



Earthrise from Apollo 8. Copyright NASA

The Strategic Significance of the Population Pyramid

David A Rew, University Hospital Southampton, looks at the Strategic significance of the Population Pyramid.

Those readers of BAR who take time to look up from their Ordnance Survey maps to the heavens, will know that we occupy a very small planet in a very large, cold and relatively empty Universe. 70 per cent of the Earth is sea water, for occupation by plankton, by cruise liners and by the Royal Navy, and the top and bottom of the Globe are very cold indeed. The habitable surface of the globe spans approximately from 60 degrees of Latitude above to 60 degrees below the Equator.

Even within those boundaries, large areas such as the Sahara Desert, the Amazonian Rain Forest and the Siberian Plains are not suited to continuous human habitation. Moreover, over millennia, climatic patterns changed the habitable zone substantially. It is sobering to consider that it is only around 10,000 years since the last Ice Age, when everything north of Watford Gap Services was a kilometre deep in Ice.

Therefore, at this present moment in galactic time and space, the British peoples are fortunate to occupy a green and pleasant land, with a mild, oxygenated climate, abundant fresh water, productive soil and a maritime moat. Our geographic location has been conducive to a remarkable flourishing of intellectual, commercial, scientific and creative thought, and of progressive political liberalism over many centuries. These characteristics make the British Isles and the European

Land Mass in general to be among the most desirable pieces of real estate on Earth and across the Milky Way.

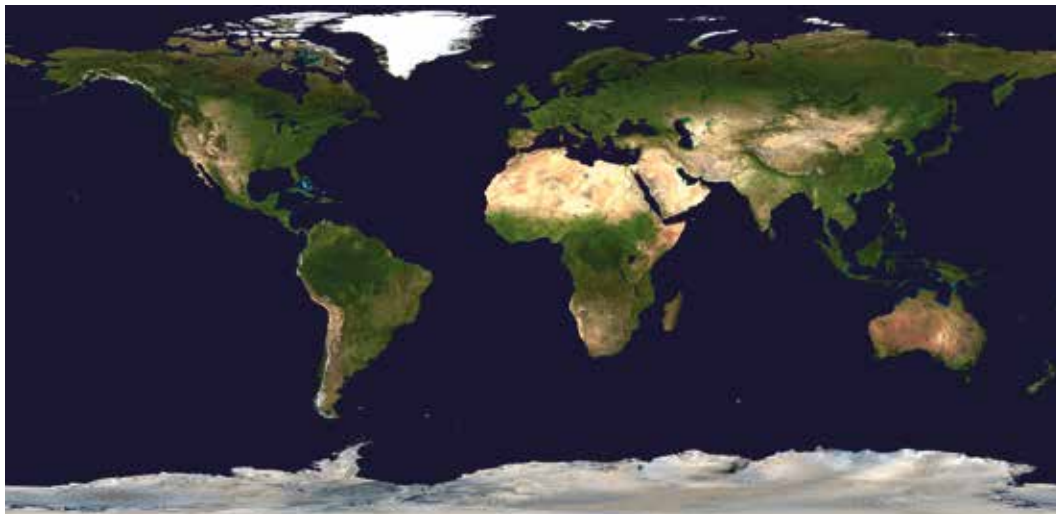
Controls on Human Populations

The surface of the Earth has a finite capacity to support life. Human populations in earlier millenia have been severely constrained by access to resources of food and fresh water in the habitable areas of the planet.

Human beings and societies are not immune from the laws of the natural world. We are in ceaseless competition for the resources to survive and develop as individuals and as a society, and the security of our real estate is paramount to this survival.

Numerous factors in human organisation and technological advancement have allowed us to circumvent many of the earlier constraints to population growth, and over the past century in particular, there has been an unprecedented worldwide population expansion to around seven billion people. The ceiling for human population expansion has not yet been reached, and various estimates of the capacity for habitable land, water for agriculture and food production place the upper limit at around 12 billion souls.

The human capacity for population expansion is enormous. Over her reproductive life, a woman could produce as many as 15 to 20 live children. Of course, this level of fertility is now very uncommon in the Western



Satellite Imagery: The Visible Earth project. Copyright NASA <https://visibleearth.nasa.gov/view.php?id=57752>

world. However, just out of living memory, the Victorian age often saw families of 10-12 live births, even though many children did not survive to adulthood.

