2. The vision of the 21st century as a challenge for social sciences

In this chapter we discuss the first Gordian Knot of the 21st century, "political cannibalism". However, following Steve Denning great book[1], which outlines great importance of storytelling we begin this chapter with a very powerful story borrowed from Gyorgy (2005).[2]

"One and a half thousand years ago after a long voyage the legendary chieftain Hotu Matu'a touched land on the Easter Islands which seemed to be Paradise. The climate was pleasant, the soil was fertile and the flora diverse. The wanders of the ocean settled on the island covered by huge palm trees and soon populated it. The small communities owning 11 separated territories, led by their own chieftains and also competing with each other lived their everyday lives: they cut down the palm trees of the forests, and they decimated the original flora and fauna of the island. They elected huge stone works astonishing everybody – the biggest of which was 20 m high statue called today El Gigante, weighting 270 tons – with the help of which they wished to gain their God's goodwill and support. During the one thousand years following settlement the population increased from a few dozen to ten thousand persons. While the population density continuously increased, no trees were left on the island. Due to disappearance of the forest soil erosion became more intense, which reduced the crops. No basic material was left even to prepare new boats. Thus fishing stopped, too. Finally, there was not enough wood left for the islanders to cook meals, either – they had to use grass to make fire.

When the population exceeded 15 thousand persons, the age of famine, social chaos and cultural disintegration set in abruptly – practically within the life of a single generation. The society was destroyed by mass death caused by bloody wars and cannibalism. Soldiers assumed power, the landscape was covered by spearheads produced in vast amounts, the winners ate the losers or enslaved them, the enemy tribes destroyed each other's statues, people took shelters in caves to defend themselves. On the formerly abundant island the earth of one of most excellent societies of the world degenerated to a state as the Eastern Island is today: bare, grass-covered praire, varied with destroyed statues, keeping only one-third of the former population ".

This sad Easter Island story outlines a one-dimensional problem faced by inhabitants of the island, the lack of resources to maintain the standard of leaving in the face of growing population. Easter

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[1] Denning Steve (2007) … storytelling

[2] Gyorgy M. (2005) „Futures of Europe", in Kuklinski A., Paswlowski K. eds. "EUROPE – The Global Challenges", WYzsza Szkola Biznesu National Lousi University and Recifer Eurofutures Publication Series REUPUS, Nowy Sacz 2005.

Islandes lacked the ability to think in the long term so they failed to notice that happy but rapidly growing population would soon use up all available resources and this rapid resource use would also isolate island and eliminate inhabitants ability to travel and source necessary goods elsewhere, from the sea and from the other islands. Hence, wise and indispensable decisions that should have been taken were not even discussed. Picture the group of people cutting down last few trees. Instead of building a boat, they used up all wood for short-term needs, such as cooking meals or making weapons. When bad time came they also lacked the ability to form strategic alliance between the tribes to tackle the problem, which led to outbreak of the worst human instincts, including cannibalism. Finally, the population was probably too small to come up with disruptive innovations that would prevent the worst[3].

This lack of vision, and lack of ability to take strategic, long-term decisions produced a Gordian Knot, that destroyed the Easter Island, as the Alexandrian Solution failed to emerge amid low level of intellectual capital of the island. This story is very relevant today, as we document in this book that the world today is facing similar challenges the Easter Islanders faced, but across multiple dimensions. One analogy is very easy to see. In the year 1000 there were no more than 250 million people, in 1500 there were 450 million, in 1900 1.63 billion, in 1950 2.5 billion and at turn of the millennium there were 6.2 billion inhabitants on the planet Earth. Available forecasts put human population in 2050 at close to 9 billion. This rapid population growth creates demand for various resources: food, energy, various services. As we show in the next chapter human footprint has exceed the Earth biocapacity already in 1980s. Oil prices exceeding 100 dollars per barrel and rapidly rising food prices are best examples of demand/supply imbalances on various markets, which are aggravated by financial markets activity.

[insert figure 1 here: long term chart of oil prices and basic foodstuffs prices: rise, soya and wheat, annual, from 1950 to 2007]

One question emerges naturally. Is it possible that humanity will launch massive resource wars, and in some regions winner will literally eat losers? Imagine Germans winning a war with French and eating them for dinner. Will beer or riesling go better with a steak made with a French human meet?[4] Or imagine some African countries invading others and eating them for lunch. This is unthinkable in

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[3] See Romer P. (…) and Rybinski K. (2007) "Three faces of globalization. Offshoring – global imbalances – monetary policy, Difin, Warsaw, 2007 (in Polish).Both texts explain why big populations are more likely to produce disruptive innovations, that sometimes rise to the status of Alexandrian Solutions.

