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**Title: Potential Metrics Models for Determining the Actions and Status of Tools of National Power for Homeland and National Security**

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# **Potential Metrics Models for Determining the Actions and Status of Tools of National Power for Homeland and National Security**

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## **ABSTRACT**

Several times in the national news and in speeches the phrase ‘tools of National Power’ has been heard when discussing some of the potential methods of waging the Global War on Terrorism. There have been some factors associated with this phrase, but usually not much detailed discussion about what those ‘tools of National Power’ are! Is it the Diplomatic Corps of the Department of State? Is it the Commerce and Trade Representatives of the Department of Commerce? Is it the Military Forces of the Department of Defense? – As in our soldiers, sailors, marines, and airmen, and their leaders with their equipment that are sent out into harms way?

The author feels that these three traditional points are indeed valid, but are much, much too limiting in understanding the availability of the ‘tools of National Power’ in all its many additional facets and details. There are many others to consider through all the factors and areas which are covered by all the Executive Branch Agencies. Factors which essentially make up the older basic social studies and geography details we have all been exposed through our years of ongoing education. To these others must be added because of the technological advances which are empowering other social and organizational changes.

## **Discussion and Opportunities**

Besides the traditional model of international and national interaction of Von Clausewitz – Government, Military, Population; and, the models of Graham Allison – Rational Actor, Bureaucratic, and Personality; there are more models available for evaluating the ‘tools of National Power’. They are ones which go beyond the lines and bounds of diplomatic talking, commercial trading, and application of military force, which most often are the first to come to mind.

This paper will touch on these briefly, and then go to another set of three potentially useful reference models for monitoring the ‘tools of National Power’ for Homeland and National Security. There are three that this paper will touch upon for reference and comparison. The first is the relatively historical traditional six points of A.T. Mahan’s ‘The Influence of Sea Power on History 1660 -1783’: geographic position, physical conformation, extent of territory, number of population, national character, and character of government. The second is a more recent framework from F. H. Hartman’s ‘The Relation of Nations’: demographic element, geographic element, economic element, scientific-technical element, historical-psychological-sociological element, organizational-administrative element, and military element. The third is a more current model offered by T. L. Friedman’s ‘The Lexus and the Olive Tree – Understanding Globalization’: How wired is your country?; How fast is your country?; Is your country harvesting its knowledge?; How much does your country weigh?; Does your country dare to be open?; How good is your country at making friends?; Does your country’s management get it?;

and, How good is your country's brand? (Additional characteristic descriptions of the evaluation factors of all three are included within the Figure 1, following contextual discussions.)

From this initial listing, some similarities and many differences are initially apparent. This offers some grounds for potential interesting analyses, like the differences which are drawn out by employing G. Allison's three models when looking at the same set events. Different relationships are potentially revealed by looking at the same event through different reference frames. Hopefully, by way of these three models, additional texture and the opening of a door to new levels of understanding may result.

Additionally, the differing metrics and views of the data and conditions may reveal new avenues of cause and effect, risk assessment and mitigation, and allow better investment strategies to essentially perform effects based planning to address possible shortcomings in the 'tools of National Power'. Thus communicating and realizing one of the messages of Sun Tzu, "To be certain to take what you attack is to attack a place the enemy does not protect. To be certain to hold what you defend is to defend a place the enemy does not attack. Therefore, against those skilled in attack, an enemy does not know where to defend; against the experts in defense, the enemy does not know where to attack." (Griffin, 1971, p. 96-97.) Or stated another way, develop strength in all aspect of the 'tools of National Power' for defense and appropriate attack, and thus remove the opportunities and invitations to have to defend.

## **Introduction**

As recently as March 4, 2004, during Secretary of Defense Donald Rumsfeld's DoD News Briefing (DTIC, 2004) regarding the attacks in Korbala and Baghdad, and the prosecution of the Global War on Terror (GWOT), "That's the reason the 90-nation coalition is doing what it's doing using all the elements of national power, putting pressure on bank accounts, putting pressure on law enforcement around the world, and seeking out terrorist heavens and attacking the terrorist networks. That's the only way to deal with the problem."

This phrase: 'the elements of national power', and some variations, such as: 'the tools of national power', or 'the parts of national power' have been used regularly since the attacks of 9/11 upon the U.S. and the national and international institutions it represents. Along with the attacks on international allies and coalition partners.

This phrase is employed regularly in broad terms, yet it can be interpreted in many ways, levels, directions, and criteria. In fact, it can be considered to be a constantly changing and shifting set of tools and relative metrics, which change with the ages so to speak, along with changing models and data which are measured and utilized for comparison and developing understanding.

Some models, metrics, and tools change through the stages of history and current events. To cite some by population growth, some by knowledge growth, and some by technological growth, is but a few examples. Some models come into and go out of favor, while the metrics and data remain available for employment, analysis, and the development of knowledge and understanding.

The traditional aspect that many individuals call to mind when hearing the phrase ‘elements of national power’ is composed of the diplomats, commercial transactions, and the military. These are sometimes referred to as the ‘talking, trading, and fighting’ factors of group interactions. Though, in truth, when even pulling the string just a small amount reveals a great depth behind these factors and many other contributing factors as well – all networked together.

This brings to the fore the purpose of this paper and topic, to offer a sampling of three models, or systems for looking at the ‘elements or tools of national power’. These models are the summary offered by A. T. Mahan, from his 1892 *The Influence of Sea Power on History 1660 -1783*; F. H. Hartman, from his 1957 (original publication date) *The Relations of Nations*; and, Thomas L. Friedman, from his 1999 *The Lexus and the Olive Tree – Understanding Globalization*. This will be developed as offering some context associated with the time when these models were presented. Compare the models for matching and mis-matching items considered, and offer some possible observations. Then offer a discussion of whether there might be a need for another model, one which is completely different, or whether these represent a flavor of a ‘system-of-models’ akin to Graham Allison’s three models discussed when reviewing the outcomes of the Cuban missile crisis (rational actor, personality, and bureaucratic models). Also whether with the shift toward more international complexity due to the emergence of the international organizations and organizations which do not completely fit into the West Phalian nation state model.

In effect, this paper is a beginning of what may be a continuing discussion and set of research on this subject of tools of national power and their overall integration and interconnections. It is definitely not intended to be a definitive discussion at this point, but one which might start a dialogue and offer an additional perspective toward greater understanding, and thus a reduction of tensions.

### **Some Prior Models for Consideration**

As mentioned in the introduction, there will be three models to discuss within this section. The models of Alfred T. Mahan, Frederick H. Hartman, and Thomas L. Friedman. This is not to say theirs are the only models, but to sample several for examination, comparison, and starting point for further discussion and research.

#### ***Alfred T. Mahan***

A. T. Mahan’s *The Influence of Sea Power on History 1660 -1783*, dates from 1892 and his years of experience following the American Civil War when the great technological change of the world navies were shifting from sail and wooden ships to steam and iron/steel ships, and when the technology and scientific exploration and colonization of the world had been accomplished by the West Phalian/ European nations. It is primarily a model and approach for emergence onto the world scene of the United States (U.S.) as an international power, and to challenge those powers of Europe which already had overseas holdings. It was also in response to the Pax Britannia history and position.

Its primary factors are thus related to that frame of reference, and can be considered relatively consistent with traditional geography, societal, and economy approaches to describing countries and power metrics. They are relatively consistent with the scientific approach of routinization

and smooth lines (sometimes seemingly arbitrary lines) drawn by colonizing powers as other sections of the world were carved out as 'holdings'. They are 6 (six) in number: geographic position, physical conformation, extent of territory, number of population, national character, and character of government. (Mahan, 1892. p. 28-89.) Brief explanations of these are included in the first column of Figure 1 following. In some ways these are quite consistent with the approach and thinking of the time, yet with shifting centers of power and opinion through the years they are in some ways at odds with more finely detailed social/ethnic demographics. From Mahan's perspective, population Item number four in his listing) had most to do with the total number of that population. It is specifically described as: "After the consideration of the natural conditions of a country should follow an examination of the characteristics of its population as affecting the development of sea power, and, *first among these will be taken*, because of its relations to the extent of territory, *is the number of the people that live in it.*" (Mahan, 1892, p. 44, *emphasis added*) Later years (and as seen with the U.S. Civil War) there were other pressing factors associated with the internal characteristics of the population and its overall vitality: growth rate, immigration rate, levels of income, level of education, or national interactions. Most of these factors are included within Friedman's factors as can be seen in column three for Figure 1 following.

### ***Frederick H. Hartman***

Hartman's *The Relations of Nations* dates from 1957, during post World War II and the depths of the Cold War, and in some ways can be considered to have been influenced by the bi-polar model of the Cold War, U.S. United Soviet Socialist Republic (U.S.S.R.) confrontation model. Samuel Huntington mentions this model within his book *Clash of Civilizations* (1997), as essentially one of several models, a transition model, to his multi-ethnic, religious conflictual model of interactions. Hartman identifies 7 (seven) factors: demographic element, geographic element, economic element, scientific-technical element, historical-psychological-sociological element, organizational-administrative element, and military element. (Hartman, 1957/1982. p. 43-65.) All with the general flavor for these factors which related to the international community of group interactions, but at a level above the general individual. (See column two of Figure 1 following, for some additional descriptors of Hartman's elements.)

In a way, Hartman is treating the areas and nations as distinctive groups and providing characterization metrics, almost fore-shadowing the later efforts of G. Allison which resulted in his three international descriptive models: rational actor, personality, and bureaucratic, for describing how a nation group responses to international situations. His two elements: historical-psychological-sociological and organizational-administrative generally line up with Mahan's: national character and character of government. One has to remember the Hartman's primary model was the Western Democratic-Eastern Communist confrontation, while Mahan's was Democratic U.S.-European Regal Colonial Imperialism, to add some context to these models.

In fact when looking at Hartman's elements and Mahan's factors, there is rather significant degree of alignment and agreement between the items, Hartman's seven and Mahan's six are in remarkable agreement. They could almost be considered as only slightly different approaches using essentially the same information for only slightly different purposes. Mahan's was looking at sea and commerce as the primary source of a nation's generation of strength and power, and some of the factors behind having national power, while Hartman's approach seems to approach

those factors from the standpoint of groups and organizational interactions, and could possibly be considered as being related to the early 50's psycho-history effort to understand international and group interactions based on psychology, historical backgrounds, and influence paths on individuals for actions and decisions – essentially an earlier version of effects based operations. Hartman also discusses these factors in the traditional geography type approach.

### ***Thomas L. Friedman***

Within Friedman's *The Lexus and the Olive Tree – Understanding Globalization* (1999), there is an approach to evaluating nations (groups) according to a new granularity of more current terms used in the globalization discussion. While globalization has been around for centuries (consider the early ~15<sup>th</sup> century voyages of the Chinese Dragon Throne treasure fleets (Levathes, 1997)), the new granularity, speed of transaction, and visibility of details is part of the model presented. Some of his factors for evaluation are similar to Mahan's and Hartman's, though asked in rather interesting ways associated with the shift in technology and capabilities introduced by the electronics of the cold war, and continuing to improve in agreement with Moore's Law of capability improvement doubling and halving prices at a ~18-24 month cycle times.

Friedman proposes 8 (eight) factors, posed as questions: How wired is your country? How fast is your country? Is your country harvesting its knowledge? How much does your country weigh? How good is your country at making friends? Does your country's management get it? and, How good is your country's brand? These items are all associated with the globalization model of group/organization interactions, and the freedom of movement and transparency related to: freedom of information, mobility and speed of financial transactions, and freedom of commerce. All associated with the idea that information is an empowerment tool and strength based on the principle of good overcomes evil – a style of international idealism. (See column three of Figure 1 following, for amplifying information and metrics questions.)

