

# Considering population and war: a critical and neglected aspect of conflict studies

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This study analyses the relationship between war and population. The impact of the growth and decline of population on important types of warfare—great power, small power, civil war as well as terrorism—is illustrated, with the objective in each case to be descriptive of risk. I find that population change has a significant impact on each, with the greatest causal impact on small power conflicts, civil war and upon terrorism. I conclude with some reasons for guarded optimism about the incorporation of population as a component of analysis in the discipline of international studies, and for the potential to devise new solutions to prevent conflict.

**Keywords:** civil war; great power war; population growth; population decline; small state war; terrorism

## 1. INTRODUCTION

For political scientists, studying the relationship between population change and war is a bit like geological change—not immediately important and so it is infrequently noticed. Just as an earthquake compels one's attention whether one is a geologist or not, population change will be the earthquake in the study of international politics that compels the attention of the discipline. The tectonic plates of population change are shifting underneath the feet of political scientists, and the resultant analytical and policy earthquakes will remake the features of international politics in this century.

Political scientists are open to many theoretical and methodological approaches to the analysis of war. Yet, the relationship between population and war is not one of them. The reason why says much about the health of the study of international politics. Population, and insights from the life sciences more broadly, fall outside the standard social model forcefully advanced since Durkheim—social facts may only be explained by other social facts (Barkow *et al.* 1992). For traditionally trained social scientists, the biological is taboo, and population is thus neglected. The cost of this neglect is significant. Shunning the life sciences costs political scientists a better understanding of political behaviour (Thayer 2004b; Barkow 2006).

Conflict is typically studied through the lens of domestic (such as regime type or militarism) or systemic factors (e.g. polarity or alliance behaviour) that preclude population. Indeed, with the notable exceptions of Hans Morgenthau and A. F. K. Organski, population is rarely acknowledged at all by the major theorists of international politics (Morgenthau 1948; Organski 1958; Organski *et al.* 1984). Interestingly, military leaders such as Eisenhower or, more recently, the head

of the CIA Michael Hayden have been more aware of possible interrelationships between population and conflict.

While changes in power, such as relative economic power, are well studied in international politics, power is conceived as economic or military, not population. Political scientists at their annual conventions and related meetings are very comfortable discussing economic power or military might, but not demographic power or 'youth bulges'.

One of the objectives of this study is to encourage political scientists to broaden their field of study to include population and help them comprehend its important role in causing inter- and intra-state conflict. The bottom line is transparent: rapid population growth threatens international stability and affects state power. For this reason alone, it should be of great interest to scholars of international politics. Fortunately, recent scholarship has made some progress in this area (Potts & Hayden 2008). Yet, much work needs to be done to explore the impact of population on warfare and to make scholars of international politics aware of the importance of population as a central explanatory variable for conflict studies.

This study is divided into three parts. The first considers war, population and time in order to define and frame the discussion of a complex relationship. The second examines the essential components of population and warfare from the standpoint of international studies and explains the key contributions or insights possible when population is considered. The third offers a short conclusion and reason to expect progress, however slow, in the application of population as an important variable to be considered when approaching the fundamental questions of war and peace.

## 2. FRAMING THE DISCUSSION

When considering the relationship between population and war, both variables must be analysed in

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component parts due to their complexity. To this relationship, the consideration of time must be added. Like population, time is an element not considered by most political scientists but is equal in importance to the other two variables. A demographic shift over several generations is certain to receive less attention from the national security community than the latest weapon system or military campaign. Countless articles and scores of books will be devoted to the procurement of major systems like the F-35, North Korea's nuclear programme, or the problems faced in Afghanistan or Iraq. Many fewer will be devoted to population. This has to change. To modify Clausewitz, this trinity of war, population and time is greatly significant for the study of warfare in the past as well as in the future.

It is also important to highlight and accept divisions of style between those engaged in strategic studies and sociologists, economists and development specialists. In crossing disciplinary boundaries, we need to understand that the everyday academic assumptions of colleagues who belong to other schools of thought may frame the same debate in different terms. A military analyst of Sino-American security competition, or Islamic *jihad*s, will frame any debate on the assumption that national security is paramount and conflict could occur and he or she will think through every possible scenario, including those which would be politically painful, such as conflict between racial groups currently living in reasonable harmony. Some social or political scientists who assume that peace is the default position find this framing unnecessarily assertive. Even more difficult is the need to balance a well-grounded sense of danger presented by one particular group hostile to another against the risk of antagonizing moderates within a necessarily heterogeneous group who may be trying to restrain extremist behaviours.

#### (a) *Types of war*

Wars come in many forms but all may be conceptually divided into two different types: inter-state and intra-state or civil wars. In turn, inter-state wars come in numerous types. The greatest of these is hegemonic war (like World War II), great power war (Franco-Prussian war), great power versus small power (of which the Soviet invasion of Hungary is an example), or small power against small power (such as the Iran–Iraq war). Historically, there is an inverse relationship between the intensity of the level of war and its frequency (Levy 1984).

Accordingly, intra-state conflicts are more common and usually less costly in terms of numbers of people killed, although civil conflicts are no less vicious in their more localized effects. Consider the genocide in Rwanda or Yugoslavia, or the still unpunished madness of the Khmer Rouge. The human cost may be just as great in terms of refugees and traumatized civilians, ruined economies and destroyed ways of life.

Terrorism also deserves note in this analysis. Although terrorism is not considered warfare, the rise of Islamic fundamentalist terrorism is changing this. Conventional terrorist groups like the Italian

Red Brigades, the Irish Republican Army or the Red Army Faction have involved only a small number of dedicated members backed by supporters perhaps numbering only in the hundreds (Crenshaw 1995; Hoffman 1998). With Islamic fundamentalist terrorism, the template is changing. What is profoundly worrying for those tasked with defeating Al Qaeda and associated movements is a demographic fact: Many Islamic states have youth bulges, a demographic condition where the number of youth aged 15–24 is a high proportion of the rest of the adult population (Howe & Jackson 2008, p. 34). Although it is difficult to say with any certainty how many, a significant and growing number of young males in the Muslim world—and, equally significantly, in the West—are joining the jihadist movement (Gunaratna 2002; Burke 2004; Sageman 2004, 2008; Gerges 2005; Khosrokhavar 2005).