[4] This example is not as ridiculous as it appears at a first glance. Reuters reported in March this year that Charles Taylor, former dictator of Liberia encouraged his soldiers to eat their captured alive enemies.

Europe today, but in 30-50 years, with present demographic trends Europe will become a very different continent, populated heavily by immigrants from all over the world. This is unthinkable by today's European standards, but imagine permanent black-outs, lack of proper store supplies, disintegration of today's local communities. It could happen very quickly, it took thousand years on the Easter Island, but today world is moving much faster, and certain processes could emerge within next few decades. This is unthinkable in educated societies, also because 6 billion people are more likely to come up with disruptive innovation solving the problem than 15 thousand people living on the Easter Island. But will there be a global framework supporting such solutions? Will there be leaders in key nations that will acknowledge that we have a problem, will they seat together and agree on what bold decisions should be taken? These are questions that cannot be answered affirmatively today. On the contrary, many decisions taken by some nations prove otherwise. US President, G.W.Bush, the most powerful man on Earth while in the office, once said *the American way of life is not subject to negotiations".* He could not have been wrong more. The American, the European, Asian, African, Australian and even Eskimosian way of life[5] is not only subject to negotiation, it will surely change, in some places in a very dramatic way.

The Eastern Island dilemma should be seen in a broader context, which includes the issue of global leadership. The reason is that global leader often defines the set of values and the set of rules that govern the contemporaneous world. As shown by Antoni Kuklinski[6] the past 200 years have witnessed important changes in this respect. Kuklinski defines several periods of creation and destruction of the global order. In 19th century Great Britain was in charge of global leadership and the period can be referred to as *Pax Britanica*. A symbol of this global leadership was a coronation of the British queen for the Queen of India **[dodać !!!]**. In this period vast majority of world foreign exchange reserves were held in British pounds, which dwarfed Swiss franc and German mark as the reserve currency choice. In 19th century it was unthinkable to use US dollar as a reserve currency. A series of strategic mistakes **[add Suez canal as example – from blog]** led to a collapse of the British empire, and as a matter of fact Great Britain should probably stop using the prefix Great. Period between the First and Second World War was a transition when *Pax Britanica* has been replaced by *Pax Americana*. It was the United States that played a key role in shaping the international governance order after the second world war, which was based on Bretton Woods institutions and on Washington consensus as a framework of political-correctness in the area of policy-making. US dollar has become the world reserve currency, accounting today for two-thirds of world reserves

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[5] It is easy to imagine that global warming will make it impossible to live in igloos, and when population of renifer gets decimated the Eskimos tribe will cease to exist, they will have to move to other locations. When last renifer dies it will also be more difficult for parent to explain to their children that Santa comes with presents for Christmas. It shows that our culture will likely change together will changing economic conditions.

[6] Kuklinski A. "Procesy tworzenia i destrukcji porządku globalnego", forthcoming in quarterly Journal Kolegium Nauk o Przedsiębiorstwie, SGH, Warsaw, 2008, in Polish. (Eng. „Processes of creation and destruction of the global order")

with the British pound share falling short of five percent. US economy accounts for 25 percent of the global economy, and together with Canada it spends 50% of the world defense budget[7].

Kuklinski (2008) posits that *Pax Americana* has ceased to shape the global order around 1985, when Soviet Union showed first major cracks, and collapsed few years later. He notices that after the implosion of the biggest communist empire US was left as the only military superpower. An important question emerges why during the last 25 years no new global arrangement has been designed to take into account rapid global changes, which transformed themselves into Gordian Knots presented in this book.

There are several explanations possible. Rybinski (2008)[8] argues that there were two factors responsible for this strategic blindness. Firstly, last 25 years are often described as a "Great Moderation" period[9]. Inflation fell across the board in all countries, on all continents, with rare exception of countries such as Zimbabwe, where inflation hit 100,000 percent amid exceptionally poor governance. At the same time output volatility fell to record low levels (despite crises in Asia, Russia and Argentina) and the last five years witnesses a very strong global growth reaching 5 percent. There are many papers analyzing factors behind this good global economic performance[10]. Rybiński (2007a) reviews the existing literature and show that globalization, less frequent and smaller shocks that in 1970s and 1980s and independence of central banks which focused on achieving stable prices, all these factors together contributed to reducing inflation and reducing output volatility. This "Great Moderation" as a period of global prosperity and global expansion of corporations from the West made it very difficult to alert decision-makers that *Pax Americana* is falling apart and that Bretton Woods institutions lose their global mandate.

