

[14] They make no mention of Syria, whose military aims remain open to doubt. In the absence of any conclusive evidence, we do not consider Syria to have been a new proliferator in the period in question. Furthermore, some sources suggest that Damascus launched a nuclear program in 1979, that is to say prior to the period being examined.
http://www.globalsecurity.org/wmd/world/syria/nuke.htm (accessed on 16 May 2010).

[15] This point however needs to be qualified. Indeed, the fact that the Pakistani could react to the Indian tests by testing six of their own devices within two weeks leads to wonder whether they did not have their weapons ready before the 1998 test. This raises the question of the criterion of "nuclear statehood", traditionally understood as the existence of a test. I thank Sverre Lodgaard for this remark.

largest arsenals in the world.[16] In this sense, ten States were effectively said to have nuclear weapons in 1991—the five official ones, Israel, South Africa and the three former Soviet States—whereas five years later, that figure had fallen to six. If India is included by virtue of its peaceful test in 1974, the figure drops from eleven to seven. Horizontal deproliferation does exist, then, in spite of the efforts of the proliferation metaphor to obscure it, although we must avoid extrapolating it into an irreversible trend, lest we find ourselves embracing a belief which would directly counter that which we are examining here.

Both these factors lead us to acknowledge that proliferation and abandonment of nuclear activity are two twin exceptions in nuclear history. What is more, successful proliferation is less common than abandonment. Indeed, of all the States which have, at one time or another, harbored ambitions to acquire a nuclear weapon, the majority have abandoned them, and very few have succeeded in crossing the threshold (28 to 9).

TABLE 1
Retrospective classification of States' military nuclear status in 2009

	Number[17]	Percentage
States with no history of military nuclear activity	153	79.7%
States having engaged in nuclear activity or having kept arsenals on their soil and then relinquished or returned the arsenals in question	28	14.6%
States having engaged in nuclear activity, crossed the threshold and maintained their arsenals	9	4.7 %
States which were probably engaging in military nuclear activity in 2008[18]	2	1.0 %

[16] Two questions have yet to be discussed, and we cannot go into them in detail here: the matter of launch codes and that of testing sites. Indeed, in order for Ukraine to have been able to acquire a truly independent arsenal, it would have needed access to the launch codes for its missiles and would have had to become able to change the targets of that same arsenal. (Interview with Robert Nurick of the James Martin Center for Nonproliferation Studies, Washington, D.C., on 4 April 2008.) Ukraine had neither an independent satellite system to monitor missiles nor a testing site. Christopher Stevens argues, on the contrary, that numerous nuclear warheads had lifetimes that did not expire until at least 2010; in this case, computerised tests could have been carried out. He also relies upon Reiss (1995:105) and Mearsheimer (1993:62-63) to point out that U.S. and Russian experts believed that the Ukrainians had the capacity required to ensure the security of nuclear warheads (Stevens 2008).

[17] The sum of the last three rows here gives the 39 States listed in footnote 13, which is the most pessimistic estimate regarding proliferation.

[18] We include Iran and Syria in this category.

4. Conclusion: hysteresis of representations, political consequences and misleading alternatives

By way of conclusion, it must be acknowledged that some members of the al-Qaeda network have expressed a desire to go for the bomb (Cirincione 2007:89), and that the bomb can be and has indeed been coveted as a means of seeking both security and status. Contrary to the impression conveyed by the metaphor of proliferation, however, that desire and, in particular, its fulfillment are by no means preordained by technological or economic factors, by circumstances arising from the authority of a particular regime, or by a decline in the strategic environment of the State in question.

Such arguments do not require us to submit that an historical narrative devoid of metaphor would be desirable or even possible.

Nonetheless, the metaphor of proliferation, which has been naturalized by experts, eclipses three important facts, namely that most States have simply never tried to acquire nuclear weapons, that most of those States which have engaged in military nuclear activities have failed to see them through to completion, and that the first half of the 1990s was a period of widespread deproliferation. Although deproliferation and successfully completed proliferation form a pair of exceptions to a wider rule, the former has proved more common than the latter.