#### (b) *Key population considerations*

Population growth by itself does not cause war, not even increases in overall population density; but particular types of population changes are associated with political conflict (de Sherbinen 1995). To consider the relationship between population and warfare, it is useful to consider population composition and population dynamics. Population composition includes primary and secondary effects on warfare including: population size, sex ratios, infant mortality and population age. Depending on the particular case, not each of these variables is equally important or even relevant. For example, in the present study, population growth rates will be the most important. Second-order considerations including religion, race and class will not be considered here.

Second, population dynamics are critical as well. Population dynamics consider changes in the composition of a population over time. These changes may occur in either absolute size or relative proportions of population groups. Two factors that are of great significance are population growth rates (either positive or negative) and migration within the state or between states. In all cases, population change occurs in a political, economic and cultural context, which should be considered for more detailed analyses. As scholarship advances, we may expect that methodological hurdles, such as with datasets and auto-correlation, will be increasingly overcome.

#### (c) *The consideration of time*

The fact that population change works over generational time rather than the truncated time horizon of most scholars of international politics is unfortunate since it has hindered its incorporation into the discipline. Experts in the realm of international politics are typically focused on the next election or the war or crisis of the minute. Owing to the slow nature of demographic change, even as we demonstrate the relationship between population and war, we must keep in mind that many political scientists will not be interested due to the immediacy of the items on their research agenda. I expect this will remain true even as the world's population grows from 6.8 billion

in 2009 to 8 billion by 2025 (National Intelligence Council 2008, p. 19). When it comes to time, political scientists may not be as bad as journalists, but they are not historians either.

While it is the case that most population change occurs over decades, disasters—natural and human made—may cause abrupt significant change. The eminent economic historian Eric Jones has identified the key factors that truncate or accelerate change: (i) geophysical (earthquakes, volcanic eruptions, tsunami); (ii) climatic population (hurricanes, typhoons, floods, droughts); (iii) biological (epidemics, epizootics, crop disease, locust invasions); and (iv) social (warfare, settlement fires, collapse of man-made structures) (Jones 2003, p. 24).

These factors remain in the contemporary period and are augmented by another source of population change—immigration. As we witness in Europe, where population change is accelerated, Muslim populations have gone from a negligible amount to substantial numbers, 15–18 million, in a single generation (National Intelligence Council 2008, p. 25). Most European nations have had to adjust to this change with varying degrees of success (Nökel & Tezcan 2005; Bowen 2007). Yet again, for most scholars of international politics, such change is too slow to impact the problems defined by their research agenda or not identified as sufficiently important to be taught to graduate students in a seminar.

### 3. HOW DOES POPULATION AFFECT WARFARE?

If we step back a moment and consider this relationship in the tradition of big history, dismissing the welter of a host of events, we see that population's influence has been tremendous. In this section, I suggest precisely how the simple structure of population change illuminates significant facts about warfare in the past and present. Rapid population change, in particular, influences the balance of power among states and may directly contribute to war. Political scientists and statesmen should think of a population balance of power just as they do the traditional balance of power.

When we consider the role of population change historically, we see that the discovery and conquest of the New World is one of the most significant events in human history and the one that most dramatically captures the impact of population change. The rapid decrease in population due to diseases the Conquistadores had unknowingly introduced made the European conquest of the New World possible. By rights, and by the standards of power used by most political scientists, the Aztecs and Incas should have destroyed the Spanish. Eurasian diseases carried by the Europeans were their unintended but powerful ally—one so powerful that it made the Spanish victory in the great power war with the Aztecs and Incas possible.

But the epidemiological balance of power overwhelmingly favoured the Spanish and made their conquest of an American empire possible (Thayer 2004a, pp. 199–216). Cortes' key allies were Eurasian diseases—smallpox, measles, influenza—which were unleashed upon a virgin population and made his

1519 conquest of Tenochtitlán possible. The Inca were decimated by disease and concomitant civil war before Pizarro and his 168 men landed in 1532. Almost a 100 years later, the Wampanoag Indians were weakened by disease when the Pilgrims arrived in 1620, and this fact greatly facilitated European settlement and rapid expansion.

The native populations in the Americas were vulnerable to Eurasian diseases due to their isolation imposed by climatic change brought about by the rising sea levels. The Earth's warming inundated the land bridge between modern day Russia and Alaska, preventing population transfer in significant numbers. American populations crossed that bridge about 12 000–11 000 BC and thus avoided exposure to Eurasian diseases, such as smallpox, which afflicted Eurasians beginning in India around 1500 BC.

The epidemiological balance of power also worked to alter the course of European imperialism. The major reason why the trajectory of Africa colonization differed from the Asian was the presence of potent diseases in its tropical regions. The mortality of European troops in Senegal or Sierra Leone was tremendous, almost 50 per cent in the years 1819–1836 (Curtin 1989, pp. 7–8; Curtin 1998, p. 239; Thayer 2004a, pp. 210–211). It was not until the Pasteur-Chamberland water purification filters were deployed in garrison and on campaign that European armies were successful in establishing colonies in Africa and China.

It is important to be reminded of the impact of disease on population and therefore warfare, not simply because viruses keep humans humble, but because a pandemic today could be greater than what the world has experienced thus far (such as with HIV/AIDS in Africa, extensively resistant (XDR-TB) tuberculosis, highly pathogenic avian influenza like H5N1, or the SARS coronavirus crisis of 2002–2003) and will have a huge impact on the global economy and state power.