On a planet of unconstrained resources and unconstrained fertility, human population growth would rapidly reach unimaginably high levels, and crowding would match the dystopian predictions of the most imaginative science fiction artists. In practice, many social, economic, cultural and security factors in different countries and geographic regions ensure that population growth rates vary considerably from one place to another. For example, the agricultural Green Revolution in the mid 20th Century was a major contributor to dietary security and to population growth in India.

Even where human populations are suddenly diminished by war, pestilence and famine, populations are capable of rapid recovery when the constraints are removed, as after the First and Second World Wars.

In practice, a human society must achieve an average live birth rate of just over two children per woman, to maintain a steady state population. There are many constraints to higher birth rates, but critical factors now appears to be the economic well being, consequent self determination and access to effective contraception of the female population.

Premature death of mothers and infants has traditionally imposed major constraints on population growth. Dramatic improvements in healthcare for these

groups, including (for example) immunisations, clean water, anti-malarial strategies and better perinatal care for mothers can transform the population growth rate.

Conversely, where women have reproductive choices, birth rates fall significantly. In many parts of the Northern Hemisphere, birth rates of indigenous populations have fallen below societal steady state replacement rates and national populations are shrinking. This is generally the case across Western Europe, but particularly so in Germany and Russia.

The Population Pyramid as a Strategic Descriptor and Predictor

Human beings follow a natural cycle of birth, aging and death over (at best) a century, and over much shorter periods in many adverse circumstances. This cycle is absolutely predictable, and its understanding has strategic significance. By knowing the age and sex distribution of a human population in each and every country; by understanding the socio-economic norms in that population; and by making reasonable predictions about reproductive behaviour; it is possible to deduce quite remarkable insights with profound significance for national defence and national political strategy to the end of the 21st Century and beyond.

The population pyramid is well used and standardised graphical tool for describing the size and shape of a population in any one country, region, continent or in

global terms. It comprises two back to back stacked histograms, with the male population on the left and the female population on the right. The numbers of people of each sex are counted along the baseline (X axis) of the graphic, either in absolute numbers or in percentages. The age distribution in five year blocks is plotted on the vertical (Y) axis of the graph.

The population pyramid is not a static structure. In reality, it changes minute by minute and hour by hour with births and deaths, and it is continually moving and reshaping. Its accuracy is constrained by the frequency with which statistics are collected and collated, as for example through birth and death registrations in each country.

Moreover, the fertility of the population is generally defined by the cohort of fertile females in the 15-35 age ranges in poorer countries, and in the 15-45 age group in wealthy countries, where fertility is generally shifted to the later years of reproductive life.

The population pyramid is a very powerful descriptive tool because it describes both the past reproductive behaviour of the population over 100 years, and it predicts the likely future population for many decades ahead. It also indicates where there have been major upheavals to a population over time leading to decline or expansion in particular age groups, for example through famine, migration or government policy.

The population pyramid also demonstrates the life expectancy of the population. Countries with advanced health systems will generally have much taller pyramids, describing longer life expectancy, than poor countries with shorter life expectancies. Where there has been rapid improvement in the food supply, and reduction in infant and maternal mortality rates, population expansion in the younger age groups at the base of the pyramid can be dramatic.

Thus, for example, the population pyramid for China now reflects the consequences of the one child policy over past decades, in that there are relatively few children to support an aging population. Conversely, the green revolution and economic liberalisation of the past few decades on the Indian subcontinent have led to a substantial expansion of the young population.