These measures and freedoms are the potential drivers to counter oppressive regimes, dictators, oligarchies, etc. In many ways representing the 'guiding light' principle idealism within the group/national/international community compared to the realism community. The ease of alignment mentioned previously between Mahan and Hartman, is not as apparent with Friedman's model. Though with some review and detailed examination, they are in many ways additional factors within many of Mahan's and Hartman's phrased in contemporary terms of the period, like those previously mentioned models. Friedman's points and elements thus almost reflect aspects of the increased level of tracking granularity possible through the application of current technologies.

### ***The Starting Point***

These three models are a starting point for metrics which form a reference frame for evaluating tools of national power, and national strengths. The balancing factor is that they also can be viewed in the 'glass-half-empty' model for revealing opportunities for improvements and interfaces which need improvements balanced with the associated risks involved. This point can also be considered the internal application method of effects based operations or outcomes associated with national, international, and organizational strategic plans and objectives. At the national level it could be interpreted as the executive branch organizations strategic plans and visions associated with the Government Performance and Results Act (GPRA) of 1993 (Public

Law 103-62), which was intended to link funding and appropriations to strategic plans, goals, and outcomes. On the international scale it could be considered with all the traditional talking, trading and fighting factors – diplomacy, commerce, and military, for interactions, outcomes, and effects. Additionally, it can be utilized for potentially determining the factors that cause problems with other national tools of power at any level. Then, where to apply which resources, at what time, to mitigate and improve the metric, potentially removing sensed or perceived threats, challenges, and shortcomings – to produce better outcomes.

So, having said that, the next section will delve a bit deeper into one of the factors which seems common across the models discussed in this introduction section, and provide a degree of added context and complexity. The final sections will discuss whether a new model is required and attempt to whet the appetite for the author's intended future course of development and discussion in subsequent writings.

### **Matches & Mis-Matches**

The simplistic analysis, says these models are not equal due to varying numbers of elements or factors. Yet there must be more critical and useful information to draw from comparing these models. Some has been offered with the context discussion of the periods when they have been published. More can be gained by looking at the words and discussion behind the elements and factors which are offered by the source authors and restated here within Figure 1.

### ***A Cross Walk – Both Simple and Complex***

Taking a factor or element which goes across all three models let us look at the one most related to the population and some of its aspects. Mahan's: 'Number of Population' – After the consideration of the natural conditions of a country should follow an examination of the characteristics of its population as affecting the development of sea power; and, first among these will be taken, because of its relations to the extent of the territory, is the number of the people who live in it. Hartman's: 'Demographic Element' – How many people are there? Are they growing or declining in number? And, What is the population structure? Friedman's: 'Is Your Country Harvesting Its Knowledge?' – The key to wealth is how the organization (country or company) amasses, shares and harvests knowledge. (Utilizing the network) -What is the percentage of high school graduates? -What is the percentage of national income spent on teacher salaries?

One point that becomes clear is that there seems to be rather more agreement between Mahan and Hartman, compared to Friedman. Yet, when stepping back and viewing Friedman's point (selected by this author) a bit broadly with others he proposes they are truly related to the population and its characteristics or demographics. Also one starts to see almost immediately, that any one factor is related to several others. Mahan starts basically with the gross number, Hartman goes a bit further asking about its trends and internal characteristics, while Friedman asks about another population characteristics about knowledge and its employment. Aspects related to the gross population are: where is it located, and how distributed; what is its national and ethnic background, it is native or immigrant based? What are the birth and infant mortality rates, along with the age and sex distributions? And Friedman's questions speak for themselves in asking about education and development of the population over all. He opens the door for



F A C T S O I R S E R F A O T R I O N	<p><b>Alfred T. Mahan –</b> <b>‘The Influence of Sea Power on History</b> <b>1660 – 1783’</b></p> <p><b>Geographic Position</b> – If a nation is situated that is neither forced to defend itself by land nor induced to seek extension of its territory by way of the land, it has, by the very unity of its aim directed upon the sea, an advantage as compared with a people one of whose boundaries is continental.</p> <p><b>Physical Conformation</b> – The seaboard of a country is one of its frontiers; and the easier the access offered by the frontier to the region beyond, in this case the sea, the greater will be the tendency of a people toward intercourse with the rest of the world by it. If a country was imagined having a long seaboard, but entirely without a harbor, such a country can have no sea trade of its own, no shipping, no navy.</p> <p><b>Extent of Territory</b> – As regards the development of sea power, it is not the total number of square miles which a country contains, but the length of its coast-line and the character of its harbors that are to be considered. As to these, it is to be said that, geographical and physical conditions being the same, extent of sea-coast is a source of strength or weakness according as population is large or small.</p> <p><b>Number of Population</b> – After the consideration of the natural conditions of a country should follow an examination of the characteristics of its population as affecting the development of sea power; and, first among these will be taken, because of its relations to the extent of the territory, is the number of the people who live in it.</p> <p><b>National Character</b> – If sea power be really based upon a peaceful and extensive commerce, aptitude for commercial pursuits must be a distinguishing feature of the nations that have at one time or another been great upon the sea. History almost without exception affirms that this is true</p> <p><b>Character of Government</b> – It must be noted that particular forms of government with their accompanying institutions, and the character of rulers at one time or another, have exercised a very marked influence upon the development of sea power. The various traits of a country and its people which have so far been considered constitute the natural characteristics with which a nation, like a man, begins its career; the conduct of the government in turn corresponds to the exercise of the intelligent will-power, which, according as it is wise, energetic and persevering, or the reverse, causes success or failure in a man’s life or a nation’s history.</p>	<p><b>Frederick H. Hartman –</b> <b>‘The Relations of Nations’</b></p> <p><b>Demographic Element</b> – How many people are there? Are they growing or declining in Number? And, What is the population structure?</p> <p><b>Geographic Element</b> – Where do these people live? What is their climate and location? And, What is the size of their territory?</p> <p><b>Economic Element</b> – What are their raw material possessions and resources? What critical and strategic material shortages confront them? And, What are their present and projected production rates?</p> <p><b>Scientific-Technical Element</b> – Where do they fit in terms of scientific and technological ability?</p> <p><b>Historical-Psychological-Sociological Element</b> – What has been their past experience as a nation-state? How do they look at life? How cohesive is their society?</p> <p><b>Organizational-Administrative Element</b> – What is their form of government? What is their attitude toward it? How strong do they desire it to be? And, How strong and efficient is it?</p> <p><b>Military Element</b> – What armed forces do they possess? What are the relations between the size and the military-age group and the size of the armed forces? And, How well-trained, armed, and equipped are those forces?</p>	<p><b>Thomas L. Friedman –</b> <b>‘The Lexus and the Olive Tree –</b> <b>Understanding Globalization’</b></p> <p><b>How Wired Is Your Country?</b> What are the metrics for: -personal computers/capita -bandwidth/capita -closeness to universal connectivity</p> <p><b>How Fast Is Your Country?</b> -What economic restructuring has been done to increase the speed of government approvals, transactions, investment and production? -How fast can a citizen move an idea from garage to the market? -How quickly can capital be raised for a crazy idea, and how quickly can the new ideas be generated? -How quick is the destruction, through bankruptcy of inefficient firms?</p> <p><b>Is Your Country Harvesting Its Knowledge?</b> The key to wealth is how the organization (country or company) amasses, shares and harvests knowledge. (Utilizing the network) -What is the percentage of high school graduates? -What is the percentage of national income spent on teacher salaries?</p> <p><b>How Much Does Your Country Weigh?</b> -How much does an average container of exports weigh? -How light is the organization’s GDP? (Somewhat related to Moore’s Law)</p> <p><b>Does Your Country Dare To Be Open?</b> -Openness forces competition at the meat and potatoes level of work accomplishment for survival. -How open to the movement of best minds, ideas and technology for benefits and cross-fertilization?</p> <p><b>How Good Is Your Country At Making Friends?</b> -How many alliances are the organization part of for leverage of opportunities? -What are the characteristics of the alliances: political, strategic, commercial, technology, etc. --How do you balance shared interests and self-interests, short-term gains and long-term gains? --Where do you have things in common and where do you really want to preserve separate identities?</p> <p><b>Does Your Country’s Management Get It?</b> -Can the boss do information arbitrage? Can the boss constantly synthesize six different dimensions at once? Does the boss understand the three democratizations (information, finance, and manufacturing) and how to take advantage of them?</p> <p><b>How Good Is Your Country’s Brand?</b> -How well does the organization demonstrate how relevant the strengths of its product(s) are? -How different the products are from other similar products? (Differentiation) For different categories: Tourism (old mode); financial, information, technology, manufacturing, etc. --Organization image! --Take care of the basics!</p>
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**Figure 1 - Reference Model Source and Metrics**

literacy rates, and other factors he mentions associated with computer skills, organizational adaptation (whether business or national). To be fair Mahan also mentions 'National Character' along with 'Character of Government', which are related to Hartman's 'Historical-Psychological-Sociological Element' and 'Organizational-Administrative Element', which are related to Friedman's 'Does Your Country's Management Get It?' and 'How Good Is Your Country At Making Friends?' This demonstrates some of the complexity of connections and depth of interactions.

### ***A Path Through the Woods***

Through this brief discussion it becomes clear that when examining these models and the data associated with them, there is a great deal of potential complexity. This offers the opportunity to examine how the data is collected, along with whether the correct or best data is being collected. Akin to the discussions offered by Alberts and Hayes (editors) – Code of Best Practice (COBP) – Experimentation (2002), and the NATO Code of Best Practice C2 Assessment (CCRP, 2002), employed for National factors and elements (tools of national power), besides command and control.

### **Is Another Model Needed?**

In posing this question, it can be answered in the positive that there needs to be a new model, the negative that no new model is required, or the 'in depends' that something in between is the solution. The author feels that the last category is the appropriate answer.

That response is appropriate because what seems to be needed is not so much a new model of measures and tools, but a new model of connecting the data and information together, to generate knowledge and understanding related to national objectives and goals from the high levels to the low levels. By this the author means that there are National strategic, operational, and tactical goals and objectives; these also apply to the groups, organizations, and segments which represent the nation, the government, and the population, as well as the states, and the businesses. Each group and organization has goals and objectives with plans and resources, the challenge is understanding the interactions and influences between all of the.

Take for example, wanting to have a viable military draws contributions from: science and technology to provide improvements; the population to provide the personnel; the education system to provide learned individuals for the military, science and technology, and education sections; the commercial section to produce and deliver goods to be used and consumed; the area of medicine and health to support a viable birth-rate and healthy population to support all the others. This is not an exhaustive list, yet it starts to generate a connected network of factors which can be measured, managed, and potentially acted upon to improve contributions.

Most of these factors are regularly mentioned in isolation, they are very seldom mentioned together, though maybe linked in passing. Little time and effort seems to be invested in analysis of influence connections of these factors which can be considered as indicators of the 'tools of national power' because the influence connections are complex, like many of the topics regularly discussed during these CCRP symposia. Even still progress is being made, and accomplishments documented. The topics routinely discussed during these symposia are organizational theory, group interactions, complex adaptive systems, effects based operations and outcomes, influence

nets, and bayesian networks and weighting systems. They all have application in developing the knowledge and understanding of all the factors associated with ‘tolls of national’ power.

This is the area of future analysis and development the author will endeavor to follow in future papers. Having set that objective, continue with the last section to have an appetizer or teaser in that direction.

### **The Appetite Teaser and Close (For Now)**

As others have said, the devil is in the details concerning what items or factors to consider when performing evaluations, collecting data for analysis, and distilling toward knowledge and understanding. Imbedded within those efforts are the continual analysis of risks involved with the data, and the risks involved with the strengths and weaknesses which are being checked, for locations, actionable paths, and characteristics – in short opportunities for applying effects for producing desired outcomes while minimizing collateral effects and unintended consequences.