Population and warfare have had a large impact on empires as well. Peter Turchin's excellent scholarship demonstrates the connection between population growth and empire formation largely through warfare, with the denouement of civil war and imperial destruction (Turchin 2006). Introducing the concept of cliodynamics, identifying large-scale historical change with particular emphasis on cycles, and drawing heavily upon the life sciences, he makes his central argument: a demographic imbalance of power can aid imperial success in warfare, which brings prosperity (imperiogenesis) and too rapid population growth, which, in turn, causes internal unrest and civil war, inevitable population decline and, finally, imperial collapse (imperiopathosis).

These examples help illustrate the impact of population change on major events in the history of international politics, but they also sensitize scholars of international politics to the critical impact population change can have. To use the language of the discipline, population change may yield both an offensive dominance (taking territory is easier than defending it), or defensive dominance (defending it is easier for states and sub-state groups). I will now explore the impact of population on the types of warfare I have identified. As table 1 summarizes, population has a significant

Table 1. The impact of population change on types of wars.

type of war	impact of population change
great power war	<i>significant for stability</i> 'demographic peace' argument, possible stabilizing impact of no surplus males <i>significant in negative effect</i> destabilizing in Europe due to increasing Muslim minority, and shifting balance of demographic power. Destabilizing in China and, to a lesser extent, India due to sex ratio imbalance
small power war	<i>significant when declining</i> particularly Iran, may increase proliferation incentive due to reduced conventional deterrent <i>significant when increasing</i> contributes to aggression through unit level factors (economic, migration, state failure, social imperialism) and systemic (preventive war pressures)
civil war	<i>significant when increasing</i> destabilizing with rapid population change in multiethnic states. Shifting balance of demographic power causes an internal security dilemma and internal security competition, as in Bosnia, Kosovo, Macedonia and Sri Lanka
Islamic fundamentalist terrorism	<i>significant</i> youth bulges in Egypt, Saudi Arabia and Yemen should provide ample recruits problem made worse by marriage markets and polygyny

impact on warfare in each of the four categories considered: great power wars, small wars, civil wars due to population change and Islamic fundamentalist terrorism conducted by Al Qaeda and associated movements.

#### 4. GREAT POWER WAR

Population does not have a significant impact on great power wars simply because, and mercifully, there have not been any since World War II. This happy fact is due to the presence of stabilizing factors such as nuclear weapons, the influence of US military power and the network of alliances created by the United States (Thayer 2006).

However, the impact of population changes on stability in Europe might be considerable. According to demographer Gunnar Heinsohn, it is the lack of surplus males that makes Europe peaceful (Heinsohn 2006). While we must be sensitive to other factors, in general, a surplus of young males increases the risk of conflict. The reverse of this is the irenic condition Heinsohn identifies is what Neil Howe and Richard Jackson felicitously term the 'demographic peace' (Howe & Jackson 2008, p. 34).

The impact of the demographic balance of power will have an effect on all extant great powers: all face a negative change in the balance of demographic power. The impact of how great a change is not appreciated by the national security community in the United States. The United States has the highest total fertility rate of any industrialized nation, but the make up of the population is changing due to immigration and differential birth rates in different ethnic groups. The white population is declining demographically. Had the US population (since 1950) grown at the same rate as Pakistan, it would now have almost a billion people. According to the United Nations Population Division, in the 45–60 age bracket, the USA and the

UK now have a four-to-one advantage over Afghanistan and Pakistan. But in the 0–14 age bracket (those who will reach military age in 2020 and after), the 36 million boys in the UK and USA are outnumbered by the 38 million boys in Afghanistan and Pakistan. Most of those 38 million boys are likely to be second, third or fourth sons, whose loss in conflict would not be catastrophic for their families. This is in contrast to the West, where a boy is similar to the only son or, perhaps, second son, and where the loss would be more significant if not less tragic.

At present, European states do not have a surplus population to sacrifice in war, contributing to stability on that continent. European states are devising policy solutions to reverse this, although none more direct than Russia's efforts. Russia's population of 142 million is shrinking by more than 700 000 per year and may be halved by 2050. President of Russia Vladimir Putin termed this 'the most acute problem facing our nation today' (Howe & Jackson 2008, p. 35). In part, Putin's concern must be anchored in the fact that many of Russia's neighbours have significant populations, including China whose presence is increasing in Russia's Far East.

To reverse this, President Dmitry Medvedev's government created the 'Order of Parental Honour' to women with many children (Blomfield 2008). Not to be outdone, the governor of Ulyanovsk encourages couples to skip work and have sex instead, promising any woman who gave birth on June 12, Russia's National Day, qualification for a prize (Malkin 2007).

But the impact of declining indigenous populations in Europe, Canada and the United States is Janus-faced with respect to the stability of the Atlantic security architecture over the last 60 years. The ageing of indigenous populations, passing 35 per cent in some European countries by 2030, and the rise of heretofore minority populations to majority



status will have dramatic implications in these countries. There are two principal concerns.

The first is a palpable unease in the United States security community over the increasing political strength of Muslim minority populations in NATO countries, with an expected 25–30 million Muslims in Western Europe by 2025 (National Intelligence Council 2008, p. 25). The impact seems particularly acute in Britain. The expectation among defence analysts in Washington is that there will be an inverse relationship between the political power of the Muslim community and the state's reliability as an alliance partner. As the political influence of the Muslim community grows, the pressure builds for Britain to change its traditional foreign and defence policies from being in tandem with the United States to being an erstwhile supporter or even adversary. This concern is made on both sides of the Atlantic, usually sotto voce, but, in the UK at least, increasingly publicly, such as by the Royal United Services Institute (RUSI) 'Gray Eminences' article (Prins & Salisbury 2008).

