CHAPTER 6: SUMMARY AND CONCLUSION

6.1 Introduction

The purpose of this study is inter alia to consider the role incentives and disincentives fulfilled in nuclear weapon decision making, using empirical data regarding the South African nuclear weapon experience and to consider whether there might be implications for the global nuclear non-proliferation norm.

The research problem was formulated as follows:
Why did the South African government, both in the development and dismantling of its nuclear weapon capability, follow policies not reflecting the upcoming trends in nuclear weapon proliferation and non-proliferation? Stated differently, why did South Africa firstly develop a nuclear capability despite the growing international incentives against nuclear weapons and secondly abandon such a capability before these incentives (especially the non-security incentives) were significantly strengthened after the Cold War?

In answering the research problem sub-problems were formulated and studied in depth.

6.2 Sub-Problems Studied

The first two sub-problems that need further investigation are dealt with in Chapter 2:*What do the concepts nuclear weapon proliferation and non-proliferation mean?* Nuclear proliferation refers to the spread of nuclear weapons as well as the means to deliver these weapons to other states than the five NPT nuclear weapon states. In this study the scope of proliferation was limited to the spread of nuclear weapons with only some references to the means of delivering them. The spread of nuclear weapons is not limited to detonation or official declaration of the possession of nuclear weapons, but is also related to activities aimed at developing nuclear weapons. Not all nuclear development programmes would necessarily be successful and depend on a range of factors of which the political will of the proliferating state and the ability of the government to organise, manage and carry through complex long term projects involving a large scientific and technological infrastructure and to keep state

secrets, remain vital.[1] Non-proliferation is defined as the full range of political, legal, economic and military tools to prevent proliferation, reverse it diplomatically and to recognise the non-proliferation norm.[2] Non-proliferation thus not only includes international or multi-lateral political activities, but also a whole range of technical and legal measures, political security initiatives, and institution building. [3]

What are the influences of the broader paradigms in which international relations are conducted specifically with regard to nuclear weapons proliferation and non-proliferation? The broader international relations paradigms provide the macro environment in which the issues of nuclear proliferation and non-proliferation can be studied. Two paradigms of international politics, namely the realist and rationalist traditions, as identified by Martin Wight, are useful for understanding the macro global environment.[4] These two traditions are related to two interrelated political conditions which comprise the major subject matter of international relations. The first condition is that, no politically superior power exists and the multiplicity of independent sovereign states acknowledge and ultimately use warfare to regulate relationships. This is the basis of the realist world view regarding international relations.[5] The second condition is that diplomacy and commerce form the basis of international and institutionalised interaction between sovereign states. Rationalists thus tend to emphasise and concentrate on this element of international interaction.[6]

The realist view of international relations at first glance increased the threat of nuclear proliferation. This view of international relations dominated during the Cold War period, resulting in many states in vulnerable security dispositions, supporting "power maximising positions." Realist views thus supported efforts to strengthen military power with the view to counter and deter threats from potential rivals. The invention of nuclear weapons added a new dimension to these "power maximising" capabilities. Initially the technological, scientific and industrial barriers against obtaining such a capability limited it to only a few industrial capable states. The ideological and political division that prevailed for many decades between East and West, and its security implications, triggered an arms race in nuclear weapons.[7] While most states protected by nuclear guarantees from superpowers, decided against obtaining a nuclear weapon capability, this was not necessarily the case for states not been granted nuclear protection by the nuclear powers. Being in a vulnerable regional security situation drastically strengthened initiatives for a nuclear weapon capability.

The view that nuclear weapons are the ultimate "power maximising" capacity, had begun to change by the 1960s as more states obtained the capability. With the threat that the power balance would change fundamentally while continued life on earth could be endangered, if nuclear proliferation continues, the rationalist paradigm provided an incentive to limit the spread of these weapons.

Rationalist thought highlighting the destruction capabilities of these weapons thus, influenced nuclear decision making from the start of the nuclear era. International cooperation on preventing nuclear weapon proliferation has been part of global multilateral deliberation since the 1940s. However, during the earlier years of the development of nuclear weapons the main constraint against nuclear weapons was not the non-security factors such as the non-proliferation norm. Initially technical, economic and political factors were dominant in limiting the spread of nuclear weapons to mainly the global powers. The rationalist-based proliferation and non-proliferation impact on international relations are linked to developments within the international law, international organisation, the non-proliferation regime as well as the growing interdependence and integration linked to globalisation. The nuclear arms race during the Cold War did not result in many states joining the nuclear weapon club as predicted by some scholars and world leaders. The South African nuclear weapon programme was conducted during a time when the realist approach was globally dominant. Strategic competition between the US and USSR was rife. South Africa not being under the nuclear protection of the US, while also an opponent of the USSR, seemed to be an ideal candidate for a nuclear weapon capability.