### ***The Basics of Opportunity***

While Sun Tzu can be quoted “If you know the enemy and know yourself, you need not fear the result of a hundred battles. When you are ignorant of the enemy, but know yourself, your chances of winning and losing are equal. If ignorant of both your enemy and yourself, you are certain in every battle to be in peril.” (Griffin, 1971, p. 84.) These points are important to consider regarding weakness and strength. Sun Tzu also says: “Subtle and insubstantial, the expert leaves no trace, he is mysterious, he is inaudible. Thus he is master of his own fate. Ho Yen-his: . . . I make the enemy see my strengths as weaknesses and my weaknesses as strengths while I cause his strengths to become weaknesses and discover where he is not strong. . . . I conceal my tracks so that none can discern them; I keep silence so that none can hear me.” (Griffin, 1971, p. 97.) This object of mis-alignment of strengths and weaknesses becomes even more challenging when considering the globalization objective and tenet for openness and transparency of information – that is potentially an even bigger hurdle to resolve, and beyond the scope of this paper.

Still another point regarding appearances of strengths and weaknesses is the consideration of the U.S. Marine Corp FMFM-1 tenet of paying attention to enemy vulnerabilities and opportunities (Grey, 1989, p. 35-37.) to which “we should focus our efforts against a *critical enemy vulnerability*. Obviously, the more critical and vulnerable, the better. But this is by no means an easy decision, since the most critical object may not be the most vulnerable. In selecting an aim, we thus recognize the need for sound military judgment to compare the degree of criticality with the degree of vulnerability and to balance both against our own capabilities. Reduced to its simplest terms, *we should strike our enemy where and when we can hurt him most.*” (p. 36, source emphasis and spelling.) This can be interpreted as related to systems interfaces and boundaries, as well as the interfaces and boundaries between the systems of organizations and groups (executive branch agencies, national organizations, international groups and countries, and even transnational groups). This truly makes for complex challenges and metrics if there is going to be an analysis of influence and paths for producing the desired effects. Yet, only by starting someplace is it possible to have an entry point for resolution and reduction of boundary or interface conflict, make corrections to improve poor communication (internal and external), and remove potential attack points.

Having said this, let us return to the important phrase introduced at the beginning of this paper regarding ‘employing all the tools of national power’ during the prosecution of the GWOT. Depending on the community of which we are a member, and the perspective we start from, the components or pieces of tools of national power are classically viewed in the Von Clausewitz paradigm of the people, government, and military as the stable triumvirate of support for national will and means. However, those three seem to neglect or seem too simple when we consider the various list of metrics from Mahan, Hartman, and Friedman. Even the Newsweek article “The Power Game” by Sparks and Gates, 22 December 2003 edition (Enterprise insert center fold-out,) offers an interesting set of comparison factors in the form of a supposed board game establishing rankings for: Military Power – three categories; Economic Power – three categories; Resource Power – three categories; Technological Power – four categories; Diplomatic Power – three categories; Movie Power – three categories; and, Social Power – three factors; to determine a level of rankings between international entities. (See Figure 2 for listing of comparison factors and categories.) This is a quite encompassing selection of metrics and provides a spectrum of examples which parallel and complement those mentioned previously in Mahan’s Hartman’s and Friedman’s models.

Military Power	<ol style="list-style-type: none"> <li>1. Military Spending</li> <li>2. Nuclear Warheads</li> <li>3. Weapons Exports</li> </ol>
Economic Power	<ol style="list-style-type: none"> <li>1. Total Gross Domestic Product</li> <li>2. Competitiveness (WEF Index)</li> <li>3. Exports</li> </ol>
Resource Power	<ol style="list-style-type: none"> <li>1. Oil Reserves</li> <li>2. Freshwater Reserves</li> <li>3. Agricultural Exports</li> </ol>
Technological Power	<ol style="list-style-type: none"> <li>1. Nobel Prizes in Science</li> <li>2. Patents Granted</li> <li>3. Internet Users</li> <li>4. Personal Computers</li> </ol>
Diplomatic Power	<ol style="list-style-type: none"> <li>1. Donors of Foreign Aid</li> <li>2. U.N. Security Council</li> <li>3. Environmental Treaties</li> </ol>
Movie Power	<ol style="list-style-type: none"> <li>1. Feature Film Production</li> <li>2. Film Investment</li> <li>3. Movie Tickets Sold per Year</li> </ol>
Social Power	<ol style="list-style-type: none"> <li>1. University Students</li> <li>2. Quality of Life (U.N. Index)</li> <li>3. Housing: People per Room</li> </ol>

**Figure 2 – The Power Game Factors and Categories**

Future development of this topic will offer a relationship or breakdown between the national and international strategic objectives through the executive agencies down to tactical employments, and then to the routinely reported metrics. This framework would need to establish allocations

of contributions and weights of factors for the components, sub-components, sub-sub-components, etc. to the basic fundamental data. An esoteric approach by a specialist or areas specialists may be great for the individual or community, but not gain acceptance and relevance, so that actions could be taken. Weighting and allocation factors could come from bayesian factor development processes.

### ***The Beginnings of the Breakdown***

While some will say this is pro-American/pro-democracy biased because the author is part of the system, the author is part of the system. The author does not find a more senior source of criteria for that common good than the Constitution of the United States. Which in the Preamble says: “. . . in order to form a more perfect union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity, . . .”

These objectives carry responsibilities and duties, as well as certain guarantees. A subset of the delegates and drafters of the Constitution writing under the pen name Publius, characterized all the points and arguments for and against the Constitution in *The Federalist Papers*, yet still managed to succinctly capture the Preamble language as the Union’s principle purposes are: “the common defense of the members; the preservation of the public peace as well against internal convulsions as external attacks; the regulation of commerce with other nations and between states, the superintendence of our intercourse, political and commercial, with foreign countries.” “These powers ought to exist without limitation: Because it is impossible to foresee or define the extent and variety of national exigencies, or the correspondent extent and variety of national emergencies, or the correspondent extent & variety of the means which may be necessary to satisfy them.” “The means ought to be proportional to the end; the persons, from whose agency the attainment of any end is expected, ought to possess the means by which it is to be attained.” (Hamilton, et al, p. 112., (18 Dec 1787), 1982.)

When an examination of these pieces of the Preamble and Publius’ comments, with the factors behind them, there is the opportunity to derive and characterize those items like a form of breakdown structure, and employing the data collection strategy of COBP – Experimentation (Alberts & Hayes, 2002) and NATO COPB Assessment (CCRP, 2002) methods and plans. We are once again quickly into the devil and the details . . . potentially having the statistics and data, supported by the processes which measure and generate them. With those statistics and information, along with the root influence chains, there might be the opportunity to invest actions and resources to improve the statistics, quite literally like effects based planning and outcomes. This is similar to the intent behind the 1993 GPRA, which intended to link strategic planning outcomes to budgets inputs for accountability and improvements. That is improvements whether they be tons of wheat grown, tons of cotton exported, \$s of products imported, number of high school, college, or grade school graduates, mortality rates of infants, successful numbers of new start businesses, unemployment rate, new home starts, birth rate, immigrant entry rate, citizen naturalization rate, technology development and discovery rate . . . they all can be monitored passively, or they can be analyzed and managed more actively, a la, goals, missions, and outcomes. (Thence into influence nets and outcomes management.)

### ***The Future***

This paper does not propose a new model, but instead an analysis framework of the various elements already being collected and analyzed. It essentially proposes to help with the analysis of their interactions and linkages for outcomes and effects (an opportunity for different utilization of effects based planning, execution, and operations) – a more expanded view of the factors and elements of the ‘tools of national power’. Specifically, to offer the beginnings of the methodology to establish a work breakdown (influence net) from our top national objectives and goals, through these families of metrics, producing the weighting factors and contributions for the influence nets for analysis and action planning. All to be accomplished while balancing the risks and resources available for investment to remove and mitigate risks and vulnerabilities as noted and alluded via Sun Tzu, Grey, and Publius remarks above.

Opinions, conclusions, and recommendations, expressed or implied are those of the author. They do not reflect the views of the Command and Control Research Program, DoD, U.S. Navy, Naval Sea Systems Command, or Program Executive Office for Integrated Warfare Systems. The author likewise assumes responsibility for any errors in this work.

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### **ACKNOWLEDGEMENT**

This paper is dedicated in memory of two individuals who offered support and encouragement: My Mother: Sarah S. Bryant who passed away late April 2003, two days before her 85<sup>th</sup> birthday. Secondly, my Father: Russell E. Bryant who passed away late May 2003, two days prior to his 92<sup>nd</sup> birthday.

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**Russell E. Bryant** is the Leader for Future Decoy Development in the Electronic Warfare Directorate, Program Executive Office for Integrated Warfare Systems. In 2000 he was selected as ‘Outstanding Alumni for Organizational Contribution’ Executive Potential Program, Leadership Development Academy, USDA Graduate School. Previously served as CVN Ship Life Cycle Manager in the Aircraft Carrier Program Office, Naval Sea Systems Command. Retired Reserve Lieutenant Commander with Surface Warfare, Nuclear Power, and Naval Control of Shipping/Convoy qualifications. Commissioned 1976 from the Rensselaer Polytechnic Institute NROTC program with a Bachelors of Engineering in Nuclear Engineering, and minor in History and Political Science. Active duty service: USS Mississippi (CGN 40); USS South Carolina (CGN 37); USS Texas (CGN 39); Commander Naval Surface Force, Atlantic Fleet (Readiness and Training) staff; and, Commander Naval Air Force, Pacific Fleet (Ship’s Material) staff. Graduated 1997 from the Naval War College, College of Naval Command and Staff, through the Non-Resident Seminar Program. Graduated 1999 from the USDA Graduate School Leadership Development Academy, Executive Potential Program. Member of the Defense Leadership and Management Program (DLAMP) Class of 2000. Awarded Masters of Arts in National Security and Strategic Studies from the Naval War College March 2003.

# CCRTS

2004

## POTENTIAL METRICS MODEL FOR DETERMINING THE ACTIONS AND STATUS OF TOOLS FOR NATIONAL POWER FOR HOMELAND AND NATIONAL SECURITY

Models, Granularity, Metrics, Bayes, and Outcomes

**RUSSELL BRYANT**

**PEO (IWS) 2E24**

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# OUTLINE

- **Why Address ‘Tools of National Power’**
- **Traditional Sources**
- **Additional Sources & Models**
  - Mahan, Hartman, and Friedman
- **Comparison with Cross-Walk**
- **Some Linkages**
- **Strategic to Tactical Framework**
- **Available Tools - Connected Paths**
- **Future Opportunities**

# Why - Tools National of Power?



Regarding the prosecution of the Global War on Terror, “. . . That’s the reason the 90-nation coalition is doing what it’s doing *using all the elements of national power*, putting pressure on bank accounts, putting pressure on law enforcement around the world, and seeking out terrorist heavens and attacking the terrorist networks. That’s the only way to deal with the problem.”