The web sites 'populationpyramid.net' and Index Mundi are very valuable resources for the understanding of global population patterns and contemporary population pyramids for every country and continent on the Globe, with historic data and future trends.(refs)

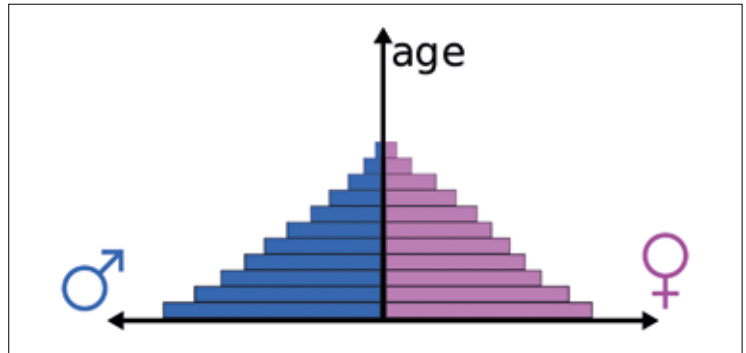


Figure 1: Diagram of the structure of a population pyramid (copyright Wikipedia)

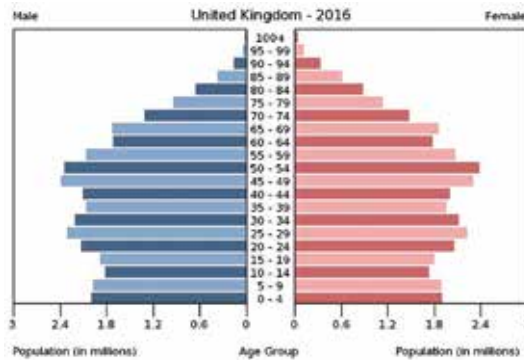


Figure 2: Population pyramid of the UK 2016 Source Index Mundi: It demonstrates an aging population with the post Second World War 'baby boomer' bulge in their 50s-70s, supported by a smaller younger population. The 'youth deficit' is now being made up in part by the numerous arrivals of "New Britons" in the past two decades.

The Strategic Significance Of Population Patterns For The UK

There are some very notable lessons from population pyramids as they impact upon UK security, domestic and international policies and long term strategic planning.

One lesson is that the population of Western Europe is now reasonably stable out to 2100 at around 190 million (M) people, while that of Eastern Europe shows a significant decline from present levels of around 310M people to 210M by 2100.

Conversely, that of the Russian Federation predicts a significant decline, from around 150M at present to around 117M in 2100 on present trends.

Further afield, the Indian population is currently around 1300M, and it peaks at around 1700M in 2100.

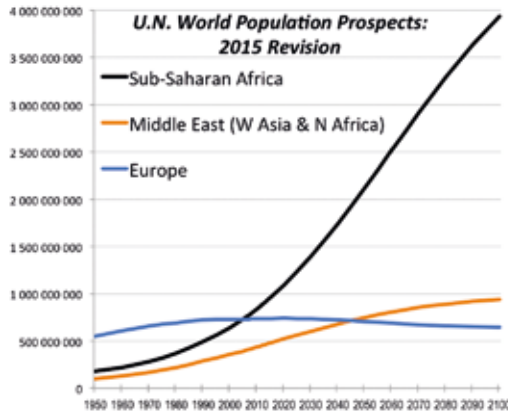


Figure 3: The Chinese population declines from 1350M now to around 1000M in 2100, subject to no changes in the one child policy, the need for which has now been recognised in China. Steve Sailer iSteve blog; UNZ Review. <http://www.unz.com/listevel/the-graph-that-explains-the-2015-migrant-crisis/>

However, much closer to us in strategic terms, the most dramatic population growth is on the continent of Africa, where the current population of 1200M is predicted to grow to 4400M by 2100. As but examples, the population of Egypt will grow from around 100M today to around 200M in 2100, while the population of Nigeria grows from around 180M to around 750M.

The Strategic Significance Of Migration

Population pyramids are clearly susceptible to modification by a number of factors, including war, famine, and government interventions. Migration can have an important and beneficial role in rebalancing ageing population pyramids. It brings younger workers and taxpayers into the economy, where indigenous populations are falling below reproductive sustainment. However, where migration is uncontrolled, it can create the conditions for social and political destabilisation. One of the unwritten rules of immigration is that immigrants will accept and adapt to the social and cultural norms of the host country. Where there is a rapid influx of migrants, the recipient population can feel that their social and cultural norms are under threat.

In the absence of catastrophic upheavals and in the relatively benign global reproductive environment of the current century, one of the most important strategic factors in population change will be that driven by the migration of populations from one region to another, and explicitly from Africa and the Middle East to the economically and climatically attractive global land mass that is Northern Europe.