Secondly, as shown in Opala, Rybinski (2007) last 25 years witnessed an unprecedented development of the global financial markets. Bond markets' capitalization rose from 40 percent of the world nominal GDP to 130 percent, stock markets' capitalization advanced from 30 percent to almost 100 percent of GDP, and the notional value of derivative contracts (excluding commodity derivatives) catapulted to eight times the world GDP.

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[7] See Brzezinski Z. "Second chance", Basic Books, 2007.

[8] Rybinski K. "Komentarz do artykułu „Procesy tworzenia i destrukcji porządku globalnego" prof. Antoniego Kuklińskiego. forthcoming in quarterly Journal Kolegium Nauk o Przedsiębiorstwie, SGH, Warsaw, 2008, in Polish. (Eng. „Comment on A. Kuklinski Processes of creation and destruction of the global order")

[9] See … **(wziąć źródło z mojej książki)**

[10] For example Stock, Watson (2004), Bernanke (2004), Blinder, Reis (2005), Sims, Zha (2005), Rogoff (2006), MFW (2006), Cecchetti et al. (2005).

Table 1. Financial markets development (in % of global GDP)

% of nominal global GDP	1980	1993	2000	2005
Global bond market capitalization	39.6	91.4	113.6	130.3
- government debt securities	19.8	43.4	44.2	51.7
- private debt securities	19.8	48.0	69.4	78.7
Global equity market capitalization	29.7	58.6	100.9	98.9
Global bank deposits	49.5	67.2	78.9	85.4
Global derivative markets (notional outstanding)	n.a.	386.1	345.4	798.9

Global derivative markets - first data publicized by BIS corresponds to the year 1998. Data for 2000 and 2005 without commodity contracts.
Source: BIS, OECD, McKinsey Global Institute, IMF, Morgan Stanley, own calculations
Source: Opala, Rybinski (2007)

As we show later in this book financial markets became a very important source of growth and prosperity, but at the same time their influence on policy agendas increased dramatically. For example Federal Reserve under Greenspan but recently also under Bernanke chairmanship drastically reduced interest rates every time Wall Street was in trouble, this policy earned a name "Greenspan put", which reflects the payoff structure of buying right to sell assets at a pre-specified price. Another example is double morality of US lawmakers and the IMF. When financial institutions in developing countries made stupid investments often recommendations were that Schumpeterian "destructive creation" should play a key role in bringing about new equilibrium. However when US banks face similar problems then US authorities resort to all possible tricks to save them, even at a price of creating a massive moral hazard in the future. It is well documented that financial markets are short-sighted and are incapable of thinking long term; when next quarter performance is important why worry about what will happen five years ahead, not to mention fifty years ahead. So financial markets strong influence on policy agendas made it very difficult to launch a global debate about next order post *Pax Americana*.

Both factors together: Great Moderation and financial markets hegemony delayed taking bold geo-strategic decisions, which led to emergence of several Gordian Knots of the 21st century.

Another answer to question put forward in Kuklinski (2008) is given in a very illuminating book Brzezinski (2007). Unlike Rybinski (2008) who focuses on economic and financial agenda, Brzezinski explanation why no new order has been created in the last 25 years is placed in leadership, military and diplomatic context. He argues that after the collapse of the Soviet Union United States remained the only power in the world, and that there were widespread expectations that it will play a role of a global leader, taking responsibility for maintaining global order and securing global peace. Brzezinski argues that all three presidents George Bush, Bill Clinton and George W. Bush failed to deliver the much needed global leadership. Brzezinski is particularly critical about last president performance, who presented a simplistic, dogmatic and one-sided view of the world which proved self-destructive to the American global leadership. The Statue of Liberty, once a global symbol of American values was replaced by the Guantanamo prison symbolic. Brzezinski is absolutely right in his assessment. It is enough to say that for the first time ever Chinese president can crash the dollar and send US economy into tailspin with one comment, that China will no longer buy dollars. Islamic world exhibits