*Donald H. Rumsfeld, Defense Secretary*  
*March 4, 2004 News Briefing following attacks in Korbala and Baghdad*  
*(Emphasis added)*

# Traditional Sources

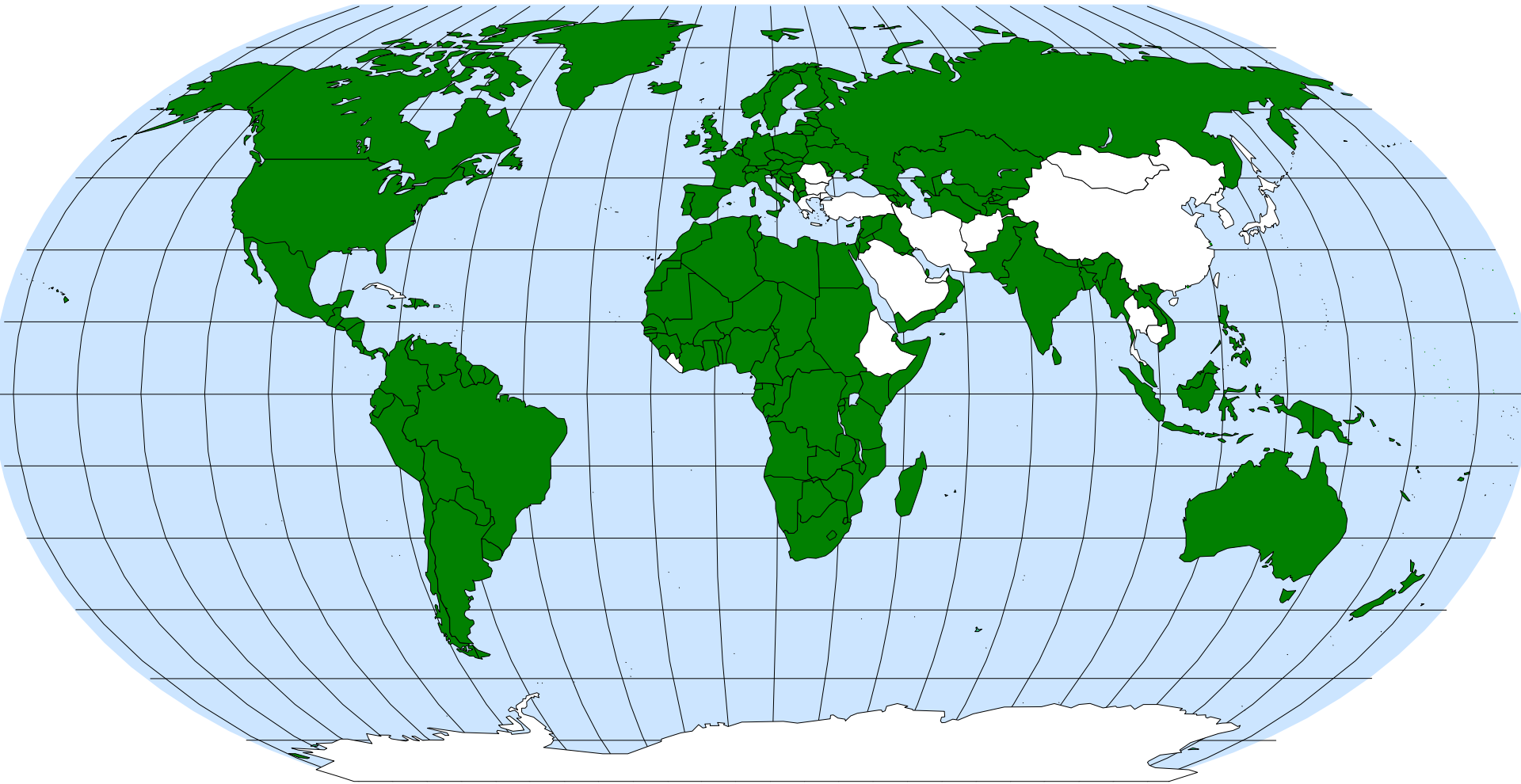
- **Von Clausewitz**
  - Gave us the tripod - Government, the People, and the Military
- **Stated in another frame**
  - Diplomatic, Economic, and Military
  - Sometimes referred to as Talking, Trading, and Fighting
- **Recently some other Factors added:**
  - Information; or,
  - International Relations Solutions

# **Additional Sources and Models with Context**

- **Alfred T. Mahan (1892)**
  - **The Influence of Sea Power on History 1660-1783**
  - **Six Factors**
- **Frederick H. Hartman (1957)**
  - **The Relations of Nations**
  - **Seven Factors**
- **Thomas L. Friedman (1999)**
  - **The Lexus and the Olive Tree**
  - **Eight Factors**

# The West and the Rest: 1920

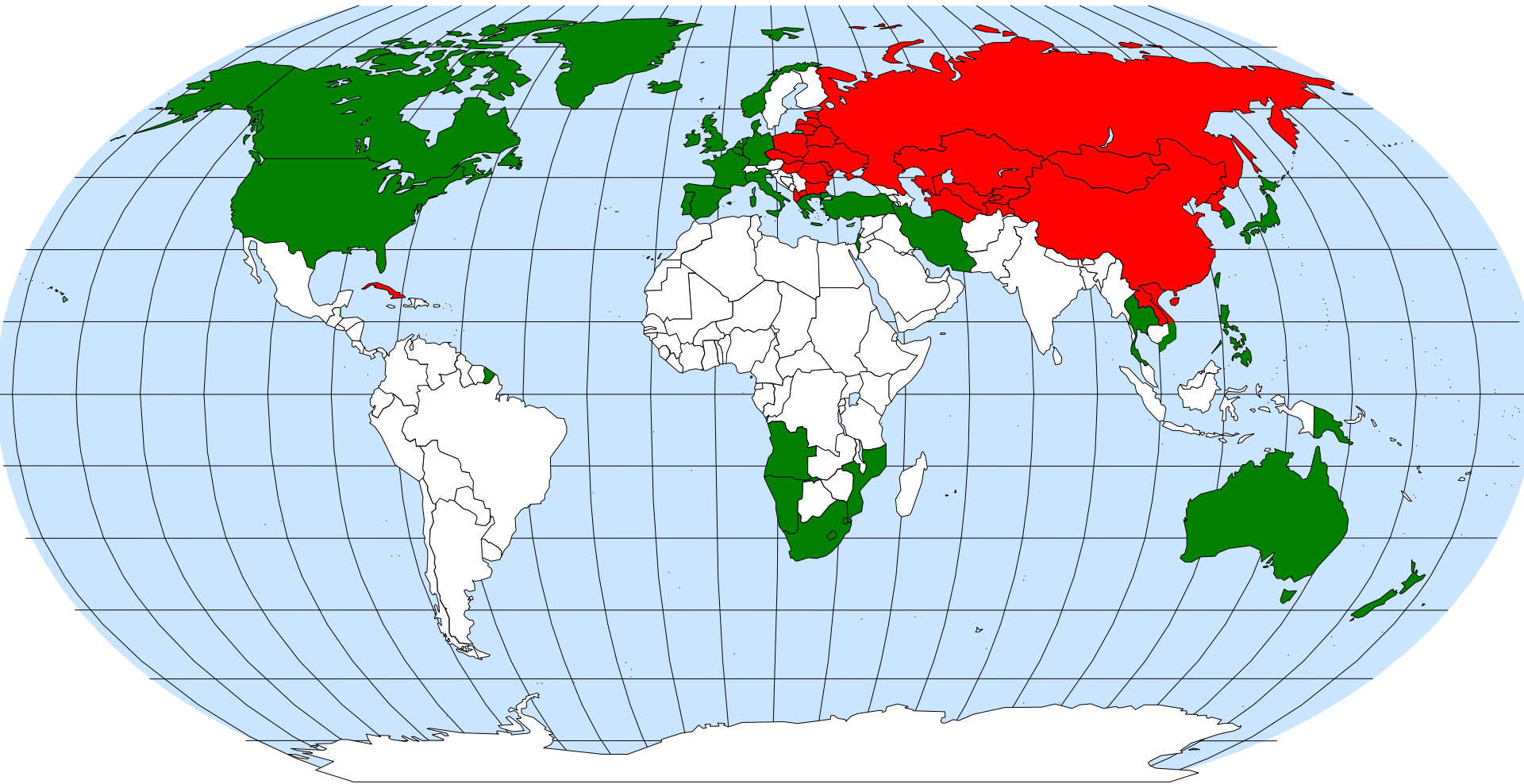
(A. T. Mahan)



■ **Ruled by the West**      □ **Actually or Nominally Independent of the West**

# The Cold War World: 1960s

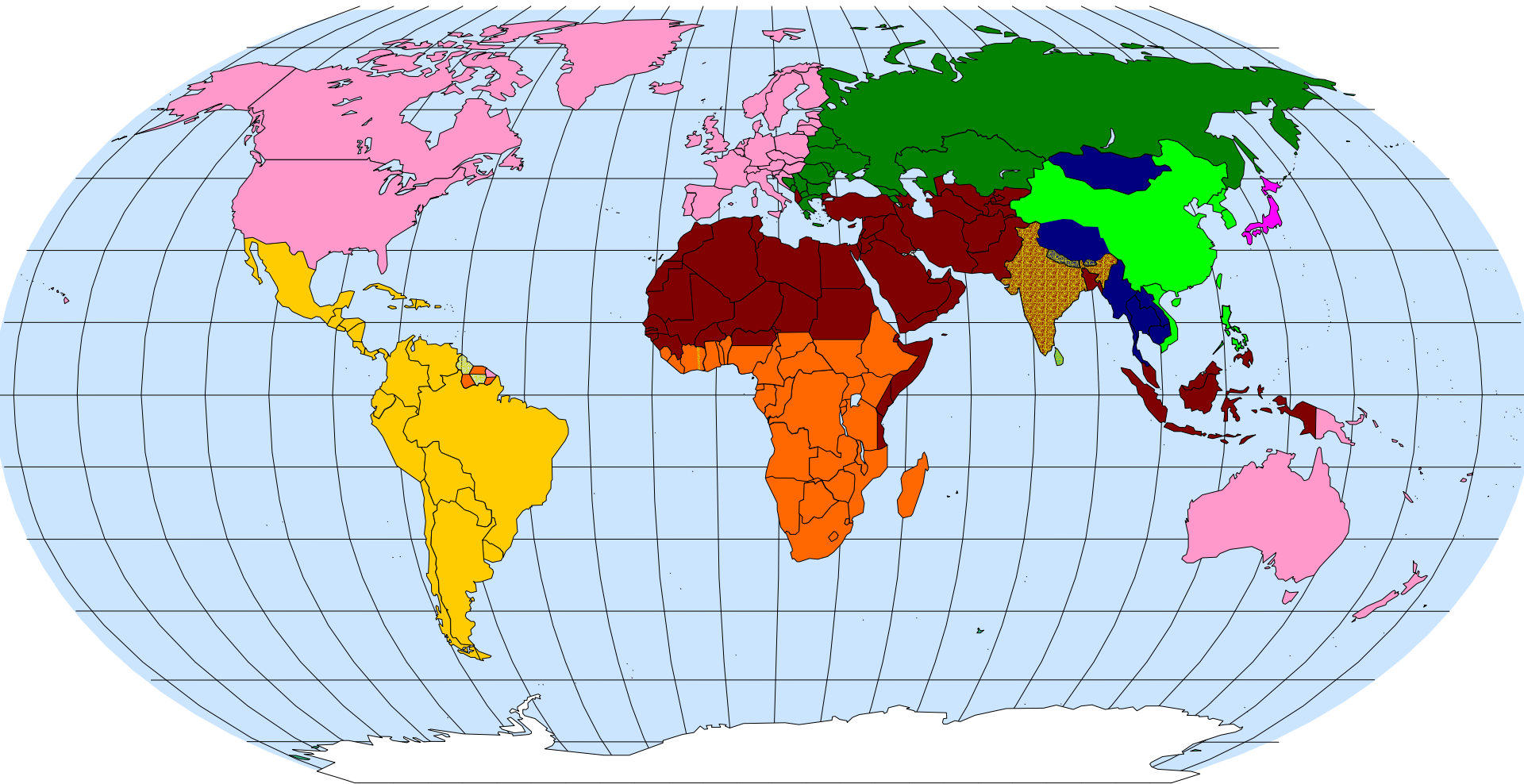
(F. H. Hartman)












■ **Free World**    ■ **Communist Bloc**    □ **Unaligned Nations**

# The World of Civilizations: Post-1990

(T. L. Friedman)



- |                                                                                                           |                                                                                                    |                                                                                                       |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
|  <b>Western</b>        |  <b>Islamic</b> |  <b>Orthodox</b> |
|  <b>Latin American</b> |  <b>Sinic</b>   |  <b>Buddhist</b> |
|  <b>African</b>        |  <b>Hindu</b>   |  <b>Japanese</b> |

Derived from 'The Clash of Civilizations and the Making of World Order, Samuel P. Huntington, Touchstone, 1997, Map 1.3, p. 26-27.