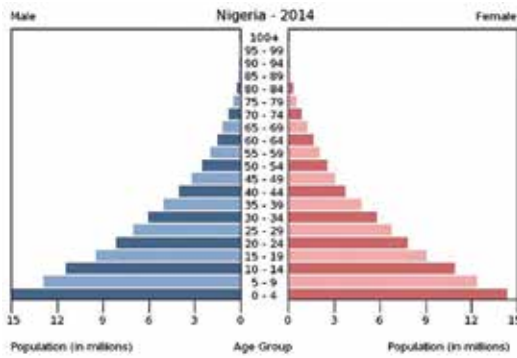


Figure 4: Population pyramid for Nigeria 2014 from Index Mundi, demonstrating the huge expansion of the young population and the relatively small numbers living to late old age. Such pyramids are typical for sub-Saharan African countries.



Figure 5: Image: From Project for Democratic Union Blog <http://www.democraticunion.eu/2014/10/mediterranean-sea-migrants-danger/>

In strategic terms, the challenges of a politically resurgent Russian Federation and its steadily declining population, or of Chinese machinations in the South China Sea, pale into insignificance when we consider the possible consequences of the search for a better life by four billion as yet unborn or recently born Africans over the next 80 years.

We have seen the start of this process in the past few years. European Border Force data dramatically shows how, while the media focus has been on Middle Eastern migration patterns and Islamic fundamentalism, the true challenge lies to the South of the Mediterranean Sea, where migration rates (and tragic drownings) are already hugely in excess of other sources of migration.

Strategic Lessons From The Population Pyramids And The Migration Maps

It is clear that mass migration presents major political challenges to European nations, and serious concern to national electorates. Notwithstanding the unresolved questions around the UK Brexit referendum in the summer of 2016, it is obvious from a glance at the maps and from a basic study of population dynamics that the fundamentals of UK Defence Policy remain intimately linked to Europe and to the Mediterranean and South Eastern borders of Europe.

It is also clear that while the issue of refugees from Syria and North Africa is the most immediate concern, resolution of conflict in Syria and Libya will not resolve the migration challenge from Sub-Saharan Africa, which is now established and evident from the migration routes and from the numbers travelling along them.

We must therefore recognise and plan clear-sightedly for the real possibility that huge numbers of living and as yet unborn Africans will seek a better life in the relatively prosperous and well-governed states of Europe over the remainder of this century.

Such potential volumes of immigration in a compressed timescale are hugely challenging for European countries and carry a risk of discontent that can be seen in the political and homeland security spheres.

The logic of the situation directs us to a rigorous analysis of why Sub-Saharan African migration is increasing, and in large numbers, when sub-Saharan Africa is fertile and has huge economic potential. We are repeatedly brought up against the issue which is understood by all but which is not openly confronted, of woefully poor governance, graft and corruption in many African states (ref).