The third sub-problem was dealt with in Chapter 3: *What are the specific global incentives and disincentives influencing nuclear weapon decision making (both to obtain and abandon such a capacity)?* Both incentives to obtain and abandon such a capacity are of interest here. The factors primarily underlying such a decision have been identified by William Potter in the early 1980s. It consists of four broad clusters of nuclear proliferation incentives and disincentives.[8] These four broad clusters were grouped by Potter according to the relative importance they ascribe to internal or external considerations and military or political-economical objectives. He labelled these incentives and disincentives as factors of international security and politics as well as domestic security and politics. In terms of the countries deciding to develop such a capability in the cases focussed on in this study

namely China, India, Israel and South Africa (for the military devices) international factors, especially international security factors have been influential incentives. In all of these cases the influence of self-interested actions by bureaucratic actors also proved significant.[9]

Chapter 4 dealt with the development of the non-proliferation norm and thus the forth sub-problem: *How did the non-proliferation norm develop and how did it create barriers for nuclear proliferation over time? What is the norm's weak and strong points*? The development of the non-proliferation norm is described according to three periods. The three periods were preceded by the development of international law and international organisations which influenced international political conduct. Deterence and the arms race between the superpowers were the major global security concerns during the first two periods of the foundation of the non-proliferation norm. While Cold War security concerns overshadowed the non-proliferation norm during this period, this norm increasingly became a multi-lateral policy issue globally. The creation of the NPT was of special significance, establishing the basis from which the norm further evolved. The NPT also assisted in developing a global political environment that inhibits nuclear proliferation.[10] From the non-proliferation norm, measures were developed which formed part of the global efforts against nuclear non-proliferation. Disincentives initiated during arms control and disarmament negotiations between the superpowers included practical measures such as verification, compliance, export control and strengthened nuclear safeguards, all lending some actionable content and strengthening the non-proliferation norm. The strengthening of the proliferation norm had the implication that nuclear proliferation became difficult to maintain if significant security threats were not perceived by the leadership of a country. Thus where the norm remains unlikely to lead to nuclear disarmament in Israel, Pakistan and India, the diminishing threat in South Africa at the end of the Cold War had a positive effect on the prospect for nuclear proliferation. It, however, again had been a decision influenced by more than the change in the international security environment, but also by uniquely South African circumstances such as the then envisioned political transition. Without a conducive international environment this would not have been possible.

In Chapter 5 the fifth sub-problem was dealt with: *How did the South African nuclear weapon programme came to being?* A short history of the nuclear weapon programme is provided. The

South African nuclear proliferation history consisted of five periods, from the establishment of a nuclear infrastructure, the development of a device for "peaceful" purposes, a military deterrent, termination of the weapon programme, to an active supporter of the non-proliferation norm. This represents a complete life cycle for a nuclear weapon capability and the ultimate aim of the non-proliferation norm for nuclear weapon states.

The sixth sub-problem, also addressed in Chapter 5 is: *What were the incentives and disincentives that played a role in South Africa's nuclear weapon and non-proliferation decision making?* While it still remains fairly difficult to prove that any one incentive was dominant, it seems that a multitude of factors influenced the decision maker in this regard. It proved useful to evaluate the decision making leading to a nuclear weapons capability during the different phases of the programme. During each phase decision making was influenced by the specific technological and political purpose of that phase. During the early sixties the focus was on the creation of a nuclear infrastructure, in the late sixties early seventies on a nuclear device for mining purposes and only from the middle seventies on creating a nuclear weapon capability. Even when a decision was taken to use the work done on the "civilian device" to develop a military deterrent, no clear purpose or strategy of deployment was formulated. This only followed later at the insistence of individuals working on the programme. There has been no indications that any systematic thought went into the implications and/or the consequences of a nuclear weapon capacity in the early stages of the programme.