The second is the potential for domestic unrest in European states that have great power effects. For example, this might occur over the treatment of the Russian minority in Ukraine or the Baltic states. Recall the 'hacktivist' computer attacks against Estonia—a NATO member—in 2007, which were almost certainly sponsored by Moscow. It might happen due to oppression of the Serbian minority in Kosovo or the Albania minority in Macedonia.

Significant domestic unrest also could be due to the rise of radical politics among the Muslim community, among the indigenous peoples of Europe, or with some mix of the two. It is rather an understatement to remark that Europe has seen its share of domestic political tension in the last century due to the death of Absolutism and rise of Nazism and Communism. The challenges introduced by an increasingly radicalized Muslim minority will be significant, particularly if, first, it results in such strain with Washington that Europe's 'American pacifier', to use Josef Joffe's felicitous phrase, is removed (Joffe 1984). Second, minorities are unlikely to come to power without considerable turbulence in the domestic political system. No doubt, in some countries this will not be a problem, but in some others it might. The spillover effect into other countries is certain to increase tensions, even among traditional allies. Third, they are not likely to come to power simultaneously, introducing variation in threat perception and related changes in alliance formation and security competition.

No matter how dramatic these movements were, the Continent has never undergone such a dramatic change as it is now. A minority population with a radically different religion and fecundity than the majority population is causing profound political, economic, social and cultural change. Several scenarios are possible. Whether an ageing Europe is able to integrate its Muslim populations and re-assert heretofore dominant political principles, economic practices and cultural beliefs or Europe's Muslims integrate indigenous Europeans into the dhimmitude of Eurabia identified by Bat Ye'or remains to be seen (Ye'or 2005). It is important to note that Canada is not immune from

Table 2. Significant muslim minorities in European states. Significance equals at least 2 per cent or more. Adapted from *The Economist* (2003); Zentralinstitut Islam-Archiv (2007); United States Department of State, Bureau of European and Eurasian Affairs (2008).

country	total population	muslim population	muslim (%)
Cyprus	788 457	264 172	18.00
Bulgaria	7 640 238	960 000	12.00
France	64 107 812	5 000 000	6.00
The Netherlands	16 341 925	850 000	5.00
Austria	8 169 929	400 000	4.80
Germany	82 515 988	3 300 000	4.00
Sweden	9 006 405	351 250	3.90
Belgium	10 445 852	400 000	3.80
UK	59 834 300	1 615 526	2.80
Slovenia	2 023 358	47 488	2.40
Spain	46 063 511	900 000	2.10
Denmark	5 415 978	100 000	2.00

these dangers as well, as the 2006 plot to bomb multiple targets in Ontario revealed (Austen & Johnston 2006).

If it is the latter, the demise of the EU project, the return of great power security competition, and even warfare, are likely. This is because Muslim minorities vary considerably in Europe, Turks in Germany, North Africans in France, Pakistanis in the UK, and their growth occurs at different rates due to legal and illegal immigration as well as varying birth rates.

Table 2 indicates the size of significant Muslim minorities in European states. For present purposes, significance equals at least 2 per cent of the total population. In these conditions, scholars of international politics expect security dilemma logic to drive increasingly worsening security competition and preventive war pressures within Europe (Posen 1993; Prins & Salisbury 2008).

This would be due to internal pressures. For example, a crackdown on Muslim immigration might provoke a reaction among the ethnic group in neighbouring countries. Were Belgium to attempt to terminate immigration, there would likely be an adverse reaction among Muslims in France. Second, systemic pressure would play a role too as the decline of the traditional interests of the UK, to select an example, would compel a recalculation of the alliance and security relationships at a minimum and change the threat assessment of the UK in other countries. All in all, it would mark the return of great power politics to the Continent.

One final note on the subject of great power war concerns China and India. China is a rising great power and is likely to supplant the United States as hegemon. But the study of population again reveals an important insight that may hinder the growth of Chinese and Indian power (Hudson & den Boer 2004). The sex ratio imbalance resulting from the 'one-child' policy implemented in the 1970s will have profound effects for the country and international politics as the Chinese population ages, threatening

social stability and improving standards of living, hallmarks of the Communist government and components of the legitimacy of the Communist regime. With such a surplus male population, China may be more risk-accepting in an international crisis or more likely to undertake expansionism. Valerie Hudson and Andrea den Boer's classic study of this problem finds 'that societies with young adult male sex ratios of approximately 120 males to 100 females and above are inherently unstable' (Hudson & den Boer 2004, p. 264). At 117, China is on the cusp of that now and, according to Hudson and den Boer, by 2020 will have 29–33 million surplus males aged 15–34 (Hudson & den Boer 2004, p. 186).

India is a growing ally of the United States, and is emerging in every respect; it is expected to surpass China's population by 2030 and New Delhi's military capabilities are becoming potent. In contrast to the difficult relationship during the Cold War, the warming of this relationship is the result of the common potential adversary they face: China. India confronts the same surplus male problem, having an approximately equal number as China by 2020. But the sex ratio imbalance is less severe than China's at about 110 males to 100 females (Hudson & den Boer 2004, pp. 124–125). The impact on India, while important, including making India most risk acceptant, will be less than for China. While both have Diaspora populations, India's is larger, but perhaps of greater significance are India's identification of the population, the response of its governmental institutions, and the fact that regime legitimacy is not at stake due to India's democratic government.

