‘This book is well worth reading. It is an engaging account of the whole story of Iranian nuclear policy, and the material on the Shah’s programme creates interesting context for current developments. It represents a well-told story which, for those interested in Iran, and those who wish to learn more about the place given the nuclear crisis, will be a very useful source and reference point.’

– Professor Michael Clarke, Director General, Royal United Services Institute for Defence and Security Studies (RUSI)

‘An interesting and informative window into Iranian thinking ...a unique and fascinating book.’

– Mark Fitzpatrick, Director, Non-Proliferation and Disarmament Programme, International Institute for Strategic Studies

‘Patrikarakos has produced a meticulously researched study of Iran’s nuclear programme and situated it within the broader historical and political context. This fluent account, drawn from both archival and oral sources, provides one of the best and most readable accounts of a programme which has come to define Iran’s relations with the West. An essential read for the general reader and specialist alike.’

– Ali Ansari, Professor of History at University of St Andrews and Director of the Institute for Iranian Studies

‘A very comprehensive and useful description of the development of Iran’s nuclear programme. A topical account, it is essential reading for political leaders, journalists and all others interested in international politics and international relations ...highly recommended.’

– Professor Frank Barnaby, Nuclear Issues Consultant, Oxford Research Group

‘By his meticulous and painstaking study, David Patrikarakos has given us an engaging and comprehensive account of what is often described as the Iran Nuclear Crisis. The first detailed study of its kind, he seems to have not left a stone unturned to discover the facts and subject them to intelligent and even-handed analysis. It is a must read in all the power centres that are so acutely and urgently concerned with Iran’s nuclear project, including the IAEA, UN, America, EU and Iran.’

– Dr Homa Katouzian, the Iran Heritage Foundation Research Fellow, St Antony’s College, and Member of the Faculty of Oriental Studies, University of Oxford

‘This thoroughly readable book adds greatly to the current debate on the Iranian nuclear programme. It should be read by all those who are interested in this topic.’

– Professor Paul Rogers, Professor of Peace Studies, University of Bradford

‘An outstanding book ...the first scholarly work on Iran’s nuclear programme that grasps the programme’s historical, cultural and political impetus and clearly explains its elements of continuity over time. It will become a valuable resource for researchers on this subject.’

– Dr. Ali Vaez, Director, Iran Project, Federation of American Scientists
'This book is a watershed in the understanding of the Iranian nuclear programme. No other book quite like it exists. It is a cogent, highly readable and very well-written account of the programme’s evolution from its inception to the present day that succeeds in unravelling the technical and political complexities which have often clouded our understanding of the programme. It shows both a deep understanding of modern Iran and of its nuclear programme. The book will be invaluable to policy analysts, politicians, diplomats and journalists in Europe and the USA and is a must read for anyone with an interest in international affairs.'

– Siavush Randjbar-Daemi, Lecturer, SOAS
**David Patrikarakos** is a writer and journalist who has written for the *New Statesman*, the *Financial Times*, the *London Review of Books*, *Prospect* and the *Guardian*. 
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ACKNOWLEDGEMENTS

As is customary, the list of people I must thank for helping to bring this book to fruition is long yet certainly incomplete. Most immediately, for taking the time to read through the manuscript and point out errors and possible improvements I owe a considerable debt to Norman Dombey and Ali Vaez, whose scientific expertise filled the black hole of my ignorance. Their patience and generosity in answering my questions was unending and appreciated. It goes without saying that all errors are mine alone, most likely from a failure to listen or indeed understand their points correctly.

I also owe a huge debt of thanks to Alan Ramon Ward and Bryn Harris, both for their friendship over many years and for taking time out of their own extensive intellectual pursuits to read through various sections of the book, often at very short notice and at times when I could no longer view the page with any objectivity. Their comments and suggestions have made all the difference. Thanks also to my dear ‘moon-face’ Tanya Lawrence and to Kayvan Sadeghi, whose input also greatly improved the text.