# Comparison with Cross-Walk

## Mahan

- Geographic Position
- Physical Conformation
- Extent of Territory
- Number of Population
- National Character
- Character of Government

## Hartman

- Demographic Element
- Geographic Element
- Economic Element
- Scientific-Technical Element
- Historical-Psychological-Sociological Element
- Organizational-Administrative Element
- Military Element

## Friedman

- How Wired Is Your Country?
- How Fast Is Your Country?
- How Much Does Your Country Weigh?
- Does Your Country Dare To Be Open?
- How Good Is Your Country At Making Friends?
- Does Your Country's Management Get IT?
- How Good Is Your Country's Brand?



# Some Linkages

## Mahan

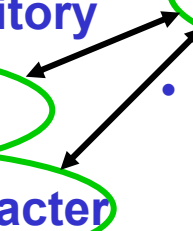
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- Extent of Territory
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- National Character
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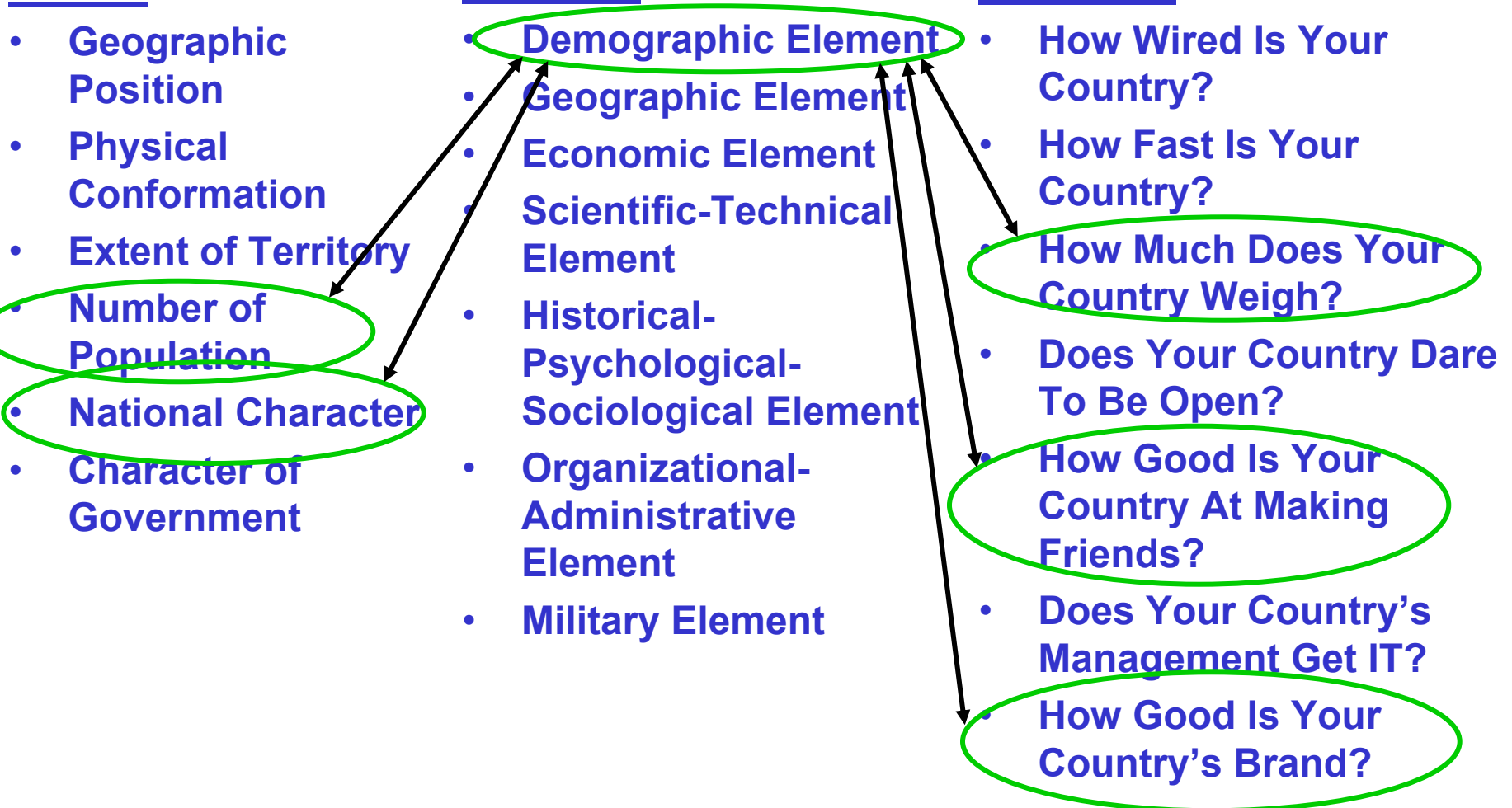
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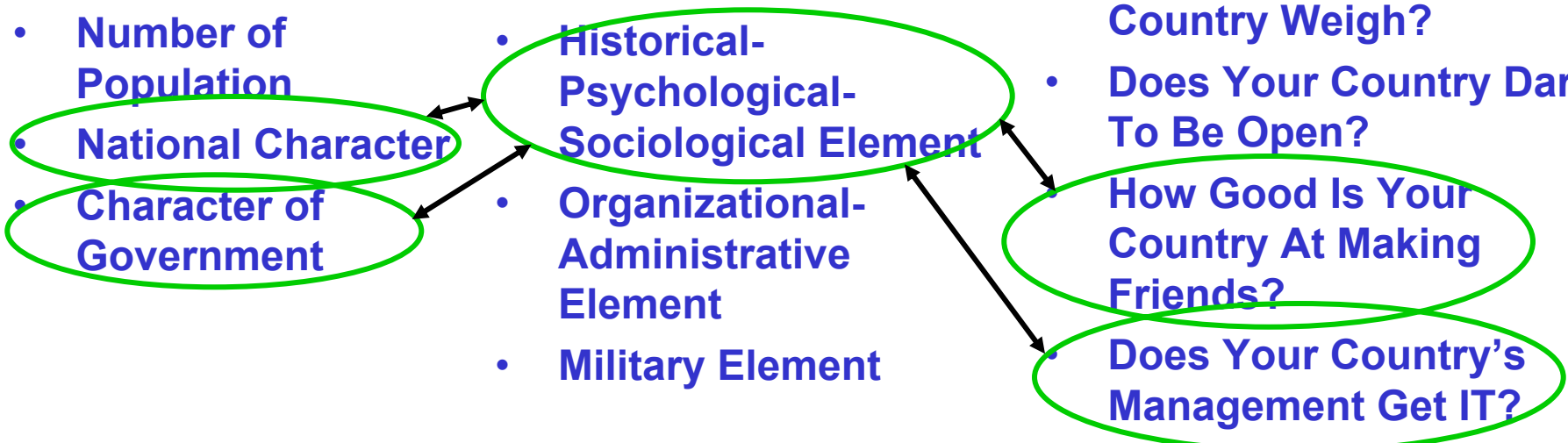
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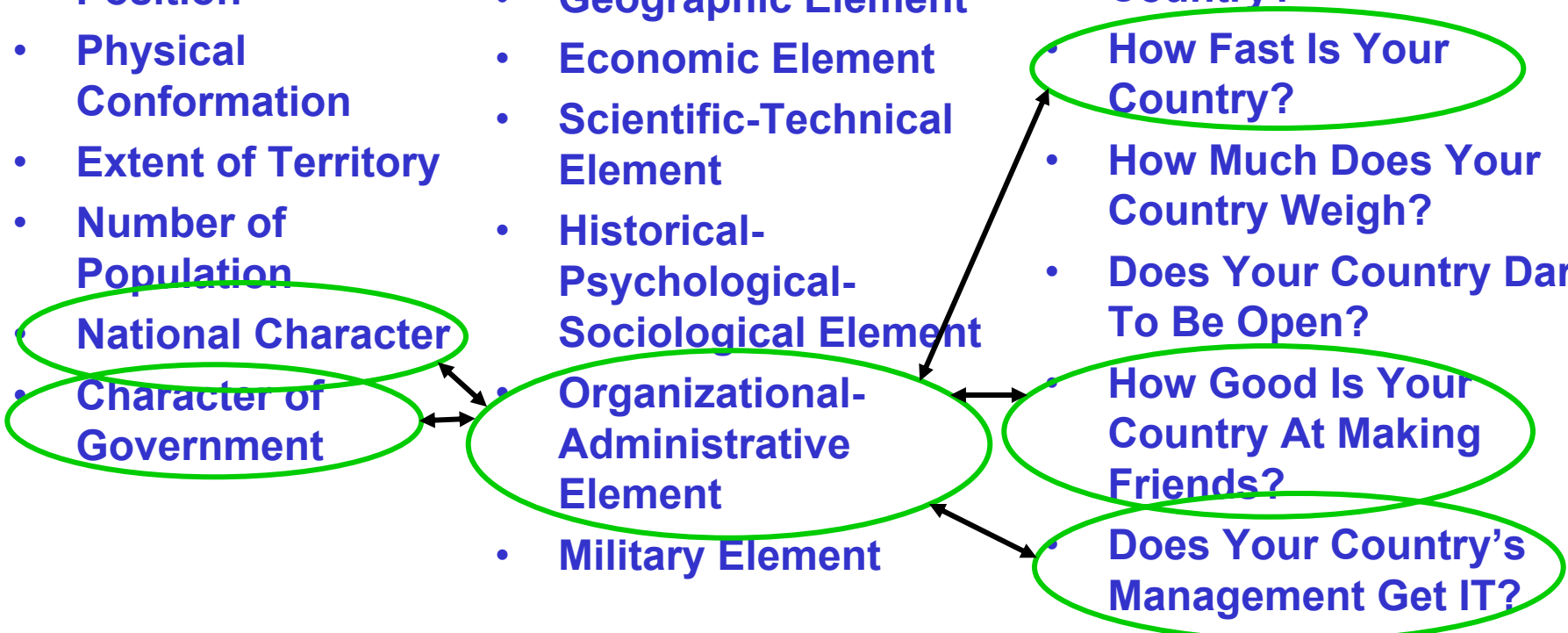
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# Some Linkages