an open hostility vis-à-vis the West, which should be attributed to the United States taking openly the Israel side in the Israelis-Palestinians conflict. More countries acquired weapons of mass destruction, Iran is gaining strong influence in the Gulf, and world which once believed in US intentions learned that top US officials may present fake evidence to the world to justify military action. Or consider how alienated the US became by comparing the involvement of other countries in the first Iraqi war and in the second Iraqi war, where for example no Islamic country sent its troops to support the second invasion, while the in first one in 1990 large participation secured Saudi Arabia, UAE, Egypt, Syria, Kuwait and Pakistan. Brzezinski argues that US will get a second chance to regain the world global leadership, and here, for the first time, we disagree with conclusions reached in Brzezinski's excellent book. It is inevitable that global leadership is moving to Asia, the question is only about the pace and whether it will take the form of global strategic visioning and planning, or whether we will see chaos, resource wars and protectionism.

As has already been indicated above in this book we show that the world today is facing Easter Island problem across more than one dimension. We show, that the lack of the world vision, and human inability to agree on what is good for humanity carries high risk of what we call a "political cannibalism".

In what follows, this chapter proposes new theoretical framework for geo-strategic political choice. It heavily borrows from the theory of finance[11], which developed a very efficient framework for sound and effective decision-making. Finance community is strongly focused on achieving superior outcomes, there are well defined measures of success and failure and there is excellent understanding of what decision structure is optimal for achieving good results. Furthermore, the incentive structure quickly eliminates bad asset managers and promotes good asset managers. Theory of finance has also developed much more advanced and effective concepts to deal with global issues (developments in global financial markets) than other sciences. Finally the theory of finance has proposed a framework that allows to overcome the shortcomings of short-termism therefore it is particularly suitable for transposition into geo-strategic and geo-political domain. We begin by defining key concepts[12].

Definitions

Political cannibalism

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[11] Authors draw heavily of concepts presented by one the gurus of modern finance, professor Philippe Jorion. One of the authors participated in the crash-course offered in Geveva by professor Jorion, when an excellent presentation allowed the author to see the opportunities that emerge by applying the modern finance technology to global strategic choice. There is also a link to the asset based strategic management school, see for example **Hamel G., Prahalad C. "Comparative advantage of tomorrow", ….** and **Kay** …. Authors present a view that in the future only those companies will flourish which will be able to build high quality non-tangible assets (people and knowledge among others) and effectively use, combine and leverage these assets to create value for clients.

[12] Please note that concepts from the theory of finance will be presented In a very simplistic and informal way, to convey the intuition behind them. Those seeking precise formulation, including formulas and formal proofs should refer to articles cited in the footnotes.

We define political cannibalism as a situation, when big countries fail to reach broad consensus on how to deal with important global problems and they implement local tactics to maximize country welfare in the short run. For example, political cannibalism emerges when world food prices are rising and countries put up export food tariffs aiming to keep foodstuffs at home to feed domestic population. In result world trade if foodstuffs declines, which creates a need to build larger national food inventories, which in turn leads to even higher food prices, jeopardizing livelihood of millions of poor families in many countries, especially those who put up tariffs. It illustrates that governments that think in local, short-term terms and are unable to see the broad picture may act in a way that backfires and aggravates the problem.

Strategic asset allocation (SAA)

This concept is borrowed from the world of finance[13], where strategic asset allocation is defined as infrequent, but bold decisions about where assets should be invested. SAA often determines more than 95 percent of achieved return on invested capital, be it profit or loss. In the context of this book we define assets as tangible ones (physical resources such as machinery, buildings, cash etc.), as well as intangible assets (knowledge, processes - including ones leading to new regulations, relationships, ability to innovate, often referred to as intellectual capital). Strategic asset allocation defines a global decision process that determines large percentage of future outcomes (wealth, happiness, health, environmental sustainability, poverty elimination, etc., in particular countries and globally). Poor strategic asset allocation could lead to very bad outcomes, in worst care could lead to global political cannibalism. Good SAA requires ability to think long term, to spot turning points and to react pre-emptively to significant threats and opportunities that arise. When threats or opportunities are very large, for example when the world is faced with Gordian Knots, it often requires that global decision-makers have the ability to come up with Alexandrian Solution to avoid disasters and achieve continued progress. SAA should also determine the globally accepted risk budget, which describes the degrees of freedom that can be used by individual countries, companies or regions in order to improve their wealth in the future. SAA process should be determined collectively by biggest stakeholders: USA, EU (one seat), China, India, Japan, Saudi Arabia, Brazil, Russia, and possibly Indonesia as a biggest Islamic country. This group should replace today's G7 set up, which produces inconclusive and meaningless mumblings.