Hossein Heirini Moghaddam and James Piscatori (who also taught me how to think) advised me on this book when it was in embryonic form. Edmund Herzig helped bring it to its early fruition and, with Homa Katouzian, guided me so expertly through modern Iran at Oxford. Dominic Brookshaw did his level best to teach me Persian, Reza Sheikholeslami gave me excellent advice on the Shah’s period while Ali Ansari (and his work) has been an inspiration for me in understanding modern Iran. All these men are true scholars of the Middle East; I have only benefited from their teaching and guidance.

I must also thank all the staff (academic and non-academic) at Oxford’s Middle East Centre and especially at Wadham College whose kindness (and forbearance) ensured I spent many happy years there. And of course Tom Woodman, without whom nothing subsequent would have been possible.

Ben Judah has been a continual source of support as we begin this long game together. The same is true of Ioanna Koutzoukou while the support of Alexis Hood was also invaluable, and always appreciated. Chris Mitchell and Dai Richards must also be thanked, as must David Mainwaring who was an excellent source of advice about the publishing world in general.

And of course, my mother, who is everything, and my brother, Phillip, who is with me every day. Rene must also be thanked for this support over many years. And my father, without whom this book would most certainly have never seen the light of day. His unyielding support throughout the writing process was, in the end, crucial.

David Patrikarakos, July 2012
A NOTE ON TRANSLITERATION

The transliteration of the Persian words and names in this book is based on a simplified phonetic system, without diacritical accents though distinguishing between the ’ayn and the hamzeh. The aim has been to make the Persian names and terms accessible to non-specialist readers.
**LIST OF ACRONYMS**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEOI</td>
<td>Atomic Energy Agency of Iran</td>
</tr>
<tr>
<td>CENTO</td>
<td>Central Treaty Organization</td>
</tr>
<tr>
<td>HEU</td>
<td>Highly Enriched Uranium</td>
</tr>
<tr>
<td>IAEA</td>
<td>International Atomic Energy Agency</td>
</tr>
<tr>
<td>IRNA</td>
<td>Islamic Republic News Agency</td>
</tr>
<tr>
<td>LEU</td>
<td>Low-Enriched Uranium</td>
</tr>
<tr>
<td>MW/MWe</td>
<td>Megawatt</td>
</tr>
<tr>
<td>NPT</td>
<td>The Treaty on the Non-Proliferation of Nuclear Weapons</td>
</tr>
<tr>
<td>UCF</td>
<td>Uranium Conversion Facility</td>
</tr>
<tr>
<td>UF$_6$</td>
<td>Uranium Hexafluoride</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>WMD</td>
<td>Weapons of Mass Destruction</td>
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</table>
LIST OF MAPS

Map of Iran showing enrichment centres and reactors
Map of Iran showing enrichment centres and reactors
The world may be tumbling into another Middle East war. For the last decade, the West’s leading powers and Iran have engaged in the most sustained diplomatic clash since the run-up to the 2003 Iraq war, and it is escalating. The Iranian nuclear crisis is everywhere. Thousands of newspaper, magazine and journal articles, dozens of books, almost daily news bulletins, and hundreds of hours of TV and radio (not to mention scores of documentary films) have appeared to judge, analyse and pontificate on Iran’s nuclear programme. The crisis now dominates Iranian, European and US foreign policy; Iran specialists have mushroomed in the media and in government; watching its nuclear programme has become a geopolitical cottage industry.

Iran’s nuclear ambitions – and the international attempts to stop them – have become the major global crisis of the twenty-first century’s second decade. It is a Manichean conflict with the potential to reorder the international geopolitical balance of power. On one side is Iran: a regional giant that lies between two of the world’s great energy sources – the Caspian Basin and the Persian Gulf. With the fourth largest reserves of oil and second largest reserves of natural gas in the world, the country will be integral to satisfying the world’s forthcoming energy needs. Iran’s links to Shi’i groups in Iraq and its ability to influence events in Afghanistan, not to mention its longstanding ties to Hamas and Hezbollah, mean that political stability in the Middle East is also to a large degree dependent on Iran.