These grey areas in our understanding of nuclear history entail significant political consequences. Indeed, due to the small number of studies carried out in the domain of nuclear history and security compared with other areas of the social sciences, and the difficulties associated with obtaining reliable information, analysts' depictions of the situation have enjoyed a level of influence which they would not have exerted in other fields. They impart their views as solid fact, when in reality they are more often than not the product of deductions, elaborate but counter-factual lines of reasoning, or hunches which rarely have any theoretical basis (Nye 1987:382; SIPRI 2004:6-7; Potter and Mukhatzhanova 2008:139). Consequently, the influence of the metaphor of proliferation, when transposed to the political sphere, which has such frequent recourse to expertise in the area, leads to policies which aim to fight proliferation by ignoring demand and trying to diminish supply, as is acknowledged by those theorists who contest the primacy of that approach (Hymans 2006b). The metaphor also leads to negligence towards or an excessive dismissal of disarmament (Cooper 2006:353-357) in favor of arguments for arms control. Even more significantly, due to the automatic acceptance of the phenomenon of proliferation, the concept of security is increasingly broadened, the strategic reasoning of (State and network-based) actors becomes extremely difficult to take into account, and the pursuit of a political solution to the problem proves even more difficult still (Pélopidas 2008a:165-172). Even if we have no faith in the influence which external experts

can exert over decision-makers where their ability to give the final word of authority is concerned, we must nonetheless acknowledge that institutional recognition of their expertise in this specific and complex area will grant the expert a certain standing (Shils 2000) in the eyes of society in general. The "teleological" view of nuclear history is all the more appealing given that it is based on a number of accurate observations, its excesses result from a simplistic view which nonetheless offers a number of well-known rhetorical opportunities, and its pessimistic bias reinforces a number of underlying fears already in existence.

We should nonetheless like to issue some words of warning in relation to an idea which may seem to be an alternative to the teleological approach to proliferation and which we could describe as catastrophe pedagogy (Pélopidas 2009). Indeed, we often read assertions according to which a large-scale catastrophe, such as the use of the bomb or an act of nuclear terrorism could jump-start widespread disarmament (Khan 1962:148-149; Perkovich and Acton 2008:108; Tertrais 2006:53). This outlook is more a dangerous method of procrastination than a viable alternative to the teleological view of proliferation; it suggests that the general principle regarding an increase in the number of actors with nuclear weapons is so ingrained in human behavior that a revolution in the true sense of the word, by which we understand the breaking of a taboo upon which the current situation is based, would be required if this alternative historical dynamic were to come to the fore. Just as nuclear history interpreted through the prism of the teleological approach ignores past successes in the field of disarmament and therefore undermines this perspective, the "disarming catastrophe" view leads to a dilemma which is at once without foundation and a tragic prospect for supporters of disarmament. It would mean that the supporters of a world without nuclear weapons must wait for a nuclear explosion to occur before their goal can be attained. Many of those campaigning for disarmament see that goal as secondary to non-use of the bomb, since the risk of an accidental trigger remains while ever nuclear weapons exist (Sagan 1993; Blair 1998). If this catastrophic viewpoint were adopted, then, those fighting for abolition would be encouraged to abandon their objective due to an impasse artificially imposed by the alleged need for a catastrophe before disarmament even becomes possible. The difference between the teleological view of history and that of the "disarming catastrophe" is to be found quite simply in the goal which is attached to forecasting. In the widely held pessimistic version of teleology in the domain of proliferation, foresight seeks to undermine itself: a forecast of proliferation is issued and entreaties us to take urgent action in order to prove it false. (It is to this end that the symbolic Doomsday Clock was adopted (*Bulletin*'s team 2002:36)). Conversely, the forecast of a "disarming catastrophe" seeks to cast the

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forthcoming nuclear catastrophe in a promising light, and even to encourage us to do what we can to hasten its arrival.