## 5. SMALL POWER WAR

The impact of population change on small power war is noteworthy and broadly comes in two forms—population decline leading to vulnerability or population growth leading to expansion. In this section, I briefly examine each, but at the outset of this discussion it is important to note that many parts of the developing world now have a total fertility rate (TFR) at or below two. While negative population change in Europe, Canada, Japan and the United States is significant, the population decline in the developing world is also changing as it undergoes the demographic transition from high mortality and high fertility to low mortality and low fertility common during economic development. A second variable affecting small power war is the impact of organized family planning. These can accelerate fertility decline, as in South Korea or Thailand, or through their absence slow the demographic transition, as in much of Africa or Pakistan (Campbell 2009). Since 1970, in the developing world, the average TFR 'has fallen from 5.1 to 2.9. Meanwhile, the median age of the developing world has risen from 20 in 1970 to 26 in 2005. It is projected to keep rising to 31 in 2030 and 35 in 2050—at which point the typical developing country will be about as old as the United States is today' (Howe & Jackson 2008, p. 33).

When we consider the consequence of population decline in the developing world, Iran is a classic case for illustrating the consequence of increasing

vulnerability. Since 1980, Iran's fertility rate has declined from 6.6 to 2.1 births per woman, and even in rural areas the population is falling off. As a result, Iran's conventional power has decreased. Iran faces a wicked multiple front war problem. Tehran must consider threats emanating from Washington, Tel Aviv, Baghdad, Gulf sheikhdoms and Riyadh, Ankara, the Caucasus, Afghanistan, the Central Asian states and even erstwhile allies like Moscow. Iran does not have the ability to meet the multiple threats it faces in the absence of nuclear weapons with its diminishing, albeit technologically more advanced force structure.

The exceedingly rapid population changes in Iran have two countervailing impacts. On the one hand, the shift to smaller families has been associated with more women in tertiary education and the possibility that the female voice could soften some aspects of radical Islam. On the other hand, there may be a relationship between population decline and Tehran's nuclear programme. At this point, one does not know the actual motivation of the present regime's desire to acquire nuclear weapons, or what the final result will be in Tehran's rush to the bomb. Nonetheless, it is reasonable to assume that the slowing of population growth in Iran worries the regime's defenders. The resulting decline of Iran's population decreases their ability to conventionally deter opponents, which may account for their desire to acquire nuclear weapons.

The Iranian case is not unusual. We see similar effects in the ageing of Colombia's last youth bulge that has contributed to the ageing of the population and contributed to greater stability in that country—the 'return to normalcy' of which they speak in Bogotá. Likewise, Turkey's fertility has fallen below that of the US, which means Turkey has less of a population to be exported to Europe, perhaps reducing tension with the EU.

Unfortunately, population growth in the developing world may also be expected to have negative effects for stability. As table 3 reveals, 11 countries in East Africa confront significant youth bulges.

There is reason for pessimism due to the tremendous and concentrated population growth in Burundi, Ethiopia, Eritrea, Kenya, Malawi, Uganda, Rwanda, Somalia and Sudan that will strain resources and provide surplus males. If not offset by countervailing policies, including greater emphasis on making family planning more accessible (Prata 2009), there is heightened risk that the state will fail, or that aggression will occur against internal enemies and external foes. Even the greater use of Nile water resources due to simple population growth might lead to tension among these states or with Egypt (Gleick 1993).

Growing populations will stress the labour force in weak economies. More educated youth will aspire to elite positions, which are not likely to expand at the same rate as the population leaving many over-educated relative to the calibre of their jobs, and increasing urbanization will increase the risk of violent conflict (Goldstone 2002, pp. 5–10). Furthermore, there may be significant migration to the neighbouring states which may be an unwelcome and destabilizing consequence for the host country (Weiner 1992/93).

Table 3. Selected countries in East Africa with youth bulge by fertility rate. Adapted from *World Population Prospects: The 2006 Revision*; United Nations Population Division. See <http://www.un.org/popin/data.html>.

country	total population aged 15–24 (%)	fertility rate
Burundi	39.83	6.80
D.R. Congo	37.30	6.70
Uganda	40.06	6.46
Somalia	33.86	6.04
Rwanda	43.87	5.92
Malawi	37.34	5.59
Ethiopia	35.85	5.29
Mozambique	35.32	5.11
Eritrea	37.82	5.05
Kenya	38.76	4.96
Sudan	33.84	4.23

Other causes of conflict at the unit level will be present, such as social imperialism, using an external threat to suppress potent internal cleavages, a policy that often leads to disaster, as demonstrated by Otto von Bismarck's 'Marriage of Iron and Rye', Saddam Hussein's invasion of Iran, or General Galtieri's invasion of the Falkland Islands. However, the temptation may prove too great in the face of serious domestic unrest.

At the systemic level, there are equally significant risks. Moreover, expanding but staggered population growth in neighbouring states will provide the faster growing states an incentive to exploit their temporary advantage in relative demographic power before the window closes, or worse shifts against them. This pressure is at play in the relationship between Armenia and Azerbaijan. It casts its shadow as well in the guarded relationship between Malaysia and Singapore.

In addition, classic systemic pressures promote the growth of security concerns, intensifying security competition. If not arrested by extra-regional alliances or by an institutional framework to reduce competition and promote transparency, such as a more capable African Union (AU), the likelihood of conflict is heightened. Equally, since analysts and policy-makers possess the ability to anticipate that the region is ripe for conflict, there is the possibility to prevent it through bilateral mechanisms, like alliances, great power inducements or coercion, as well as multilateral measures through the UN.

Turning to the Islamic world, the data reveal that Palestine, Afghanistan, Iraq, Pakistan, Yemen (as well as Somalia and Sudan) have TFRs in the 4–7% range (table 4). In addition, important countries like Saudi Arabia, Syria and Egypt remain contenders with high fertility rates.