Global risk budget

In the world of finance the global risk budget determines how particular decisions referring to particular financial markets can deviate from strategic guidelines. In the past global risk budget was defined in a very inefficient and static way. For example SAA process would determine, that 50 percent of assets could be invested in world equities, and that allocation could vary plus minus 2 percent. This approach proved to be very inefficient, because from time to time allocation smaller than 48 percent or larger than 52 percent would produce superior results. However asset managers were not able to implement this view amid binding static limits. Therefore the theory of finance developed risk budgeting techniques, which focus on the investment results of the entire portfolio

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[13] See …. (literature here)

(rather than on particular categories of investments in separation) and allow to adjust investments in response to changing market environment, providing that the overall risk level is not exceeded[14]. In the context of global policy-making global risk budget would refer to world tolerance to very negative outcomes. It is a very important concept, because by design it eliminates political cannibalism with a very high probability. Of course proper risk management cannot eliminate these outcomes entirely, Stalins and Hitlers do rise to power from time to time causing enormous losses on a global scale, and clearly such outcomes, which are called by the finance community a three- or four-sigma events require additional global risk management tools.

Tactical Asset Allocation (TAA)

This term is also borrowed from the world of finance. It describes a set of actions that could generate moderately better returns than those determined by SAA. TAA decisions are taken within the risk budget defined in the SAA process. In the context of global policy-making TAA describes set of decisions that improve given country performance, but within the risk tolerance determined by collectively decided SAA. This postulate is weaker than often used Pareto improvement rule, when as a result of a given decision at least one stakeholder should gain and no stakeholder should be made worse off when decision is implemented. Our TAA implies that someone could end being worse off, but that this worsening is always within given tolerance. Tolerance can be determined in units of GDP, or units of happiness, or units of ecological footprint. While SAA is a process determined by new G8 (G10) group of countries, TAA is run by a given country.

Policy Information Ratio (PIR)

Original concept of the Information Ratio was developed in the theory of finance and it states that ability of a particular asset manager to achieve returns better than those which are realized on the given market on average. It is a ratio of manager's excess return to his active risk budget. It is obviously a function of the manager skill and his ability to see opportunities, and exploit them. It is the duty of people in charge of asset allocation strategy to find such asset managers and allocate appropriate risk budgets to them. It is important that significant risk budgets are allocated to asset managers that have good information ratio, because even a very skillful people will not add to achieved returns, if they are not allowed to use their skill, ie. when they have very small risk budget. In our context it means that global policy strategy should establish a process that allows to find skilled politicians in particular countries that design and implement policies enhancing their country wealth, but within risk limits determined on the global level.

Fundamental Law of Effective Policy (FLEP)

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[14] This global risk budget is often determined in terms of value at risk, conditional value at risk or tracking error. It is beyond the scope of this book to go deeper into this terminology. For example conditional value at risk measures how big could be the achieved loss in a very bad year, that could happen once every 20 years, or 50 years, depending on the risk appetite (tolerance) of policy makers.

This law is based on the Fundamental Law of Active Management[15] from the theory of finance. It states that excess return achieved by particular investment strategy depends positively on the skill of asset managers in charge, but also on the number of investments and on the transition coefficient. For example better outcomes in terms of information ratio can be achieved when investment strategy is better diversified (instead of taking one large bet, there are several bets). Small transition coefficient means that even if an opportunity if identified, the appropriate investment cannot be implements, for example because investor is not allowed to invest in such assets. In the context of global policy-making FLEP will state that good outcomes depend on the skills of politicians in charge, on the number of independent policies and on the ability to go ahead when opportunity or was identified. For example if a future of the country is bet on one policy (energy), even if one has a very skillful political strategists in this sector, some unexpected events could produce bad outcomes. Similarly, if economic or political rigidities make it impossible to implement necessary reforms when opportunities or threats are identified by skilled strategist, the overall outcomes will be poor as well. FLAM states that the expected outcome improvement will fall at the margin with the number of investment strategies implemented, for example expected return improvement on the overall portfolio from launching 22nd investment will be smaller than from launching 2nd, 3rd or 10th investment. The same logic applies to policymaking, adding 5th priority to already existing four, when skillful politicians with high political information ratio are available, will likely produce higher wealth gain for particular country, that adding 15th priority. It is also important to note, that skillful political managers are rare species, so it is very likely that individuals with poor PIRs will surface when many priorities are set, which will reduce the overall performance. Finally FLAM states that outcomes can be better if implemented trades are uncorrelated. In the context of FLEP it means, that policy priorities should be determined in such a way, that outcomes of one policy should not heavily depend on the outcomes of another policy.