Finally, although it is established that catastrophic events do lead political decision-makers to question their own perception of fields as unrelated as fishing and arms control (Adler, Haas, 1992:380), it seems rather difficult to imagine that a similar change will occur where the deterministic view of proliferation is concerned, particularly if the experts responsible for offering advice tend also to foster it. How can we prove that non-proliferation is not merely a pause in proliferation? When all non-nuclear States are party to the NPT and subject to IAEA monitoring, any proliferator must act in secret, which makes it even more difficult to disprove isolated allegations of proliferation and to refute a belief in proliferation teleology.

By way of an epilogue of sorts, let us conclude by outlining three possible avenues for future research which might allow this work to be extended.

5. Avenues for further research

The first avenue of research is a sociological project which would involve documenting in precise terms the spreading of vocabulary and referents linked with the metaphor of proliferation from analysts to decision-makers in each language. In the sense that nuclear specialists make up a small expert community in which members read one another's work and interact together (proliferation-related intelligence services, meanwhile, can be seen as a sub-community or a parallel community), this line of research would call upon the concept of the epistemic community (Haas 1992; this is applied to arms control in Adler 1992). It would aim to develop a deeper understanding of the ways in which representations spread between analysts and decision-makers. This would also allow further light to be shed upon the ways in which the metaphor can provide a structure to that which it describes: does it merely validate a previously existing belief, or does it work as a paradigm in actually forging that shared belief (Kuhn 1996:43-51)?[19]

It would then be fruitful to conduct research into other factors which influence proliferation teleology beyond the reification of the metaphor to which this study has been dedicated. Indeed, Kenneth Waltz, who develops an equally teleological view of the increase in the number of actors with nuclear weapons but maintains that controlled dissemination could prove positive for the international order, believes that the term "proliferation" is less than apt (Sagan, Waltz and

[19] We assume that this term can be applied to studies of nuclear security in the sense that the field is particularly narrow, experts are aware of one another's work and the metaphor of proliferation is almost universally accepted. We can therefore overlook the major objections raised by Dogan (2001), who prefers not to apply the notion of paradigms to the social sciences.

Betts 2007:136). Another factor which could be put forward is to be found in the following anthropological assumption: decision-makers have always hoped to provide their community with the most powerful weapon available at the time. In order to refute rationally the existence of this alleged anthropological invariable, we need only acknowledge that any weapon is merely a tool implemented in order to achieve a particular strategic goal. It is therefore necessary to acknowledge at the very least that the party which has the most advanced weapon or a significant advantage in terms of capabilities has not necessarily won in wider terms (Biddle 2004:1-27) or limited any damage caused to it. This applies in particular to guerrilla groups who have managed to overcome mainstream armies which were nonetheless superior to them in terms of capacity (Schmitt 1962; Badie 2004) or for North Vietnam, which beat the United States, a nuclear power. It is clear, though, that the counter-examples are rarely sufficient to undermine some of the fundamental preconceptions of analysts of international politics (Tetlock 1999). Furthermore, studies in psychology and cognitive science have established that awareness of expertise can lead the experts themselves to believe that they are quicker to understand what is going on, and this, paradoxically, slows down their ability to understand the phenomenon adequately. The field of Security Studies is plagued with three specific difficulties in view of the viability of a learning process by which representations are acquired and adapted. Firstly, the domain in which the observed actors are operating leads them to lie and make information both rare and extremely unreliable, which means that inferences as to the intentions of those decision-makers where strategy is concerned are particularly risky. Secondly, those difficulties are generally compensated by a supposedly heuristic recourse to the notion of power which is so ill defined and liable to be extrapolated that it can compensate for the anomalies present in previous theories. Finally, forecasting in these domains requires that these two approaches—by which we mean intentions and the different components of power—be connected, which in turn would require calculations of combined probability which go way beyond the scope of the human brain. In such circumstances, the strategy whereby complexity is denied and summarizing explanations are employed is extremely likely to be adopted (Hermann and Choi 2007). If this second source of teleology in the domain of proliferation, to which we have made only sketchy reference here, were to be discovered, as well as some reasons for its resilience in the specific field of the study of military nuclear activity, this could contribute to a heightened understanding of the phenomenon and achieve greater precision in how to reach a paradigm shift.