Perhaps, the most famous case is Palestine (Occupied Palestinian Territory). It has consistently maintained a demographic balance of power over Israel. 'The population of Gaza jumped from 240 000 in 1950 to almost 1 500 000 in 2007. In 2006 there were 640 000 Jewish boys under 15 in Israel, against 1 120 000 Arab boys under 15 in Gaza, the West

Table 4. Selected countries in the Islamic world with youth bulges by fertility rate. Adapted from *World Population Prospects: The 2006 Revision*. United Nations Population Division. See <http://www.un.org/popin/data.html>.

country	total population aged 15–24 (%)	fertility rate
Afghanistan	36.94	7.07
Yemen	39.84	5.50
occupied Palestinian territory	35.56	5.09
Iraq	34.38	4.26
Pakistan	35.21	3.52
Saudi Arabia	28.22	3.35
Jordan	32.55	3.13
Syrian Arab Republic	36.63	3.08
Oman	32.55	3.00
Egypt	31.20	2.89
Bangladesh	31.37	2.83
Libyan Arab Jamahiriya	31.15	2.72
Algeria	32.06	2.38
Morocco	30.28	2.38

Bank and Israel. The last cohort with a Jewish majority is the 30–44 age bracket—540 000 Jews versus 410 000 Arabs—which is now past prime military age' (Whelton 2007). The consequences of Palestinian population growth in the West Bank and Gaza are many, but fundamentally they are likely to ensure that the conflict with Israel will continue for decades to come until, through attrition and the ageing of the population in both states, a settlement is reached.

As with East Africa, similar unit level causes will be present for individual regimes, such as growing labour forces and the temptation of social imperialism. Clearly, these effects will be greater for some countries than others. Autocratic regimes in Egypt and Syria, for example, have greater ability to suppress unrest than Jordan. Economic and migratory pressures are not as great as East Africa, although the stall in the decline in the TFR in Kenya since the early 1990s and projected increase in population in 2050 is disturbing (Ezeh *et al.* 2009). In addition, systemic pressures for conflict are reduced due to an active US presence in the region and lack of concentration as in East Africa. Consequently, although the evidence is mixed, for this region we should be guardedly optimistic about the effect of population on interstate war.

## 6. CIVIL WAR

We see population's influence on civil war principally as the result of rapid population change among ethnic groups. The causes of the variation in the size the population of different ethnic groups of course may be multiple. But from the perspective of population and war, we should expect that fertility will vary by ethnic and religious groups, heightening the risk of conflict.

Just as in the state system, groups on the wrong side of the demographic balance of power will feel threatened and those growing faster will hasten to claim a dominant position and the spoils that come with it, addressing what they perceive to be an inconsistency in status. This is a



problem in many countries since there is a significant ethnic or religious minority in most states. If we recall the wars following the state failure of a unified Yugoslavia, concern over birth rates of rival ethnic groups was a notable concern for Bosnians, Croats and Serbs. The conflict that plagued those states witnessed the return of rape as an instrument of warfare, and in the Bosnian conflict it was done with unofficial approval of the three governments. One of the principal Serbian concerns in the conflict over Kosovo was the Albanian birth rate and the related fear that the balance of demographic power was rapidly shifting against the Serbians in that region of historical significance. This fear of the Albanian birth rate is echoed in the Former Yugoslav Republic of Macedonia as well.

A second demographic problem that may contribute to civil war is the dynamics of the demographic transition. Of course, other considerations play a role, and exacerbate the affect of demographic transition. The first of these is rapid urbanization which will stress the infrastructure and employment opportunities for young, formerly rural workers, and provide a breeding ground for gangs, paramilitary activity, and heterodox ideologies and religions. The second will be heightened expectations among labourers due to income variation and the disconnect with what is seen and desired on television or on the Internet versus the actual conditions of their lives. Third, environmental strains will occur as a rapidly increasing population degrades or diminishes forests, potable water and other resources, while advancing pollution and soil erosion.

Youth bulges are also associated with political crisis and revolution. Distinguished political scientist Jack Goldstone notes that most 'major revolutions—the English Revolution of the seventeenth century, the French Revolution of the eighteenth century and most twentieth century revolutions in developing countries—have occurred where exceptionally large youth bulges were present' (Goldstone 2002, p. 11). To this one should add the nationalist movements which were so important, sometimes tragically: Mazzini's 'Young Italy', Chernyshevsky's 'Young Russia', Princip's 'Young Bosnia' or the 'Student Movement' in China in the 1920s and Nazism and the Hitler Youth (Moller 1968). Most of the members of America's Civil Rights Movement in the 1960s were young people. Individuals cannot be forgotten either: Martin Luther was only 34 when he published the Ninety-five Theses.

This risk is a real one, and many European states (and Canada) are not immune. Specifically, this is a particular problem in the European states with significant and increasing Muslim minorities, identified in table 2. The UK has witnessed the events of 7/7, while another series of attacks by Muslim fundamentalist terrorists two weeks later was only foiled by the incompetence of the perpetrators. In the summer of 2006 planned suicide attacks on aircraft departing from Heathrow and Gatwick airports were narrowly averted after the arrest of the terrorists and in the summer of 2007 Muslim fundamentalist terrorists attempted car bombings in the West End of London and at Glasgow airport.

The RUSI 'Gray Eminences' study mentioned above identified the shared danger of European states. It described the UK as a 'fragmenting, post-Christian society, increasingly divided about interpretations of its history, about its national aims, its values and in its political identity', which is made worse by the 'firm self-image' of its foes (Prins & Salisbury 2008, p. 23). The RUSI study continued, noting the UK's 'lack of self-confidence is in stark contrast to the implacability of its Islamist terror enemy' (Prins and Salisbury 23).

When we compare the data on youth bulges, contained in table 4, with the incidences of social unrest and violence, if not civil war, in the world today, we find that there are 88 countries with youth bulges, and 60 of them are experiencing significant social trouble (table 5). Despite this notable correlation, it would be too strong a claim to assert that youth bulges or countries going through the demographic transition cause civil war. Clearly, external threat considerations, political institutions, alliance networks, poverty, racial and religious discrimination, and historical memory, among other variables, all play roles. Nonetheless, when scholars, analysts, and aid agencies adopt a demographic perspective and maintain sensitivity to a changing demographic balance of power, they have a greater ability to suspect trouble and more importantly anticipate it.