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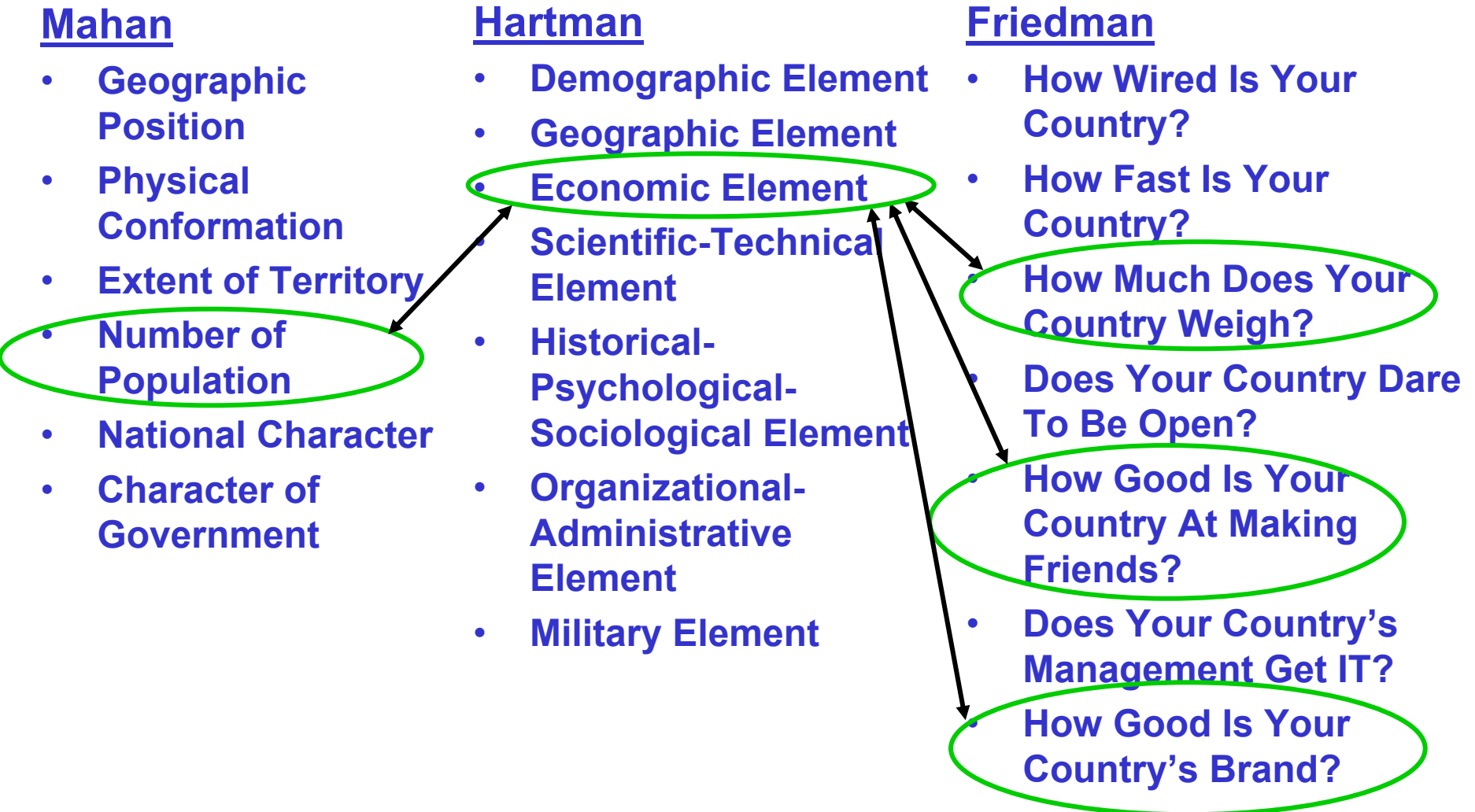
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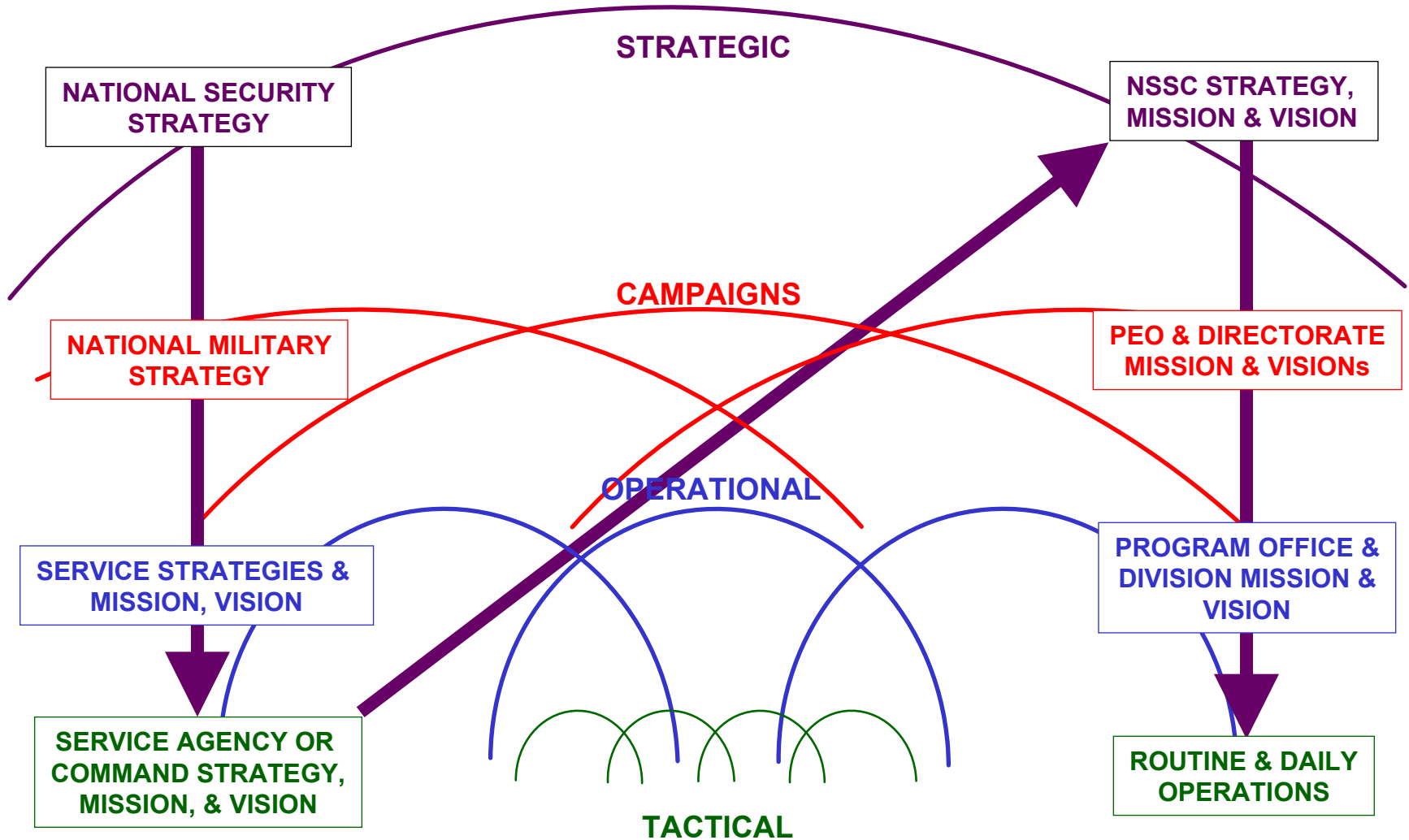
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- How Good Is Your Country's Brand?



# Strategic to Tactical Framework

- **Von Clausewitz**
  - Objectives, Centers of Gravity, and Fog of War
- **Sun Tzu**
  - Lots of Calculations, Knowing Yourself, and Where and How to Prepare
- **Mahan, Hartman, and Friedman**
  - Granularity, Metrics, and Understanding/Knowledge
- **Government Performance and Results Act**
  - Strategic Goals, Ways and Means, and Objectives
  - Sort of a melding of them all

# A Visualized Framework - STRATEGIC Through TACTICAL



# Strategic to Tactical Framework

- **Constitution; National Security Strategy; and National Military Strategy**
- **Executive Agency Strategic Plans; Missions, Visions, and Goals; and Guidance Documents**
- **Service Strategic Plans, Missions, Visions, and Goals; and Guidance Documents**
- **Service Agency and Command Strategic Plans; Missions, Visions, and Goals; etc.**
- **Etc.**
- **Trough layers Down to the Offices with their Routine and Daily Operations**



# The Power Game

<u>CATEGORY</u>	<u>METRIC</u>	<u>LEAD POSITION</u>
<b>Military Power</b>	<ol style="list-style-type: none"> <li>1. Military Spending</li> <li>2. Nuclear Warheads</li> <li>3. Weapons Exports</li> </ol>	<ol style="list-style-type: none"> <li>1. United States</li> <li>2. United States</li> <li>3. Russia</li> </ol>
<b>Economic Power</b>	<ol style="list-style-type: none"> <li>1. Total Gross Domestic Product</li> <li>2. Competitiveness (WEF Index)</li> <li>3. Exports</li> </ol>	<ol style="list-style-type: none"> <li>1. United States</li> <li>2. Finland</li> <li>3. United States</li> </ol>
<b>Resource Power</b>	<ol style="list-style-type: none"> <li>1. Oil Reserves</li> <li>2. Freshwater Reserves</li> <li>3. Agricultural Exports</li> </ol>	<ol style="list-style-type: none"> <li>1. Saudi Arabia</li> <li>2. Iceland</li> <li>3. United States</li> </ol>
<b>Technological Power</b>	<ol style="list-style-type: none"> <li>1. Nobel Prizes in Science</li> <li>2. Patents Granted</li> <li>3. Internet Users</li> <li>4. Personal Computers</li> </ol>	<ol style="list-style-type: none"> <li>1. United States</li> <li>2. Japan</li> <li>3. Iceland</li> <li>4. San Marino</li> </ol>
<b>Diplomatic Power</b>	<ol style="list-style-type: none"> <li>1. Donors of Foreign Aid</li> <li>2. U.N. Security Council</li> <li>3. Environmental Treaties</li> </ol>	<ol style="list-style-type: none"> <li>1. United States</li> <li>2. 5 Permanent Members</li> <li>3. Norway</li> </ol>
<b>Movie Power</b>	<ol style="list-style-type: none"> <li>1. Feature Film Production</li> <li>2. Film Investment</li> <li>3. Movie Tickets Sold per Year</li> </ol>	<ol style="list-style-type: none"> <li>1. India</li> <li>2. United States</li> <li>3. India</li> </ol>
<b>Social Power</b>	<ol style="list-style-type: none"> <li>1. University Students</li> <li>2. Quality of Life (U.N. Index)</li> <li>3. Housing: People per Room</li> </ol>	<ol style="list-style-type: none"> <li>1. Canada</li> <li>2. Norway</li> <li>3. Canada</li> </ol>