Global Strategic Council should be formed by leaders of 8-10 biggest countries. The metric used to rank countries should be very simple and intuitive, it is country GDP according to purchasing power parity divided by global GDP and country population divided by global population, each with 50% weight. 8-10 countries with highest scores should form the new group of G8 or G10 and should establish the Global Strategic Council. Vision and strategy agreed by the Council should be shared and implemented by the biggest countries, while other will follow on a voluntary basis. Incentives designed below will ensure that no country will chose to opt-out (possibly with rare exceptions of countries such as North Korea, Myanmar or Belarus).

Table XXX. World ranking of countries, 20 largest by GDP-PPP and population.

Source: authors' calculation based on …

Global Public Good

Following XXX we define global public goods as <**DODAĆ**>

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[15] See Grinold R. (1989) "The Fundamental Law of Active Management" Journal of Portfolio Management, vol. 15, no. 3, Spring, 1989

Equipped with the above definitions we are now able to present the new theoretical framework for sound global policy making. Policies designed and implemented within this framework will be called Rybinski Optimal Policies (ROP). Creating ROPs requires the following steps 1-4:

1. Global strategic policy benchmark

Global Strategic Council defines the vision for the world, it could be 2020 or 2050. This vision should be based on three pillars of sustainable development: (1) fast growth; (2) environmental sustainability; (3) social cohesion. This vision should be fairly easy to form: rich global egalitarian society, clean environment, accessible health services, low mortality rates, happy people, no wars. This step can be formally described in the following way. Please note, that we will keep mathematical formalism to the minimum, as at this stage it is crucial to present the intuition, while the formal derivations of optimal policies is left for further research.

Lets define:

$$DF = \begin{bmatrix} ww_1 \\ ww_2 \\ ... \\ ww_M \end{bmatrix}$$

Where *DF* is a desired future of the world in 2020 or 2050 (the world vision), which is represented by a vector of *M* indicators of that future (where *ww* stands for world wealth as measured by a given indicator). One indicator could refer to world GDP, another to human ecological footprint, yet another to international Gini index of GDP per capita.

Strategic asset allocation process involves choosing Rybinski Optimal Policies (ROPs) by solving the following maximization problem[16]:

$$DF = \max_{p_i} \left\{ \sum_{i=1}^{N} \lambda_i cw_i + \theta(GPG_1, GPG_2, ..., GPG_K) \right\}$$

Where

$$\lambda_i = 0.5 \frac{GDP_{country\ i}}{GDP_{global}} + 0.5 \frac{population_{country\ i}}{population_{global}}$$

$$cw_i = well-being\ (wealth)\ of\ coutry\ i\ (defined\ by\ M\ indicators)$$

$$GPG_j = global\ public\ good\ of\ type\ j$$

$$\theta = mapping\ from\ GPG\ space\ (K\ goods)\ into\ country-well-being\ space\ (M\ indicators)$$

$$cw_i = f(p_i, f_i^*(p_j, j \neq i))$$

$$GPG_j = g_j(p_i, i = 1, ..., N)$$

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[16] DF is a vector, so maximization will require creating a proper metric to compare vectors.

$$p_i = vector\ of\ policies\ pursued\ by\ country\ i$$

N stands for number of countries in the world, *K* is the number of globally important public goods such as: clean air, clean and accessible water, prevention of easily transmittable diseases (SARS, HIV, bird flu), war avoidance, financial crisis prevention, human footprint not exceeding earth biocapacity, etc.

The intuition behind these formulas is as follows. Desired future is determined by maximizing the well-being of all countries, which consists of two elements, the well-being of particular country *cw*ᵢ and the impact of availability of public goods on the well-being of that country, as defined by mapping θ. Maximization is over the set of policies that can be implemented, which may be different for different countries depending on the level of development. For example poor sub-Saharan country will not be able to use the energy-saving policy from the technology frontier if it does not have the basic infrastructure (ICT for example) before hand. We propose to weight the country well-being by a simple average of country GDP and country population. This takes into account that rich countries source lot of goods and services from the world, so their policies have large global impact. While good policies in populous countries affect well-being of large number of people, for example good policies adopted in India will add much more to global well-being that good policies adopted in San Marino.