## 7. TERRORISM

The impact of population change on Islamic fundamentalist terrorism is great. The youth bulges in countries with high rates of Islamic fundamentalist belief—namely Afghanistan, Iraq, Pakistan, Palestine, Somalia, Sudan and Yemen (table 4)—ensure that the recruiters for Al Qaeda and associated groups should have ample recruits, in the absence of successful countervailing messages to suppress recruitment.

In contrast, it is critical to note that youth bulges have run their course in Algeria, Iran, Lebanon, Morocco, Tunisia and Turkey. At present, these countries do not produce significant numbers of suicide bombers. Of course, given the consequences of Islamic fundamentalist terrorism—9/11, 10/12 in Bali, 3/11 in Madrid and 7/7 in London—the relationship between population and terrorism must also be evaluated to identify causes and solutions.

Youth bulges are a good place to start, and their effects are increasingly studied. In its review of the origins of the terror plot, the *9/11 Commission Report* (n.d.) identified a central cause: 'By the 1990s, high birth rates and declining rates of infant mortality had produced a common problem throughout the Muslim world: a large, steadily increasing population of young men without any reasonable expectation of suitable or steady employment—a sure prescription for social turbulence' (The *9/11 Commission Report* n.d.; pp. 53–54). As the report continued: 'Frustrated in their search for a decent living, unable to benefit from an education often obtained at the cost of great family sacrifice, and blocked from starting families of their own, some of these young men were easy targets for radicalization' (The *9/11 Commission Report* n.d.; p. 54).



Table 5. Youth bulges and fertility by country. Youth bulge is defined as the ratio of youth aged 15–24 in excess of 28 per cent of the population 15 and older. Adapted from World Population Prospects: The 2006 Revision. United Nations Population Division. See <http://www.un.org/popin/data.html>.

country	youth bulge (%)	fertility rate
Afghanistan	36.94	7.07
Algeria	32.06	2.38
Angola	37.42	6.43
Bangladesh	31.37	2.83
Benin	36.57	5.42
Bhutan	34.35	2.19
Bolivia	31.31	3.50
Botswana	36.29	2.90
Burkina Faso	37.55	6.00
Burundi	39.83	6.80
Cambodia	37.63	3.18
Cameroon	36.14	4.31
Cape Verde	37.79	3.37
Central African Republic	37.58	4.58
Chad	36.20	6.20
Comoros	35.99	4.30
Congo	34.88	4.49
Côte d'Ivoire	37.26	4.46
D.R. Congo	37.30	6.70
Djibouti	34.21	3.95
Egypt	31.20	2.89
Equatorial Guinea	32.97	5.36
Eritrea	37.82	5.05
Ethiopia	35.85	5.29
Federal States of Micronesia	36.76	3.71
Fuji	29.55	2.75
Gabon	32.29	3.06
Gambia	31.34	4.70
Ghana	34.43	3.84
Grenada	31.43	2.30
Guinea	34.64	5.44
Guinea-Bissau	35.64	7.07
Haiti	35.27	3.54
Iran (Islamic Republic of)	35.44	2.04
Iraq	34.38	4.26
Jordan	32.55	3.13
Kenya	38.76	4.96
Kyrgyzstan	30.64	2.48
Lao People's Democratic Rep.	35.78	3.21
Lesotho	39.46	3.37
Liberia	37.88	6.77
Libyan Arab Jamahiriya	31.15	2.72
Madagascar	34.65	4.78
Malawi	37.34	5.59
Maldives	37.11	2.63
Mali	38.95	6.52
Mauritania	33.26	4.37
Melanesia	32.05	3.63
Mongolia	32.04	1.87
Morocco	30.28	2.38
Mozambique	35.32	5.11
Namibia	36.07	3.19
Nepal	32.89	3.28
Nicaragua	34.91	2.76
Niger	33.61	7.09
Nigeria	36.49	5.32
occupied Palestinian territory	35.56	5.09
Oman	32.55	3.00

(Continued.)

Table 5. (Continued.)

country	youth bulge (%)	fertility rate
Pakistan	35.21	3.52
Papua New Guinea	32.61	3.78
Paraguay	32.30	3.08
Philippines	31.24	3.23
Polynesia	29.48	3.05
Rwanda	43.87	5.92
Saint Vincent and the Grenadines	30.12	2.19
Samoa	31.19	3.93
Sao tome and Principe	38.20	3.85
Saudi Arabia	28.22	3.35
Senegal	35.62	4.69
Sierra Leone	33.08	6.47
Solomon Islands	34.52	3.87
Somalia	33.86	6.04
South Africa	29.41	2.64
Sudan	33.84	4.23
Swaziland	40.38	3.45
Syrian Arab Republic	36.63	3.08
Tajikistan	36.81	3.35
Timor-Leste	35.82	6.53
Togo	35.97	4.80
Tonga	35.48	3.83
Turkmenistan	31.56	2.50
Uganda	40.06	6.46
United Republic of Tanzania	36.81	5.16
Uzbekistan	32.46	2.49
Vanuatu	33.85	3.74
Western Sahara	29.47	2.70
Yemen	39.84	5.50
Zambia	38.93	5.18
Zimbabwe	41.18	3.19

In the discussion of population and Islamic fundamentalist terrorism, what is less widely noted but just as important is polygyny (B. A. Thayer & V. Hudson 2008, unpublished data). The social tension caused by non-alpha young adult males in primate societies often is considerable. Inequitable distribution of resources across male cohorts in primate groups forming dominance hierarchies creates serious, often violent competition, in the context of scarcity. Scarcity of food is one thing, but a different type of scarcity is even more explosive: scarcity of mating partners. Polygynous primate groups have the highest level of social violence, because non-alpha males are threatened with complete reproductive failure due to monopoly of females by elite males. There are few things more motivating to a young adult male than the threat of complete reproductive failure.