# MAKING TRACKS: MIGRATION IN THE 1990S

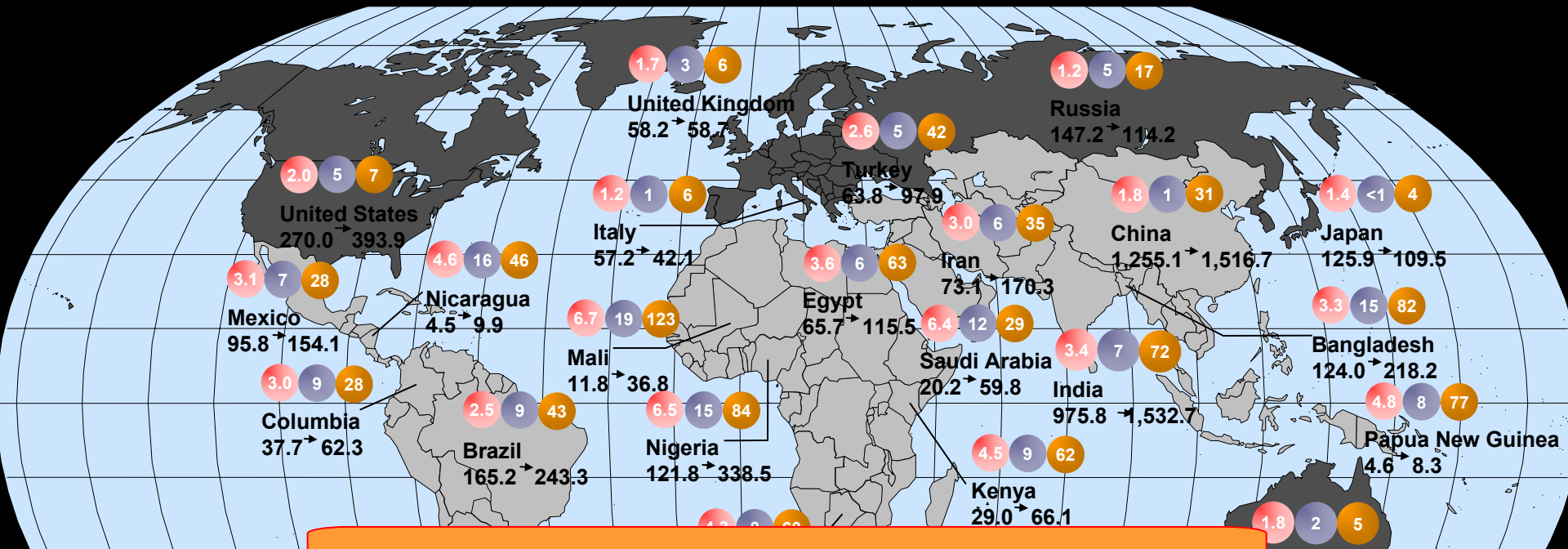
**“Desperate People Can Resort  
To Desperate Solutions.”**

Klaus Toepfer, UN Environment Programme



# POPULATION TRENDS

## HEALTH, WEALTH, AND POPULATION



**WILL 'DEVELOPING COUNTRIES' POPULATION GROWTH OR THE 'VIRTUOUS CYCLE' PREDOMINATE?**

**MAYBE A COMBINATION?**



*Developed countries*



*Developing countries*



1 Average number of births per woman



1 Percentage of teenage girls (15-19) giving birth each year



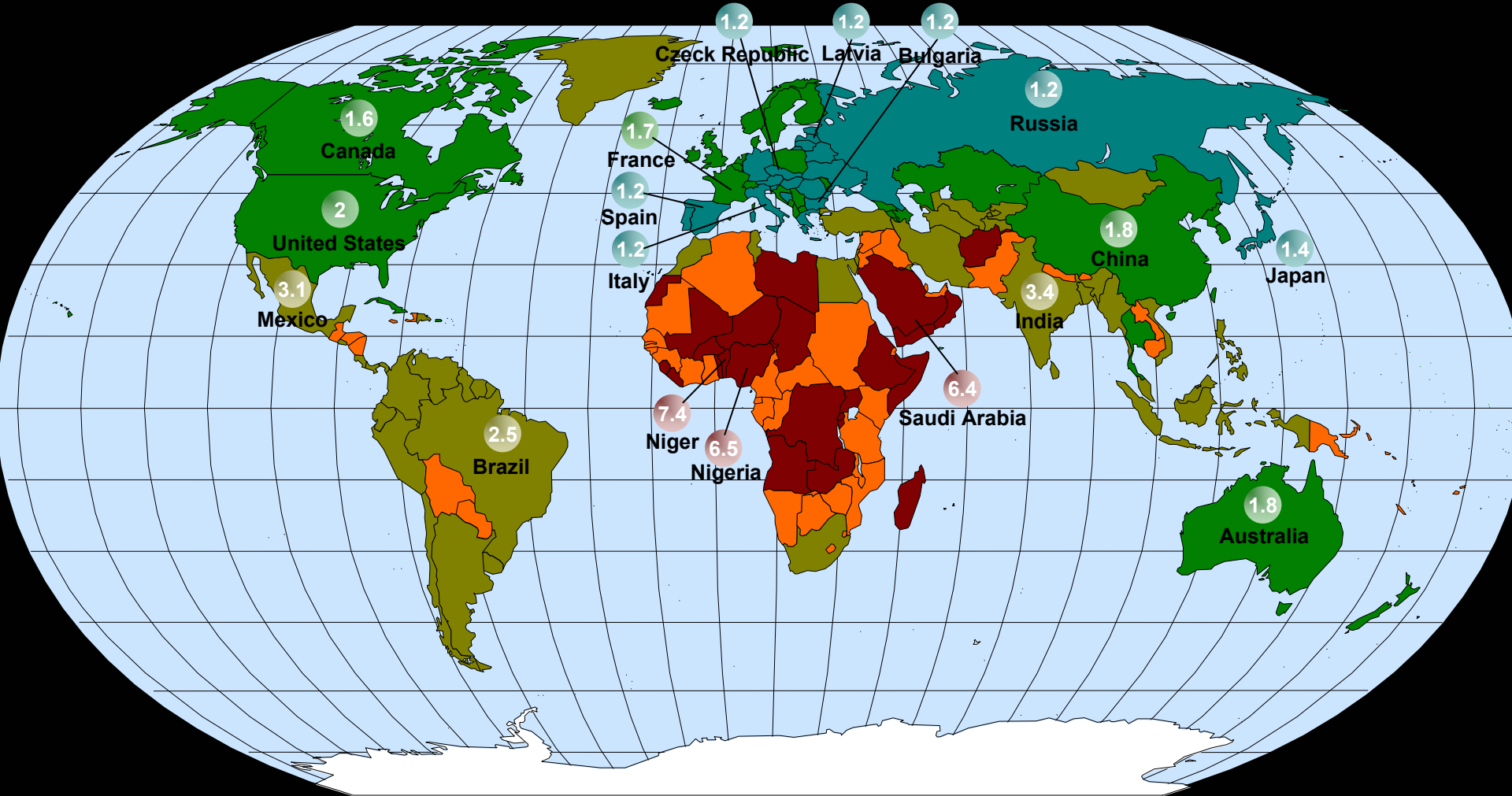
1 Infant mortality per 1,000 births

Country

1998 population → 2050 population (in millions)

Derived from National Geographic, October 1998

# FERTILITY: SMALLER FAMILIES



Fertility (Average births to women during lifetime)

