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Social Futuring, Modern and Ancient

Zoltan O. Szanto^a and John D. Mueller^b 

^aCorvinus University of Budapest, Budapest, Hungary; ^bEthics and Public Policy Center, Washington, DC, USA

ABSTRACT

This article reviews and compares two approaches to the new, holistic, and multidisciplinary concept “Social Futuring,” which are expressed in two indices based on this concept, entitled the “Social Futuring Index” and the “Human Flourishing Index” (HFI). Broadly speaking, the Social Futuring Index is indebted to the broader context of modern social sciences, while the Human Flourishing Index attempts to update the scholastic moral philosophy, which was based primarily on the insights of Aristotle and Augustine, as combined by Thomas Aquinas (hence the HFI was previously called the “AAA Index”). Finally, we present the key elements of both indices and their measurement for individual countries from a comparative perspective.

KEYWORDS

Good life; Human Flourishing Index; Social Futuring; Social Futuring Index; Anderson; Peirce

Introduction

The new, holistic, and multidisciplinary concept “Social Futuring” (SF) has been expressed in two indices based on this concept, entitled the “Social Futuring Index” (SFI) and the “Human Flourishing Index” (HFI). Arising at the intersection of philosophy, psychology, sociology, economics, political science, and geopolitics, among many other fields of the social sciences, SF and its application as an index addresses both academia and policy makers.

The SFI is indebted to the broader context of modern social sciences, while the HFI attempts to update the scholastic moral philosophy, which

CONTACT John D. Mueller  jmueller@eppc.org  Ethics and Public Policy Center, 1730 M St. NW Suite 910, Washington, DC 20036, USA.

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was based primarily on the insights of Aristotle and Augustine, as combined by Thomas Aquinas (hence the HFI was previously called the “AAA Index”). The most unique characteristic of the SFI is its fixed normative, analytical, and discursive framework, the center of which is “a good life in a unity of order.” The “Human Flourishing Index” presumes the validity of the definition of humankind as a “rational,” “conjugal,” “money-making,” “political,” and “spiritual animal” to be as relevant in the 21st century A.D. as in the 4th century B.C. or the 5th or 13th centuries A.D. Finally, we present the key elements of both indices and their measurement from a comparative perspective.

Preliminary Analysis and Overview of Country Indices

One recent survey listed no fewer than 178 different country indices or rankings, distinguishing simple from composite indices, yet warned, “[t]he inventory presented in this document is not exhaustive” (Romina, 2008, p. 8).

Thomas Aquinas put forward the basic logic of composite indices now used to compare countries in the first extant monograph on political economy, *De regno (On Kingship)—to the King of Cyprus*.¹ The main object is not mere taxonomy, but to explore what philosophers have long called “the good life.” To place Aquinas’s logic in a modern context, if one were concerned chiefly with maximizing wealth, then the appropriate index for national comparison would be, or would closely resemble, real Gross National Product (GNP) (or Gross National Income [GNI]) per capita. If one were also concerned with health and longevity one would add such measures to GNP or GNI, thus approximating the Human Development Index (HDI, which has three indicators) or Social Development Goals (SDG, which comprise 84 indicators). If (like Aristotle) one were concerned chiefly with political life, one would combine indices from the Institute for the Development of Electoral Assistance (IDEA), which focus on participation in civil and political society. Kocsis (2020) helpfully compared nine such indices.

The SFI has evolved to follow a tripartite structure, grouping its 28 indicators by reference to Economy, Society, and Nature. The nine indicators of the HFI, although also threefold, are patterned on the irreducible features of human nature rather than geometry, and the HFI implies (like Aquinas did) that all of the above are important to human flourishing: some wealth, health, civil, and political society are all necessary for a good life, but many people live this life believing that there is also a next life, in light of which we live this one; hence the HFI’s inclusion of the rate of weekly worship.