Some human religious practices aggravate scarcity, and polygyny is a prime example. Generally, if one male has multiple wives and birth sex ratios remain approximately 50–50, there would be fewer available females for the remaining males. Those males without mates would have to resort to extraordinary acts to increase their social status to allow them to attract a mate. Those men with multiple wives may likewise have to resort to extraordinary acts to reinforce the social order that favours them above other men. Islam,

unlike Christianity, Judaism, Hinduism, Confucianism or any other major religion, continues to promote polygyny into the twenty-first century. As Alan Miller and Satoshi Kanazawa explain: 'Across all societies, polygyny makes men more violent, increasing crimes such as murder and rape, even after controlling for such obvious factors as economic development, economic inequality, population density, the level of democracy and political factors in the region' (Miller & Kanazawa 2007, p. 92). Polygyny is also often associated with lack of female autonomy in marriage and the union of older men with much younger wives, both of which trends are also associated with less female choice in the use of contraception and abortion.

The uniquely Islamic contemporary practice of polygyny adds a level of scarcity not found in the Western Hemisphere, non-Islamic Asian nations or Europe. Only in sub-Saharan Africa do we find comparable practice of polygyny. But, while polygyny is prevalent there, non-Islamic African societies do not hold the special Islamic belief system that guarantees reproductive success to a suicide terrorist who is venerated as a *shaheed*.

Baldly put, polygyny means mates for some men and none for others. And who will not obtain mates? Usually it will not be those with advantages; it will be those who have not the endowments or resources to contract marriage. The implications of this are profound for those without mates and little prospect of gaining one. Suicide terrorists are known as *shaheed*, a martyr for Allah. The path of the *shaheed* may thus be interpreted as a solution to this problem. In fact, many people in the West or outside the Muslim world know little of Islam other than its promise of 72 virgins for a jihadist. Miller and Kanazawa note:

It is the combination of polygyny and the promise of a large harem of virgins in heaven that motivate many young Muslim men to commit suicide bombings. Consistent with this explanation, all studies of suicide bombers indicate that they are significantly younger than not only the Muslim population in general but other (nonsuicidal) members of their own extreme political organizations like Hamas and Hezbollah. And nearly all suicide bombers are single (2007, p. 93).

This is confirmed by a US military study of suicide bombers in Iraq, which found that they are almost always single males with no children from 18 to 30, with a mean age of 22 (Quinn 2008). The study concluded that most are 'alienated young men from large families who are desperate to stand out from the crowd and make their mark' (Quinn 2008). While some males are low status due to deformity or penury, others are forced into low status by the imperatives of hypergyny in a polygynous culture. Poor young men from large families are at high risk for reproductive failure in such a society and thus willing to undertake unexpected acts.

## 8. CONCLUSION

I will conclude on a generally positive note for the future of academic research to develop a thorough understanding of the relationship between population

and war in an appropriate timeframe. Population and war will become a more intensively studied topic for three reasons. First, the simple sociology of scholarship will compel additional attention. This might be called the Willy Sutton principle of scholarship. Just as he robbed banks because that is where the money is, often scholars study what is topical. If we accept that the study of international politics and the research agenda of its scholars and graduate students are often driven by events, then the consequences of population change will be a growth area. It will compel additional study as the processes, some of which are identified here, bring greater conflict thus the attention of policy-makers, non-governmental organizations and media.

Second, there is progress, albeit slow, in the application of the population to the traditional objects of study for the social sciences. There could be no greater traditional topic than the Industrial Revolution. Gregory Clark's wonderful economic history of this (and indeed, the world) used a population approach and was very well reviewed (Clark 2007). Clark illustrates the relationship between population growth, economic growth and military efficiency. Clark illustrates, first, how important economic success is for reproductive success, which is no surprise to life scientists, and second, this population growth permitted the right cultural memes to triumph and spread, which in turn allowed Great Britain to break out of the Malthusian era and to experience the Industrial Revolution and greater military efficiency.

Third, population is one variable about which there is great certainty—the adults of tomorrow are children today. Thus, the conclusions reached are locked in, the consequences fall into the category of the known/known, to borrow from Donald Rumsfeld. This fundamental fact must be appreciated by the national security community, whether they are policy-makers, scholars or policy analysts. They do have an excellent window into the future and thus the luxury of time to prevent some, at least, of these problems. Due to their knowledge of the causes, conduct and consequences of conflict, scholars of international politics are able to make important contributions to this problem and to permit us to remember that change is not unidirectional; wars and revolutions have big impact on some of the central concerns of demographers, including urbanization, marriages, birth rates, migration.

But by no stretch of the imagination do they have all the answers. Becoming acquainted with the arguments made by demographers and scholars of public health, as well as its practitioners, is wholly positive for the international studies community. By doing so, they will expand the opportunities to produce knowledge and, perhaps most important, discover solutions to conflict that almost certainly would not occur to them.

For example, that infant mortality may be the best indicator that a state is in profound trouble, as it was in the Soviet Union, is today the case for North Korea. With Hudson, I argue that part of the solution to Islamic suicide terrorism is to reduce polygynous practices and improve women's rights (B. A. Thayer &

V. Hudson 2008, unpublished data). Malcolm Potts and Thomas Hayden argue that the solution to rapid population growth is largely the result of women lacking access to the family-planning options they need (Potts & Hayden 2008). It would be harder to find a more efficient solution to the problem of this study, and one with another beneficent consequence—family planning that also improves the health of mother and child. Thus, relatively simple measures like providing dependable contraception may be the greatest contribution to peace that it is possible to make.

Those of us who analyse conflict for a living would be wise to recognize the myriad of contributions made by population studies. Both the life and social sciences are needed here. If successful, the result will be a consilient solution to a problem that requires one.

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