Opposing Iran is a coalition of the leading Western states headed by the world’s only remaining superpower, the USA; on the diplomatic sidelines is Israel, threatening to escalate the crisis to irretrievable, military levels. Somewhere in the middle, along with the UN Security Council, the EU and the Non-Aligned Movement of Developing Countries, are two of the world’s other Great Powers: China and Russia. The nuclear crisis is unquestionably global in its importance, and its effects accordingly severe. Higher oil prices, the increased prospect of war, more division among the UN Security Council powers and a deepening of the already huge rupture between Iran and the West have already occurred. Its resolution – one way or another – will affect the world for at least a generation.

The need to find a solution is both critical and immediate. The international strategy up until now has failed; Iran remains as isolated, and as angry, as ever. The pressure heaped on the country over the past year – greater than anything it has experienced since the Iran–Iraq war – has only been met with repeated Iranian
defiance. Israeli threats to strike Iran’s nuclear facilities increase by the day – certainly if the rhetoric coming out of Tel Aviv and parts of Washington is to be believed, the prospect may even be imminent. Should Israel (or the USA) launch an attack, the global repercussions would be severe. Iran would more than likely respond by leaving the NPT launching missiles against Israel, attacking US forces in the Gulf, destabilizing Afghanistan and Iraq, and possibly even blockading the Straits of Hormuz through which 20 per cent of the world’s oil passes. An increasingly hostile and unstable Middle East, and an Iran even more determined to accelerate any possible drive towards a nuclear bomb, are the very least that could be expected after such an attack.

But for a programme that is now in its seventh decade, there is very little understanding of it: in particular, of what it means to Iran, and why. No one has yet tried to tell the full story of Iran’s nuclear programme from its birth until the present day. How does Iran make decisions on its programme and why? And how have these changed over the years? What exactly is it that stands at the heart of global concerns? While there have been some excellent treatments of the subject, much of the available literature is often sensationalist, lightweight or too politically charged to be of real use, to either the historian or the policymaker.

This book seeks to redress these problems, and it is written with a bold but clear purpose in mind: to present the most comprehensive account and analysis of the nuclear programme so far written. It is, accordingly, based predominantly on primary sources: official statements, government and parliamentary records, declassified intelligence documents, both in English and in Persian, and of course interviews with key actors, at the national and international levels, throughout the 60-year history of the programme. Secondary literature, mainly newspapers and other media sources, again both in Persian and in English, has also been used.

This book tells the story of Iran’s nuclear programme from its beginning in the late 1950s to the present day. It opens with a brief consideration of the birth of nuclear power in the post-war world and Iran’s historical experiences over the last two centuries, which drive the modern Iranian state and its nuclear programme to this day. Chapters 4 to 6 then detail the programme’s early days – the founding of the Atomic Energy Agency of Iran (AEOI), and the Shah’s motivations for a nuclear programme – both spoken and unspoken; the programme’s expansion in the late 1970s and the early discussions on Iran’s attainment of an atomic bomb. Chapters 7 to 9 cover the arrival of the Islamic Republic in 1979 and the nuclear programme’s meandering course through the traumatic war years of the 1980s. Initially discarded for ideological reasons, the programme was restarted shortly afterwards (alongside a covert uranium-enrichment programme) and eventually mutated into a symbol of Iranian defiance in the face of a supposedly hostile world. Chapters 10 to 12 deal with the programme’s post-war progress and increasing international controversy, as well as the expansion of its covert activities, which eventually grew into an AEOI drive towards uranium enrichment and plutonium production, the two paths to a nuclear bomb.