The South African nuclear weapon experience do highlights key indicators of incentives and disincentives in nuclear weapon decision making identified in other cases in this study. Most of these factors are universal in their application and also manifested in some form in other states taking decisions on nuclear weapon capabilities. Contrary to the other cases mentioned in this study, one aspect of the chain of events leading to the nuclear weapon capability and its eventual demise remains fairly unique in the South African case. This being the incremental nature of the South African programme, which was embarked on in all its different stages namely the nuclear infrastructure phase, "peaceful" device phase and nuclear weapon phase without any apparent long term view of the purpose of these separate efforts. In each phase focussed technical work continued, despite the lack of the decision-makers' apparent inability to foresee the consequences and real purposes of work done during that phase.

Another aspect, although not unique to the South African case, which will prove to be difficult to replicate in the future, is the significant role the nuclear industry had in pushing the industry's development agenda forward. This is mainly the case because of the growth of nuclear export controls, safeguards and also the non-proliferation norm, making it difficult to use and develop nuclear related technologies for non-peaceful purposes wordwide.

The South African nuclear weapon history largely unfolded during the Cold War period when the non-proliferation norm was still subject to the nuclear weapons politics between the USSR and the US. Since the end of the Cold War the norm has been a more compelling factor in pressurising states not to arm themselves with nuclear weapons with the indefinite extension of the NPT as the highpoint of international consensus against nuclear weapon proliferation. Since then there have been some setbacks for this norm because of poor disarmament efforts by the nuclear weapon powers and the DPRK's suspension of its NPT membership without an adequate response on its possible implications for the norm. The US strong insistence that Iraq's weapons of mass destruction capacity was given as the reason for its invasion of Iraq in 2003, but no compelling evidence in this regard could be produced. This will probably disadvantage the non-proliferation norm in the future.

6.3 Propositions

The last question remains if the South African case present any general propositions specifically for nuclear proliferation? It is possible to identify two sets of propositions from the South African case as explained in its global context. At first propositions (Proposition 1 and 2) are identified as being unique to the South African case and which do not have any direct application for nuclear non-proliferation in general. The second set of propositions (Proposition 3 to 5) allude to nuclear non-proliferation in general.

Proposition 1

The South African nuclear proliferation capacity was largely the end result of smaller focussed projects without a clear proliferation intention from the start of the programme. This incremental example of decision making illustrated that because the decision makers had limited insight in the long

term, consequences of the nuclear industry made incremental decisions, each building on what has gone before and drawing on their institutional and threat perceptions.[11] This incremental proliferation route remains highly unlikely to take place elsewhere in the world because of the changed nuclear environment globally. Developments on the nuclear proliferation field since the 1990s have significantly lessen this threat. The window of opportunity for such an approach to nuclear proliferation has been largely closed because of the strengthening of global nuclear export control, pre-emptive military doctrine by the US and the non-proliferation norm. The development of IAEA safeguards makes it difficult for a civilian nuclear project to be transformed in a nuclear military programme without triggering international warning and response through the IAEA. This is especially the case with the creation of nuclear fissile material for nuclear weapons. The threat posed by continuing trade by some supplier states outside the control regimes, resulting in the possible leakage of dual-use technology is still credible, but the impact thereof remains manageable in global context.[12] While it thus remains impossible to guarantee the prevention of dual-use and nuclear technology reaching potential proliferation countries, the conduct of a large scale nuclear weapons programme in secret (such as had been the case in South Africa) is becoming increasingly difficult. Measures as implemented by the IAEA such as the new safeguards protocol, provide a measure of control by the global community in verifying countries nuclear ambitions. The fact that no "peaceful nuclear explosive devices" for civilian applications are allowed in terms of the current understanding of nuclear non-proliferation, also assists significantly to prevent incremental nuclear non-proliferation. The capacity to develop a nuclear weapon by default as result of escalating scientific projects, as has been the case in South Africa, seems highly unlikely in the future.

Proposition 2

The role of the nuclear industrial complex could be compelling in creating political pressure for a nuclear weapon capability, although the potential for a successful programme following such pressure has diminished. In South Africa's case this was even more compelling because of the lack of clear leadership regarding the development of nuclear weapons at the early stages of this development as well as strong threat perceptions within the decision makers' mind. Nuclear scientists had the freedom of choice to start a project on the civilian nuclear device, making it possible at a later

stage to successfully pursue a nuclear deterrent. While it remains possible for the scientific and technological community to develop the political clout to drive a nuclear weapon programme in other states, again this will be difficult to replicate the South African case in the future. It has been illustrated in the cases of India and Israel that the so-called "myth-makers" were prominent driving forces in those countries' nuclear weapon programmes. The difference in the future, however, will be that the possibility to successfully conduct such a programme will be more limited from a technological point of view. Without the ideal nuclear infrastructure situation such an endeavour would prove to be practically difficult to achieve. See the references to impediments to a successful nuclear weapon programme mentioned in Proposition 1 above. The slump in the global nuclear industry since the 1980s has also significantly diminished the position as well as influence of the nuclear management and scientific community.[13]