Naturally a well-being of a given country depends on policies pursued by this country as well as on policies adopted by all other countries. Of course economic-geography models naturally apply here and this impact will fall with rising distance (measured in kilometers or in trade and financial transaction volumes between countries). Similarly global public goods availability will also depend on policies pursued by countries, but the impact of a large country on a global public good will be larger than the impact of a small country.

Solving this maximization problem defines the world vision for 2020 or 2050 as:

$$\overline{DF} = DF(\overline{p_1}, \overline{p_2}, \dots, \overline{p_N})$$

Where $\overline{p_i}$ defines a vector of optimal policies pursued by country i, ie. policies that lead to fulfillment of the world vision.

This is of course a constrained optimization problem, for example resources needed to implement optimal polices cannot exceed the amount of resources available contemporaneously, policies should be selected from the pool of implementable policies in particular countries, etc.

$\overline{DF}$ defines the world vision, but it is also a global strategic policy benchmark. There are a well defined measures of this benchmark (ww₁,…,wwₘ)ᵀ that should be reviewed by the Global Strategic Council every year, or every second year. Global strategic benchmark can be translated into country benchmarks according to a set of weights.

In practice this maximization process should be implemented in reverse. Global leaders forming Global Strategic Council should agree on the world vision in 2050 (or 2020), whichever is feasible. Then the metric of characteristics of this vision should be established. A more difficult part of this reverse maximization is formulating the mapping θ, which would translate the global public goods into well-being of particular countries. This will be highly subjective and country-specific, because

some countries will benefit more from access to one type of global public good, and other will prefer other public good being in greater supply. Some African countries ruined by endless war would value peace as the most important public good, while other would prefer access to clean water, while developed counties may have preference for disruptive innovations extending human life (global R&D as a public good). Possibly the proper choice of the mapping θ would require intense public debates in countries which have civic societies. But once the mapping θ is completed it should be straight forward to work out set of sensible policies that would allow to achieve the world vision, a desired future $\overline{DF}$.

Once the benchmark has been determined the next step is to define the global risk budget.

2. Global risk budget

After the global strategic benchmark has been determined the next step will be a determination of a global risk budget by the Global Strategy Council. The risk budget would determine by how much the future outcomes could deviate from the benchmark under normal circumstances. Policy events such as large regional climate-related disasters or wars (3- or 4-sigma events) should be excluded from this risk analysis and should be managed using different, event-risk management techniques. The global risk budget could be expressed in a form of upper and lower policy constraints imposed on particular countries, such as:

$$p_i^l < p_i < p_i^u$$

Or could be set in a more advanced form taking into account that policies may be interrelated (correlated) such that outcomes of one policy influence the outcomes of another policy. For example if a country excels in one type of policy, which has large positive externalities it can avoid paying penalties if it failed to remain within the risk budget with respect to another policy. A system o proper "policy exchange rates" should be established, with a strong contribution of market forces. World will need new markets developed and becoming liquid, such as climate derivatives (including countries human footprint), efficient human or innovation capital pricing, hedging against the risk of viral diseases outbreaks, hedging against the risk of famines or wars etc. Price signals coming from these markets will make it possible to assess the quality of policies pursued by particular countries.

3. Tactical asset allocation

Once the strategic benchmark and the risk budget is set, countries can implement a country specific tactical asset allocation within the risk budget. In order to eliminate the free-rider problem proper incentives should be put in place. Note that by construction higher availability of the public good improves the global well-being, so policies which rapidly destroy public goods will lie outside the risk budget around the strategic benchmark. Country *i* may choose to adopt passive TAA and simply pursue the globally agreed policy p_i or they can choose to use the allocated risk budget to achieve a better performance. It is important to note, that because global public goods enter the vision equation, it is not a zero sum game and win-win strategies are possible and can be designed.