The book’s later chapters deal with the modern nuclear clash. Chapter 13 begins by recounting the 2002 announcement that publicly revealed the extent of Iran’s undeclared nuclear activities and began the nuclear crisis, the resulting negotiations between Iran and the Europeans, Iran’s strategic response to them and the Tehran
Agreement of 2003. The following chapter deals with the 2004 Paris Agreement and the arrival of Secretary of State Condoleezza Rice and US attempts to engage the Islamic Republic in dialogue. Chapters 15 and 16 then chart the arrival of Mahmoud Ahmadinejad and, later, Barack Obama, detailing both the former’s escalation of tensions between Iran and the international community, and the latter’s decision to engage Iran at the highest levels. The final chapters analyse Washington’s attempts to negotiate with Iran, the increasingly difficult relationship with Israel and Tel Aviv’s fear of a nuclear Iran, the seeming failure of diplomacy, and the rise of possible alternatives, including the possibility of military action against the nuclear programme.

To do all this with the necessary degree of rigour has taken six years. I have travelled thousands of miles to three continents to speak to key players in this drama (and it is a drama) in Iran, the USA, Europe, the Arab world and Israel. Access to senior Iranian and non-Iranian decision-makers (the former made considerably more difficult given the near-impossibility of speaking to relevant Iranians after the 2009 Iranian presidential elections) forms a critical part of this book. At all times, the most pertinent, personal testimony has been sought on the most crucial periods of the programme’s history. The book would not have been possible without the input of so many of those that have shaped the history of the nuclear programme. Many of the people whose insight was most valuable must remain anonymous as they continue to affect its course today, but there are several who can, and must, be mentioned.

Akbar Etemad, the founder of the AEOI, and the father of Iran’s nuclear programme, who so generously devoted countless hours of his time so that I could understand how it all began and what it all meant. Endlessly gracious, he answered all of my questions fully and expertly, and provided this book with that rarest and most valuable of things: a window into the thinking that guided and guides the programme at the very highest levels. Similarly, Reza Khazaneh, former head of the Isfahan Nuclear Technology Centre, was an excellent source of information on the programme’s early days under the Islamic Republic and, later, on its drastic and significant change of direction in the 1990s.

Ahmad Salematian, Dariush Homayoun, Mohsen Sazegara, Adeshir Zahedi and Ata’ollah Mohajerani were all of great help in illuminating the internal workings of 1979 Islamic Revolution, and of the modern day Islamic Republic. Former President of Iran Abulhassan Bani-Sadr was an excellent source of information on the early Islamic Republic’s thinking on the nuclear programme at the highest level.

Moving into the present day, Alireza Jafarzadeh kindly took me through the events of August 2002, when he publicly revealed the full extent of Iran’s nuclear activities to the world and in so doing ignited the nuclear crisis. Ali Asghar Soltanieh, Iran’s Ambassador to the International Atomic Energy Agency (IAEA), who has represented Iran at the Agency (and to the world) throughout the nuclear crisis, gave me many hours of his time in Vienna to explain in valuable detail the Iranian position.

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presence in the early stages of international negotiations with Iran. Bruce Reidel, who worked closely with Barack Obama during his 2008 presidential campaign and on the presidential transition team, adeptly explained the reasoning behind President Obama’s initial decision as US President to speak directly to the Iranian leadership for the first time in over 30 years, and was also of huge help.

On the European side, Britain’s Ambassador to the IAEA, Peter Jenkins, was critical in demystifying the often opaque series of events that comprise the early nuclear negotiations, as was France’s Ambassador to Tehran, François Nicoullaud. Officials at the Quai d’Orsay in Paris, and at the British FCO, who continue to work on the Iran file to this day, were also of great help. For the view from Tel Aviv, Kadima MK and former head of Shin Bet, Avi Dichter; the head of Israeli internal security, Amos Gilad; Prime Minister’s spokesman, Mark Regev; and former National Security Advisor to the Prime Minister, Giora Eiland, were of great help, as well as the Israeli diplomats who made me understand the gravity with which they view the Iranian threat.