Proposition 3

As long as the non-proliferation norm is augmented by practical multilateral measures (such as export control, verification and nuclear safeguards) the non-proliferation norm has practical value for inhibiting nuclear weapon proliferation. From this study it is showed that the non-proliferation norm could not play a role in preventing the programme from developing, but played an indirect role in the rollback. It was clear to the decision maker and to the nuclear industry that global interaction by South Africa was impossible without being a State Party to the NPT. With the indefinite extension of the NPT and the fact that most industrialised states started to implement IAEA and NSG export control measures on nuclear fissile and dual-use technology and goods, it has become more difficult for the nuclear proliferating state to obtain the material, equipment and technologies to pursue nuclear proliferation successfully. It is, however, not the only and final solution to all nuclear proliferation problems.

Proposition 4

If the major security threat is internal, a nuclear weapons capability as a deterrent is useless. Although South Africa had successfully developed a nuclear weapon capability, the practical value of these weapons for South Africa security remained limited. The main security threat was not from outside South Africa, but from popular opposition inside against the white minority government. If the incentives

for a nuclear weapon capacity are largely domestic as has been the case in South Africa, the ultimate utility of a nuclear development programme remains highly limited, seeing that nuclear weapons can not be used internally against opponents. After the end of the Cold War the continued existence of nuclear weapons are tolerated on a strategic level in the cases of Israel (versus the Arab states) and India and Pakistan, but it will be difficult for any new entrants to manage to develop a fully fledged nuclear weapon capability. This will be the case partly because of the nuclear non-proliferation norm, but also because of pro-active "defensive"measures such as the US's National Security doctrine that promotes pre-emptive strikes on countries considered a potential future strategic threat for the US.

Proposition 5

While non-proliferation efforts, especially after the Cold War, have provided a framework for action to counter most upcoming nuclear proliferation threats, such efforts could prove ineffective against non-state actors. The institutionalised nature of the South African nuclear weapon programme made it possible to dismantle and obtain international recognition for its destruction. As explained in this study technological, resource related and financial constraints, make it practically impossible for non-state actors to develop nuclear weapons. Obtaining a nuclear weapon from current stockpiles by such groups is possible, but unlikely. The developing or obtaining of a radiological weapon (conventional explosive device with the aim to spread a radio-activity over a geographical area) by a non-state actor (or even a state actor) is, however, a distinct possibility. While the destruction potential of such a weapon remains significantly more limited than a nuclear weapon, the psychological effect would be devastating for global security. The wide array of instruments to counter the state nuclear proliferator would be practically difficult to use effectively against non-state actor nuclear- related proliferation.

6.4 Conclusion

Empirical data confirmed the existing theory on the incentives and disincentives influencing decision-makers regarding the nuclear weapon decision. The global environment in which these decisions are taken has, however, changed. Part of this change can be contributed to the end of the Cold War and thus an end in the nuclear arms race between the superpowers. Starting in the Cold War era, however,

the non-proliferation norm developed, supported by a full array of non-security measures to address the issue of the further spread of nuclear weapons. These measures included export control, verification, safeguards and a growing consensus on the need to implement these on a multilateral level.

The South Africa case proved to be linked to the Cold War security situation as well as the unique and increasingly isolated political system. Thus being a political system which was conducive to incremental decision making on the nuclear terrain, coupled with a highly influential nuclear industry being lead by an influential scientist. The increasing political isolation and "total onslaught" threat perception by the government provided the environment in which it was easy for that government to use the nuclear opportunity presented by the previous work conducted on a civilian nuclear device.

The rollback had much to do with the realisation that this capacity provided no security advantage but rather presented a liability, especially in the light of significant changes in the regional and global power configuration starting to occur then. The growing non-proliferation norm and especially the fact that global participation in the nuclear industry without subscribing to the NPT, assisted in taking such a decision.