6 and above

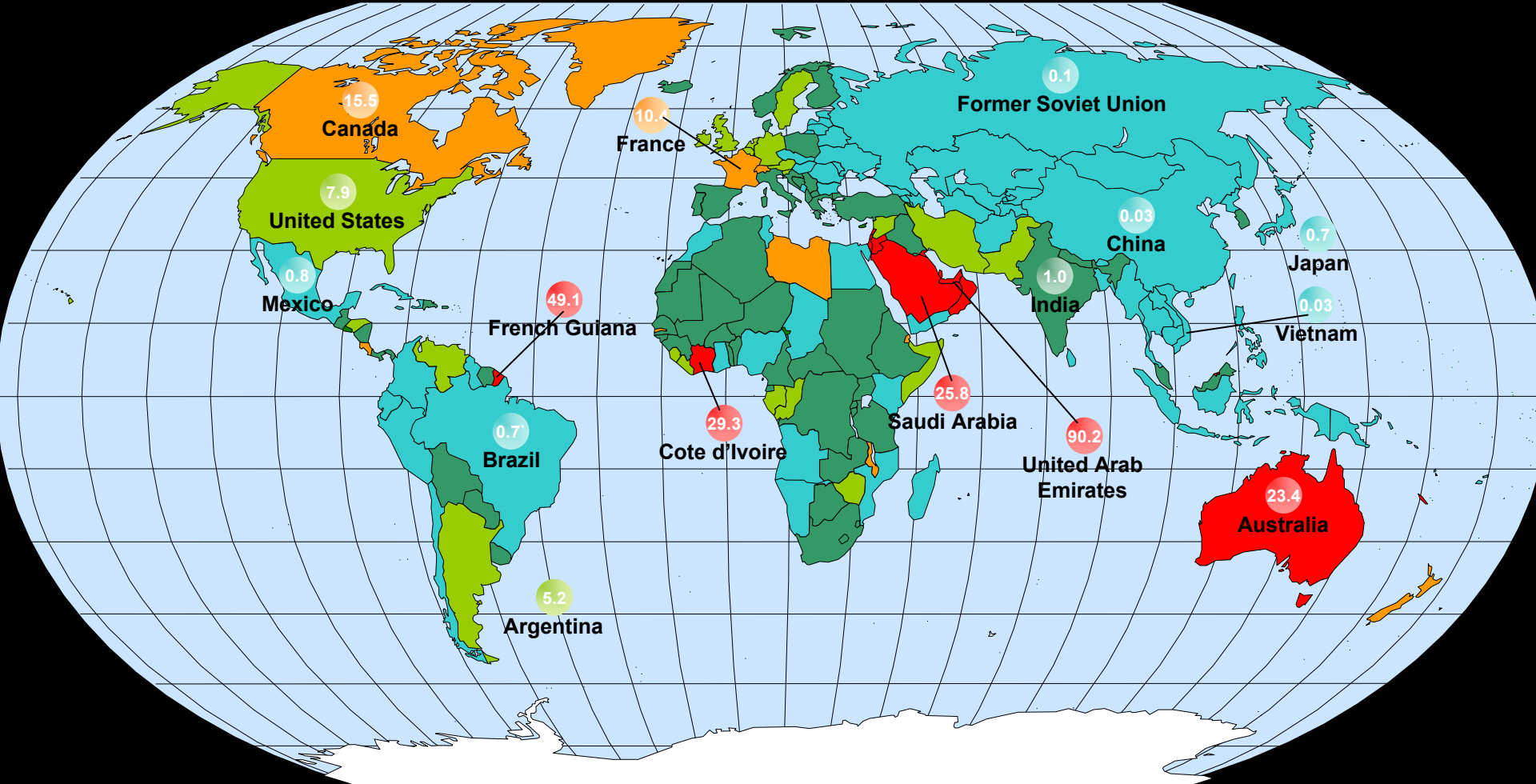
4 – 5.9

2.2 – 3.9

1.6 – 2.1

Less than 1.6

# WORLD MIGRATION: DISTANT HOMES

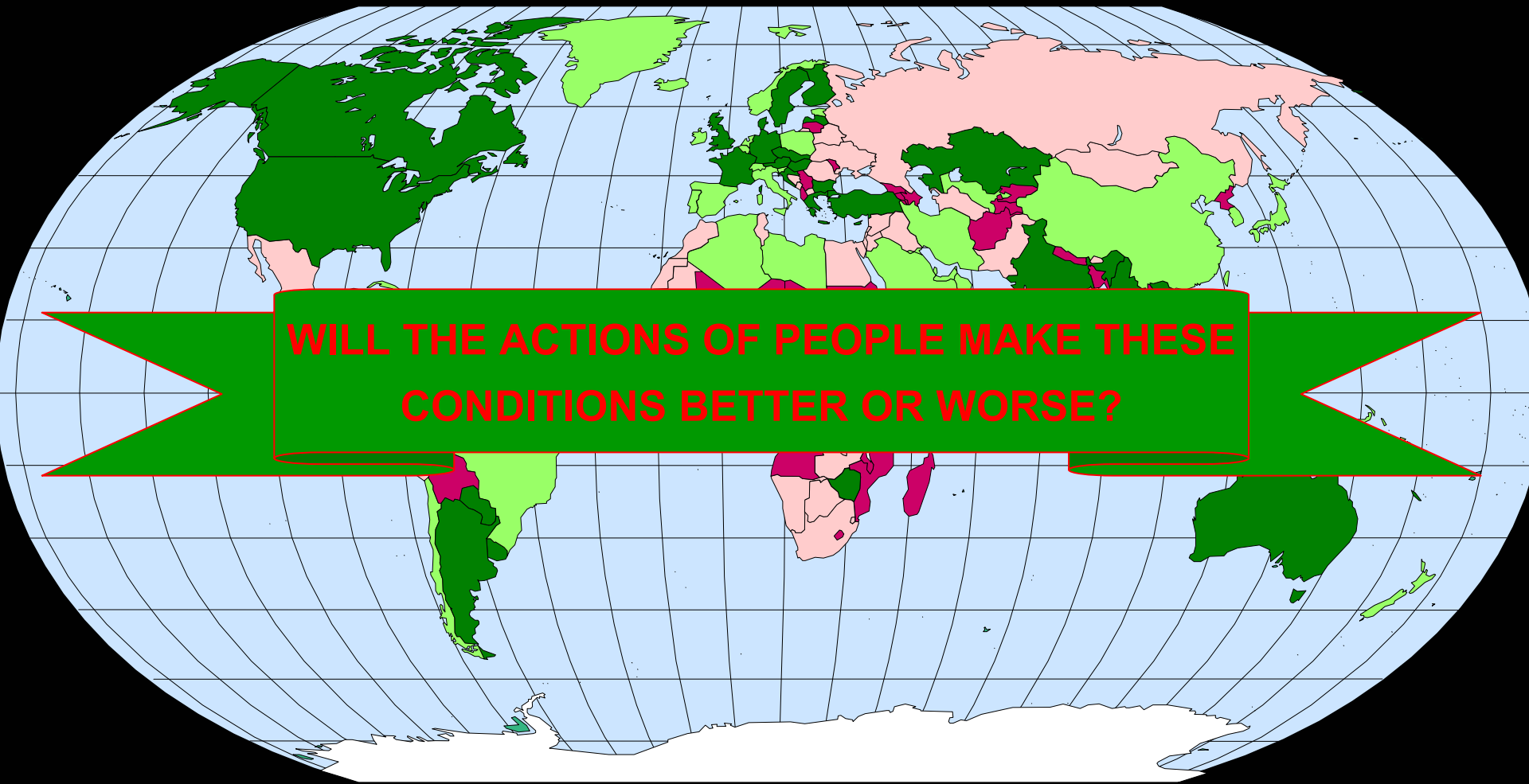


Migrant Population (percent of population)

- 20 and above
- 10 – 19.9
- 5 – 9.9
- 1 – 4.9
- 0 – 0.9

Derived from National Geographic, October 1998

# GLOBAL HARVEST FROM THE GOOD EARTH



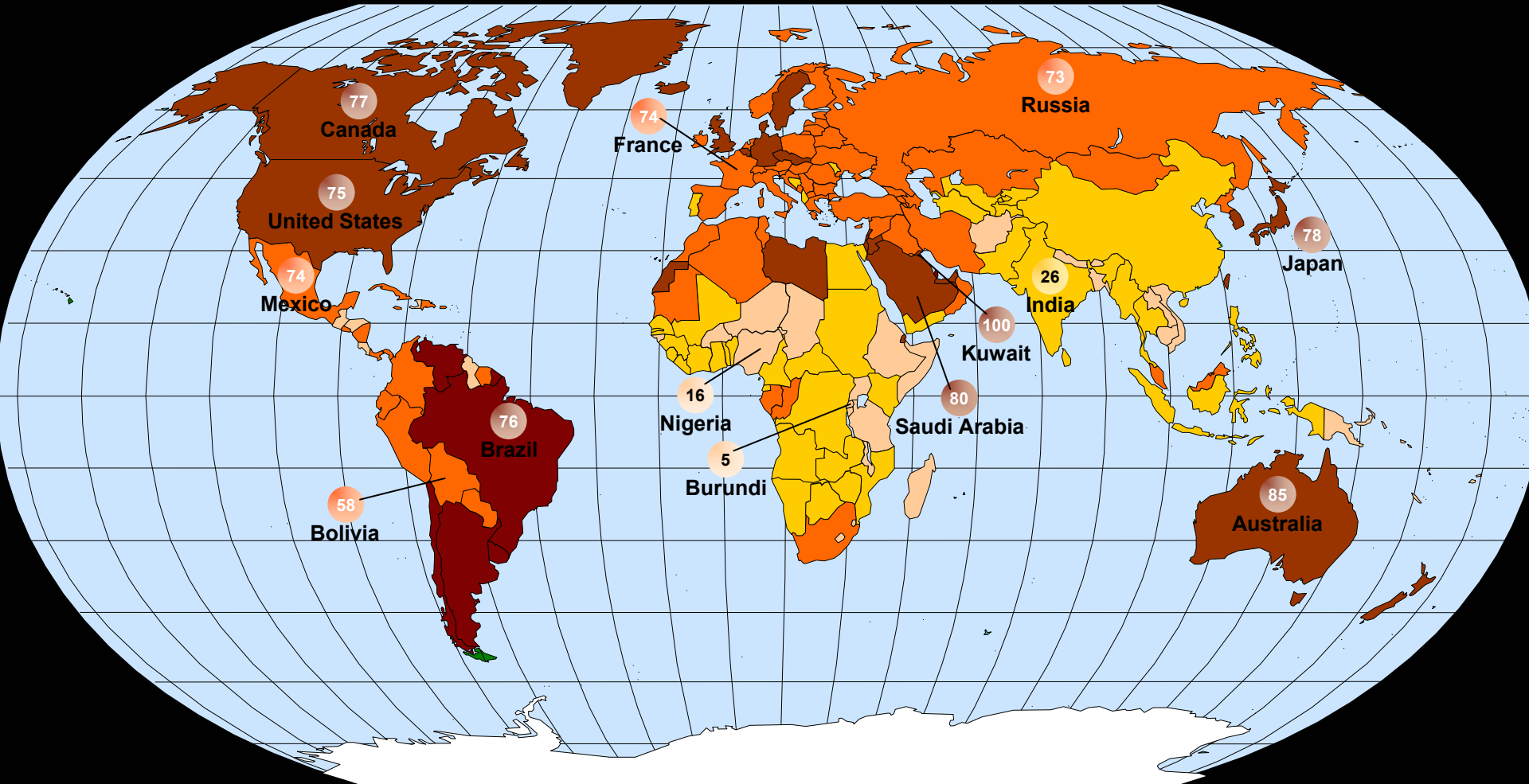
■ *Net exporter*

■ *Net importer (all imports purchased)*

■ *Net importer (1-20 percent imports as aid)*

■ *Net importer (21 percent or more imports as aid)*

# URBANIZATIONS: CLOSER QUARTERS



Population in Urban Areas (percent of total population)

75 and above

50 – 74

25 – 49

0 – 24

# PRESERVING THE ESSENCE OF LIFE

Annual withdrawal of fresh water in gallons per capita (not including rainwater usage)

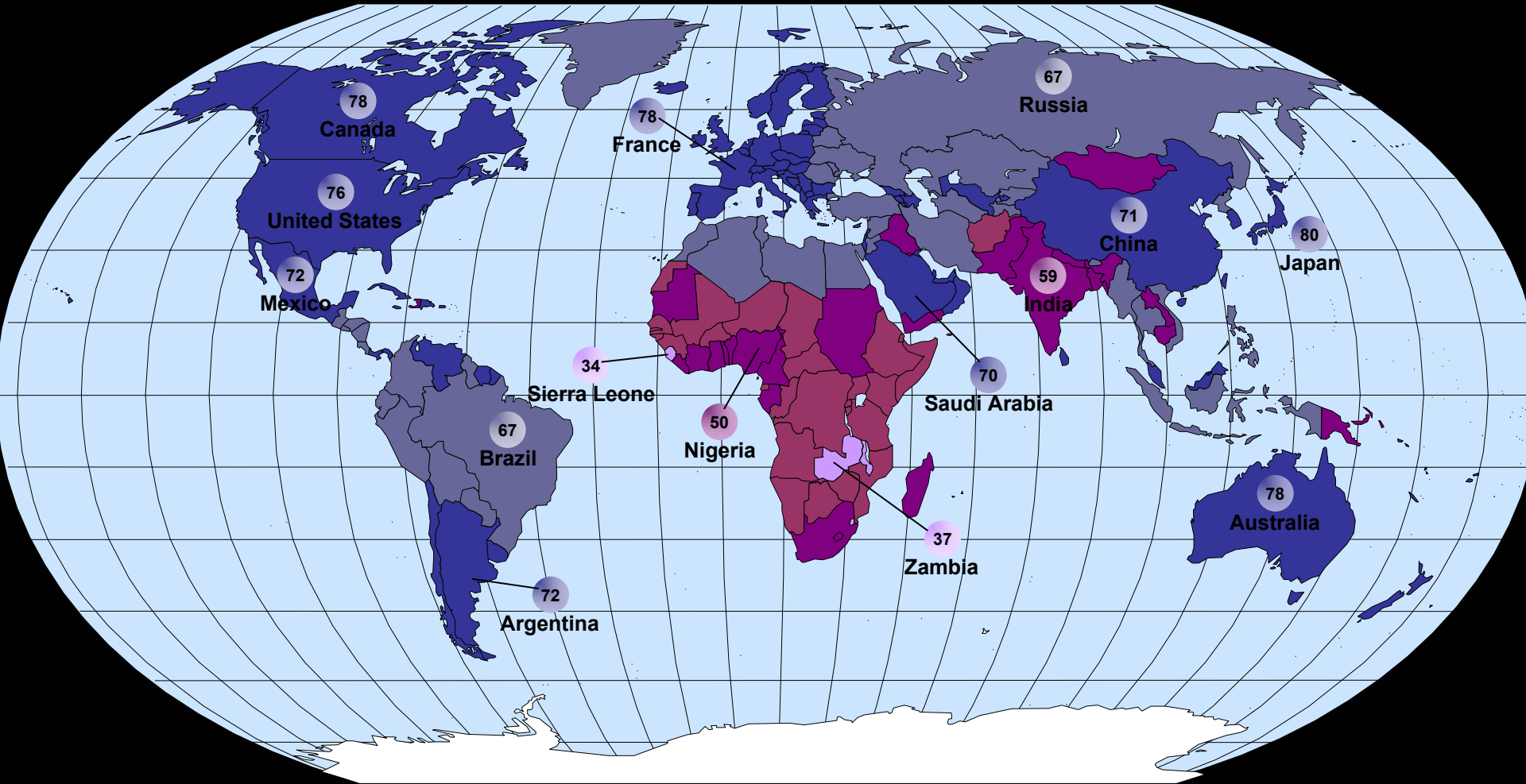


- Adequate (more than 440,000)
- Stressed (264,000 to 440,000)
- Scarce (less than 264,000)

Annual availability of renewable fresh water in gallons per capita (including rain water)



# LIFE EXPECTANCY: LONGER LIVES



Life Expectancy (years)



# Available Tools - Connected Paths

(Models, Granularity, Metrics, Bayes, and Outcomes)

- **Command and Control Research Program**
  - Bayesian Principles for Analysis of Operations and Contributions
  - Influence & Colored Petri Networks
  - Effects Based Planning and Operations
  - Other Tools not Tested or Tried
- **Utility Outcomes Model**
- **Applied to Multi-Dimensional Strategic through Tactical Framework**

**Scary Opportunities with Potential Benefits  
(Fangorn Forest and Paths of the Dead)**

# CCRTS

## Future Opportunities

2004

- **This is the Sun Rising**
- **Opportunities**
  - **Conferences Like this**
  - **Interactions and Influence**
  - **Developing Understanding and Knowledge**
  - **Many Calculations**
  - **Looking Strong Where Weak, Weak Where Strong, and maybe even Prepared All the Way Around**
  - **Synergistic Opportunities Between all the Sections of the Nation(s), with Allies and Coalitions**
- **Further Development of the Presented Framework**