This book is built on a largely linear, chronological structure that traces the history of the nuclear programme over 60 years with several guiding principles in mind. The first is that the problem is political. The crisis is not the cause but the effect of a ‘failed relationship’ between Iran and the West, and it is this underlying relationship that must be addressed if any resolution is to be found. The second is that the only way to find a solution is to understand, on a political, economic, security and, perhaps most importantly of all, psychological level, what the nuclear programme means to Iran. Which leads into the third principle, which takes the form of a question this book seeks to answer: does the programme have a definite military dimension? Only by assessing as accurately and as completely as possible whether Iran is indeed seeking a bomb, and if so just how close it is to achieving its aim, can the correct policy be found. And this is urgently needed: if the spectre of a possible attack on Iran is deeply troubling, the prospect of a nuclear-armed Iran is worse. It would strengthen the Iranian regime, both domestically and at the expense of its Middle East neighbours, further damage Iran–Israeli relations, embolden Tehran’s proxies, Hezbollah and Hamas, and more than likely start a regional arms race. On a wider level, it would inflict an irrevocable blow to the NPT’s credibility and likely convince other near-nuclear powers to follow Iran’s example. It is a deeply undesirable outcome – one that must be avoided at all costs.

But the nuclear programme also offers an opportunity: it is a window into the enigma of modern Iran, the story of which is, in several important regards, the story of Iran’s efforts to engage with modernity, and to negotiate a place within a perennially hostile modern world. The nuclear programme is merely the country’s most ambitious attempt to do so, and its history, I argue, is a kind of tabula rasa onto which modern Iran’s evolution has been and continues to be written; or, more simply, it is the story of Iran’s attempt to deal with modernity: ordered, detailed, configured. The degree of political, institutional and financial commitment necessary from any country to pursue a successful nuclear programme is absolute; the state must pour itself into the undertaking, and in so doing it puts on display its own sense of itself – not only its ambitions, its worldview, but also its anxieties and neuroses. Over 30 years after the 1979 Islamic Revolution the question of how to deal with one of the Middle East’s
largest countries, one of the world’s largest energy suppliers and a nation with the ability to drastically alter the global balance of power, still persists. Understand the nuclear programme and you understand modern Iran; understand modern Iran and you have the best chance of resolving the nuclear impasse. This book attempts to do both.

Finally, to fully understand Iran’s nuclear programme is to understand that it has a dual history or, perhaps more correctly, two ‘histories’. The first is the evolution of the programme itself – the progress of its nuclear facilities and capabilities. The second is what can usefully be described as the ‘nuclear debate’: the programme’s political history that has evolved alongside it – created largely by the diplomatic clash between Iran and the West. The first consists of reactors and centrifuges; the second comprises the constellation of relationships that dominate both international politics and the nuclear world: Sunni versus Shia; Israel versus the Islamic World; Developed versus the Developing World; and the Nuclear-weapon States versus the Non-nuclear-weapon States. And it is informed by organizing principles on each ‘side’ (‘Western perfidy’ versus ‘Iranian irrationality’ to name but one). Politics creates facts on the ground; it prompts decisions on both ‘sides’. Iran’s desire to acquire nuclear technology meets a corresponding Western desire to block Iran’s access to that technology, and both desires are informed by political beliefs and values. In its early chapters, while chronological, this book is accordingly built on a parallel structure – with parallel timelines – that considers the technical progression of Iran’s civil nuclear programme in conjunction with the evolution of a (more covert) weapons programme, such as it may exist, and, perhaps more importantly, the debate that has surrounded the nuclear programme since its birth.