4. Incentives

In the world of finance people work very hard to reach high information ratio, because their bonuses and pay level depends on it. In global politics incentives are less clear, and people are driven by wish

to be reelected, or by other, usually short-term goals. It is extremely rare that you meet politicians who want to be remembered by future generations because of their strategic skills. It is often argued that when long-term decisions are taken, such as fiscal reforms, then costs are borne by decision-makers who loose elections and benefits are enjoyed by the opposition. Therefore politicians in democratic societies have a natural short-termism bias in their policy-making. ROP setup requires designing new incentives scheme, which benefits those who design sound SAA and those who achieve high PIRs. It is not an easy task but it can be done. For example countries that contribute more than expected to creation of global public goods – which creates a global well-being surplus according to θ mapping – could receive an international fiscal transfer, with a small part of this transfer going directly to politicians in charge of good policy as a special "achievement bonus". Think about a small African country which managed to reduce the ratio of HIV infected population by half. This generates externalities because the country will become much more attractive for tourists amid falling risk of being infected and more attractive to investors to create businesses there. On top of these benefits there should be a direct "achievement bonus" transfer to the country, with part of this bonus going into the "pockets" of those who initiated health reform and reduced HIV. In other words paying for good active policies that contribute to achieving the world vision faster than benchmark policy should be seriously considered. Similarly, politicians with negative PIRs should be "punished", and those with particularly bad track record should be banned from holding public office.

Both on the global-strategic level and on the country-tactical level the FLEP should be taken into account. No more than 10 global priorities should be defined and benchmark policies should be established, with appropriate risk budgets. Similarly, each country should establish no more than 10 country-specific goals, that are closely related to global goals, and should implement related policies within assigned risk budgets.

Let us illustrate how this framework may work with a simple example. Because there should be 10 measurable goals in the world vision, they should be carefully selected. One might wonder why the global warming debate is not getting anywhere especially when it comes to Kyoto protocol[17] to reduce CO2 emissions by 20 percent by 2020. First of all the goal is probably badly chosen, because what matters in not the CO2 emissions as such, but the overall human ecological footprint. It should be easy to agree, that in 2020 (or later) human ecological footprint should not exceed the Earth biocapacity. This goal is good for humanity and is highly unlikely that it will be contested. This will be part of the world vision. Then a strategic global benchmark should be established with checkpoints every two years. It could involve all countries or 10-20 countries who have the biggest ecological deficits. Then benchmark policies should be identified and risk tolerance around these policies should be established, which would complete the SAA. Then each country would be free to implement a policy within its risk budget, and proper incentives should be in place to reward countries and politicians that do better than benchmark. There should be a net transfer of financial resources from negative PIR countries to positive PIR countries. Those who want to run passive benchmark policies could "sell" their risk budget to countries that are able to generate positive PIR, which will result in win-win situation when both countries "risk budget seller" and "risk budget buyer" gain. Politicians which deliver positive PIR should be financially rewarded and become millionaires, those who are deep in red should be banned from public office for life. In order to implement this scheme a Global

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[17] See **tutaj dokument z Kyoto** ..

Strategy Council should be established, and it will have a proper budget to implement financial incentives, for example every country will transfer 0.1-0.2% of GDP to the GSC budget. GSC should be formed by new G8 or G10, with a rotating chair that goes to the country with strongest PIR track record.

There are several important questions that remain? Does Rybinski Optimal Policy exist for all countries? Is it unique? What is the sensitivity of the vision with respect of the adopted metric which allows comparisons between various desired futures? If ROP does not exist can one find a reasonable policy close to ROP? These are non-trivial questions and would require a very technical paper to provide answers. It is beyond the scope of this book, but we will provide some intuition here.

Assume that suddenly all world leaders forget about winning next elections and become equally interested in improving the quality of life of their own citizens as well as all other world citizens. Assume that a politician utility will increase by the same amount when child in his county (or country) is fed and raised properly and when a child in far-away sub-Saharan country is fed and raised properly, adjusting for quality of food and education in different countries. With such priorities shared among world top politicians it will be easy to maximize their utility, because it will be identical to setting great vision for the world in 2050 and implementing ROPs. All politicians would agree to give highest priority to elimination of most welfare (= politicians' utility) reducing processes: wars, famine, poverty, pollution, climate disasters etc. The scheme proposed above strives to achieve the same outcome by separating strategic decisions from tactical ones and by providing right incentives.

One may also ask a question what are the differences between Millenuim Development Goals[18] worked out by the World Bank and desired future $\overline{DF}$ and Rybinski Optimal Policies implied by this vision and above decision process. [tutaj opis bogaci – biednym].

With such framework and proper incentives in place the world would be ready to face the Gordian Knots of the 21st century. The above strategic setup is our Alexandrian Solution to the first Gordian Knot – human tendency to fall into "political cannibalism" trap. In the following four chapters we describe the other four Gordian Knots of the 21st century.

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<to be completed>

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[18] **Tutaj źródła o MDG**