Finally, the "disarming catastrophe" approach requires detailed critical examination. Only some of the problems to be dealt with will be identified here. This theory assumes that the use of a nuclear weapon will set a precedent, and that the consequence of this, which according to the theory is known in advance, will

be the same for all actors on the international scene: namely, unanimous, swift and successful engagement towards disarmament. Certain examples of behaviour considered to have no historical precedent have certainly engendered conventions quite opposed to that particular type of behaviour. This was the case following the Shoah, with the advent of the notion of crimes against humanity, while some argue that the non-use of the atomic bomb since 1945 has stemmed precisely from the memory of Hiroshima and Nagasaki (Tannenwald 2007: chapter 3). We tend, however, to remember only those acts which have functioned as a precedent, and underestimate the complex conditions which lead to their being established (Kier and Mercer 1996). To this we can add the fact that the act in question consists of a specific *use* of the nuclear weapon, whereas the anticipated reaction to it has to do with *acquisition* and *possession*. In purely logical terms, if we suppose that a precedent were established, it would be much more likely to affect the use of weapons against enemies (nuclear tests can indeed be seen as an example of nuclear use which last occurred in 2009 and which has completely different political ramifications) than the acquisition or possession of those weapons (for a number of different scenarios, see Quester 2006). Besides this, a single use of a nuclear weapon could trivialize such action if there were no nuclear response and if the damage caused were not quite as disproportionate as had been imagined.[20] In other words, the use of a nuclear weapon could become a precedent in a sense quite opposed to that anticipated by the "disarming catastrophe" prophecy. Indeed, even those who subscribe to the taboo hypothesis are duty-bound to admit that the taboo in question has taken a good deal of time to become established. Thus, on 16 September 1948, the U.S. National Security Council backed the use of bombs in cases of conflict with the USSR, thereby echoing a feeling which was widespread throughout the population (Le Guelte 2009:47). Finally, in order to talk of a precedent in terms of acquisition or possession rather than merely a precedent of use, one has to believe that possession of a nuclear weapon will undoubtedly or very probably lead, sooner or later, to its being used. This idea seems less incongruous in the case of an unquestionably accidental trigger than in the case of a deliberate strike, which will always be seen as unusual and related to the particular intentions of a particular ruler. Even if all these circumstances were in place, it seems rather dangerous to assume that reflexes coming into play in a national emergency, and goals relating to power or status on this scale and in the shorter term, would not prevail over an idea as general and temporally non-

[20] In this regard, it must be acknowledged that there have been cases of nuclear non-use against powers which did not have the capability required for a nuclear response, even when a possible defeat was at stake. We can think, for example, of the United States in Vietnam, the United Kingdom in the Falklands War and the Soviet Union in Afghanistan in 1979. This matter requires an excursion into the debate surrounding motives for non-use. See Tannenwald 2007 and Paul 2009.

specific as that according to which the existence of nuclear weapons will necessarily lead to their being triggered.

Until the possibility of a paradigm shift becomes reality, teleology in the domain of nuclear proliferation and the resilience of the non-reflexive employment of the metaphor on which it is based betray an inadequate regard for the quest for scientific truth. "The desire for truth is by no means tantamount to the need for certainty, and it would be careless indeed to mistake one for the other." These words, taken from André Gide (1997:156, our translation), illustrate the way in which politicians can be misled by analysts' biases when they pay insufficient heed to the demands of prudence.[21]

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