Within this, several questions will be answered. How accurate is speculation about Iran’s nuclear programme? What was the relationship of first the Shah, and then the Islamic Republic, to nuclear power? How has the programme altered in purpose under different regimes, and how and why have motivations changed over time? The scope and range of possible Iranian desires for nuclear weapons must and will be considered. Iran is, after all, a country with, it believes, very real security threats in a world that it also believes to be fundamentally hostile. And, above all, why does Iran do it? Why does one of the world’s great oil producers pursue a programme ostensibly for nuclear energy that has brought it the hostility of large parts of the world, the fear of its neighbours, and possible military attack by Israel or the most powerful nation on earth? Is it just a desperate urge to build a bomb or are other influences at work?

Each day seems to bring news of yet another Iranian scientist assassinated, of more sanctions placed on Iran and of more Israeli threats to strike its nuclear facilities. Obama’s failed détente has left hardliners in Washington, Tel Aviv and many European capitals with the belief that diplomacy is now exhausted and only the ‘military option’ remains viable. Iran, in turn, continues to enrich uranium and becomes ever more belligerent and intransigent. The two sides now seem to be heading, almost ineluctably, towards conflict. The Iranian nuclear crisis is a drama with a panoramic cast of characters and a sweeping ‘narrative’ now in danger of ending in a disastrous denouement that could seriously alter the global balance of power and, with it, international stability. To be properly addressed, Iran’s nuclear programme must be properly understood: only by doing this can we hope to resolve what has become one of the global crises of our age.
To John Gurney
PROLOGUE

Under watchful eyes, a crowd chanted slogans on the street outside my Tehran window. Late morning; early August 2005. I was in the University dormitory on Kargar Avenue, the city’s carotid artery that runs from the down-at-heel Rah Ahan Square in the south up into the affluent vistas of the capital’s northern reaches, once home to the Western-educated elite that gathered around Sa’dabad, the Shah’s old palace. Barring the University entrance, two wary guards studied a crowd of tieless men and veiled women, while assorted university types – my language teacher, some clerical staff, the trio of depressed African students I vaguely knew – passed through the gates. The crowd’s roars became louder and more aggressive. It wasn’t a demonstration as such, but about 40 people had gathered to ‘celebrate’ Iran’s decision, announced that day, to resume uranium enrichment after two years of suspension. Iranian flags were waved. A few of the more vocal participants held up pictures of Iran’s recently elected President, Mahmoud Ahmadinejad, as they shouted about nuclear power and the Great Satan; there was a lot of anger for a celebration. I recognized references to the Iran–Iraq war and the long-overthrown Iranian Prime Minister, Mohammad Mossadegh.

I had come to Iran from Oxford University to study Persian and, only three days into my trip, I hadn’t yet spoken to many Iranians. I lived down a corridor in the Tehran University dormitory with two French friends, a Syrian (with whom I had reverently shared a single can of illegally procured Heineken) as well as a German and a Kazakh. Two European engineers lived on the first floor while the rest of the building was populated with Kurds from Iran’s Kermanshah province. Iranian students were housed separately, and encouraged not to mix. But everywhere I went I encountered the nuclear programme – only two days earlier a taxi driver had lectured me on the subject at considerable (and tedious) length. A nuclear programme, he had informed me, was the country’s ‘right’ (peaceful nuclear power was the key to economic growth), as was the ‘nuclear fuel cycle’, a term he kept repeating, but I suspected he didn’t fully understand.

He told me that Iran didn’t want nuclear weapons; that it was an advanced country and, as the nuclear programme showed the world, one of the ‘great nations’. The problem, he added disapprovingly, was the West, mainly my country Britain and of course the USA, which wanted to ‘kill’ the programme. The 1953 coup that had overthrown Mohammad Mossadegh, Amrika’s ‘enslavement’ of the Shah, and now the endless Western accusations against the nuclear programme were all part of (to paraphrase) a broader scheme of Western oppression that had created a world he decried in a single geopolitical aphorism: ‘England: the grandfather; America: the son; Israel: the grandson’. If simplistic, his analysis had the virtue of certainty.

Iranians love talking to Westerners, even if their government does not. Over the coming weeks I was lectured on the nuclear programme by two more taxi drivers, my