The objectives for this study, as stated, thus appear to present a valid conclusion. The objectives of the study were to demonstrate that South Africa's decisions to develop and ultimately destroy its nuclear weapon capability were influenced by both reactions to domestic security and to other issues unrelated to security. South Africa obtained a fully fledged nuclear weapon programme as the result of a highly incremental approach to the nuclear weapon decision It is also concluded that the threat perceptions in the mind of the decision maker were also dominant factors, especially when the final decision for a nuclear deterrent was taken. The decision to destroy the nuclear weapon capacity was also not primarily influenced by the growing non-proliferation norm, but by the changing security environment both regionally as well as globally and possibly a realisation that a nuclear weapon capability is a significant security and financial liability for South Africa in the end.

This study can possibly be of value to individuals and entities involved in the policy- formulation and/or management of nuclear non-proliferation worldwide. Nuclear non-proliferation is a long term endeavour

and while the incentives and disincentives are widely known to these practitioners, what the South African case illustrate, is the necessity to take a holistic view of the political, socio-economic context of a potential proliferation state. In endeavouring to identify the unique dynamics of a possible nuclear proliferating state it might be useful to focus on the underlying dynamics between relevant entities involved in the nuclear industry. Officials involved in security policy formulation internationally need to take note of the significance of the non-proliferation norm. The non-proliferation norm has on occasion been misused for strategic political reasons since the end of the 1990s. This could seriously damage a potential valuable tool in the combat of nuclear proliferation.[14]

While this study deals with a case of a state going through the complete cycle from being a nuclear proliferator to a leading supporter of the non-proliferation norm, a need exists for further research on at least two related issues. The one problem relates to the threat posed by non-state actors to nuclear non-proliferation and other to the implications of unilateral security actions on the non-proliferation norm.

6.5 Notes

1. Office of Technology Assessments, Technologies Underlying Weapons of Mass Destruction, U.S. Congress, U.S. Government Printing Office, Washington D.C., 1993, pp. 119-120.

2. Office of the Deputy Secretary of Defence, Report on Nonproliferation and Counterproliferation Activities and Programs, Department of Defence, Washington D.C., May 1994, p. 1.

3. Dunn, L.A. "Nuclear Nonproliferation: A Defence In-Depth," in Snyder, J.C. and Wells, S.F. (Eds) in Snyder, J.C. and Wells, S.F.(Jr.)(Eds) Limiting Nuclear Proliferation, Ballinger Publishing Company, Cambridge (Mass.), 1985, p. 285.

4. See Wight, M. International Theory: The Three Traditions, Wight, G. and Porter, B. (Eds), Leicester University Press, London, 1991.

5. Ibid, p. 7.

6. Ibid, p. 7.

7. Issa, A. "The Drivers Behind Missile Proliferation," in Kenyon, I.R. (Ed) International Perspectives on Missile Proliferation and Defenses, Mountbatten Centre for International Studies and Center for Nonproliferation Studies, Monterey CA, 2001, p. 7.

8. Potter, M.C. Nuclear Power and Nonproliferation: An Interdisciplinary Perspective, Oelgeschlager, Gunn and Hain, Cambridge (Mass.), 1982, pp. 136 - 143.

9. See Sagan, S.D. "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," International Security, Vol. 21, No. 3, Winter 1996/1997, pp. 54 - 86.

10. Erickson, S.A. "Economic and Technological Trends Affecting Nuclear Nonproliferation," The Nonproliferation Review, Vol. 8, No. 2, Summer 2001, p. 41.

11. Homer-Dixon, T. The Ingenuity Gap: How can we solve the Problems of the Future?,Random House, London, 2001, p. 303.

12. Millot, M.D. "Facing the Emerging Reality of Regional Nuclear Adversaries," in Roberts, B. (Ed) Order and Disorder after the Cold War: A Washington Quarterly Reader, The MIT Press, Cambridge (Massachusets),1995, pp. 179 - 180.

13. The global nuclear industry is facing serious challenges related to global environmental and non-proliferation concerns. Although the industry could possibly effectively manage these challenges in the future, it would be difficult to predict that the nuclear industry will again play a prominent role as it had in from the 1950 to1970s in the next few decades. See Leventhal, P.L., Tanzer, S. and Dolley, S. (Eds) Nuclear Power and the Spread of Nuclear

Weapons: Can We Have One Without the Other?, Brassey's Inc.,Washington D.C.,2002.

14. Despite stating that non-proliferation concerns were the main reasons for invading Iraq during 2003, by the end of that year no conclusive proof to this effect could be offered by the US. This could lead to a growing perception globally that non-proliferation can be used as a pretext for international power projection purposes by power full states.