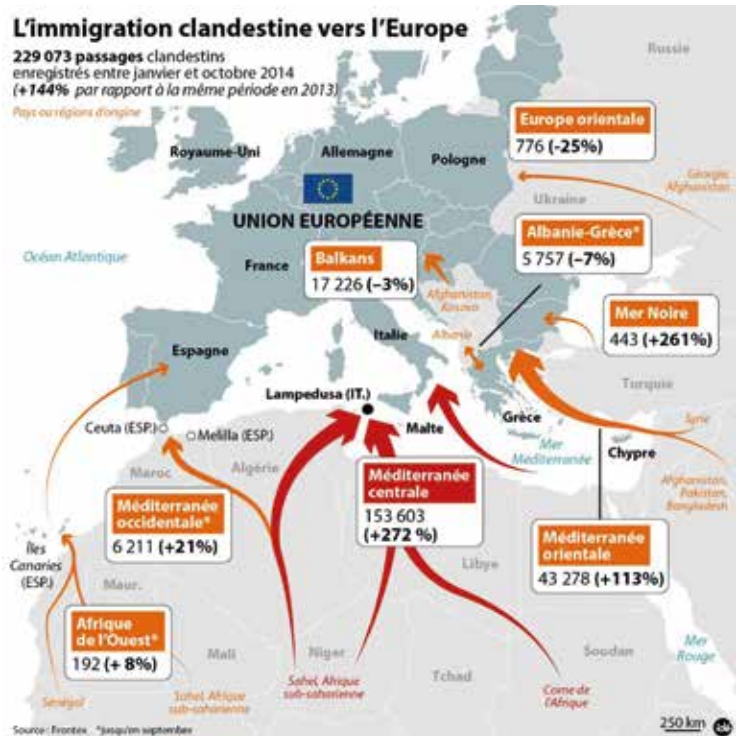


Figure 6: Clandestine migration towards Europe: Frontex Data for January to October 2014 (reproduced in the Blog of the European Association for the Study of Geopolitics and Strategy, based in Romania, 3rd December 2015 <http://aesgs.ro/page.php?id=13&s1=46&s2=316>)



Figure 7: Migrant routes from sub-Saharan Africa: Map created by the Fletcher School and Feinstein International Center, Tufts University, from data from the ICRC, Frontex, and the UNHCR. Source: WNYC New York Radio website <http://www.wnyc.org/story/the-perils-of-migration-out-of-africa/> Copyright 2015 NPR. <http://www.npr.org/>

UK Defence Engagement in Africa

The management of a challenge on this scale requires widespread political effort and coordination across Europe and Africa, with the engagement of many agencies and organisations. The UK Government is a significant player in this strategic geopolitical game. While the bulk of the heavy lifting will be done through diplomatic, commercial and civilian efforts, the UK Armed Forces provide a number of key enabling capabilities to any future government plan. A clear-sighted view of the challenge from UK Senior Military Officers will play into the national strategy and indirectly into the international debate.

The critical strategic direction must be to improve the standards of governance and government in every African country, such that money is not siphoned off or misdirected on an industrial scale through corruption and graft. Africans must come to believe that their economic and social prospects in life are as good or better through staying in their home countries and regions as through attempted migration to Europe, with all the risks that it entails.

To this effect, UK Defence Engagement in Africa allows us to understand the regional and political landscape, and to shape our future thinking about how best to resolve the issue. It makes sense that our focus should be on those countries of Anglophone Africa where we have long historic ties, while other European countries facing the same challenge can draw upon their own ties to build a coalition of the willing, as for example with the French in West and Central Africa.

Here is one example of this process in action: the Medical Operational Support Group of Central Reserve Headquarters Army Medical Services deployed to Freetown, Sierra Leone in June 2016 for its two week annual collective training programme. The seniority, maturity and breadth of experience of this unit led to an unexpectedly broad engagement with the local civilian and military health sectors to the top of Government. This informed, sustained and lubricated our relationships with one African country with a shared history, and it also was profoundly educational for the 50 reservists and regular staff of 2 Med Brigade who participated in the exercise.

Conclusion

The study of Population Pyramids of countries, regions and continents provides profound insights into the Global Strategic issues, which are of huge importance to

the UK. Human reproduction and population dynamics are a force of nature and the essence of human life on Earth. Collectively, they have far greater influence on the form and fates of nations over time than do the most destructive of wars. The huge reserve reproductive capacity of the human race rapidly and collectively replaces those killed in conflict.

Where the governance of countries is poor and worse, people will tend towards better-governed and more stable and successful countries, as represented in particular by the modern states of Western Europe.

From the data on population dynamics and migration flows, we can draw helpful insights into our continental competitors to the East of the European landmass, where the population is in long term decline and where the attractions of immigration are seemingly very limited.

However, the scale of population dynamics and of migration data from North Africa, sub-Saharan Africa and the Middle East demonstrates clearly where our principal efforts in Defence Engagement must be directed in future.

The understanding of population pyramids and migration dynamics should be a significant element in the higher professional education of all military officers.

Bibliography

- *Population Pyramids*
- <https://populationpyramid.net/world/2016/>
- <http://www.indexmundi.com/>
- *Migration*
- www.migrationsmap.net
- *Books and periodicals*
- Starkey J. *The culture of corruption gripping Kenyan society.*
- *The Times of London, Monday 19th December 2016 p38*



Lt Colonel Robbie McDermott RAMC of the Medical Operational Support Group, CRHQ AMS, engages with a large number of excited Sierra Leonean schoolchildren during a visit to Magbeni Village in June 2016. Photo credit: personal collection Col David Rew