It is necessary to distinguish nations, which are essentially an administrative category, from cultures, which are far more numerous and diverse,

originating particularly in the sharing of language. Nearly all comprehensive international organizations, such as the World Bank (WB) and International Monetary Fund (<https://data.imf.org/>), recognize about 200 nation-states. But according to *Ethnologue* there are more than 7,100 living languages (although the precise distinction between languages and dialects is disputed).²

The much smaller number of nation-states than cultures seems due to the relatively large share of the world's population that masters at least one second language besides its native language. English was the world's most spoken language in 2022, spoken by about 18.45% of the world's population, although fewer than 5% spoke English as a first language (behind Spanish: 6.97%). Mandarin Chinese was the world's most spoken native language at 14.2%, but relatively few spoke it as a second language (*Ethnologue*, 2022).³ The share of the world's population that speak each native language declines exponentially from the first to the tenth most spoken (the latter about 1% of the world's population) before tapering off at a much slower rate. As Amy Chua (2022) has noted,

The justifications for English—or any language—as a global lingua franca are based primarily on economic efficiency. By contrast, the reasons to protect local languages mostly sound in different registers—the importance of cultural heritage; the geopolitics of resistance to great powers; the value of indigenous art; the beauty of idiosyncratic words in other languages that describe all the different types of snow or the different flavors of melancholia. (p. 12)⁴

“When we look at the languages of the world, they may seem bewilderingly diverse,” Stephen R. Anderson (2010) has noted. “From the point of view of communication systems more generally, however, they are remarkably similar to one another. Human language differs from the communicative behavior of every other known organism in a number of fundamental ways, all shared across languages” (p. 6). Charles Sanders Peirce (1991, p. 10.) was the first to contrast what he called the essentially “dyadic” stimulus–response communication of other higher animals with the “triadic” structure of symbol-use common to all human language.⁵

In order to keep our topic tractable, we focus in this article on nations rather than more numerous cultures or languages. Since a more exhaustive comparison is not practicable, we also follow the methodology of Kocsis (2020) by comparing the SFI and HFI against a representative sampling of the eight most familiar country indices (Better Life Index [BLI], Change Readiness Index [CRI], Global Resilience Index [GRI], HDI, HPI, Inclusive Development Index [IDI], SDG, World Happiness Index [WHI]) according to the three criteria of Nature, Society, and Economy.⁶ Using this method, the SFI and HFI are the two most “Social” of the country indices surveyed (Figure 1).

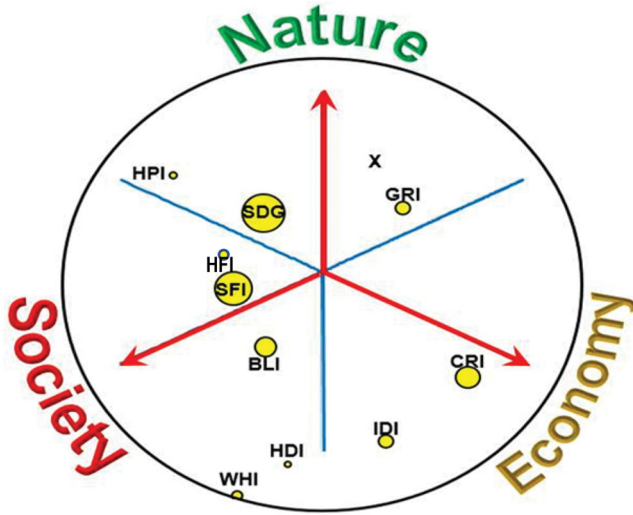


Figure 1. Country Indices Measured by Nature, Society and Economy.

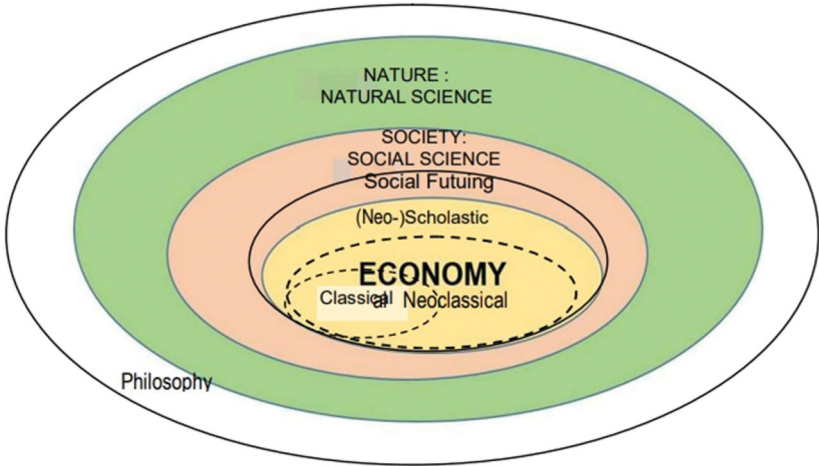


Figure 2. Disciplines Corresponding to Nature, Society and Economy.

But we suggest a more nuanced analysis, by distinguishing also among different economic theories. SF is not compatible with either classical or neoclassical economics, which presume a priori that all human transactions involve some kind of exchange. But SF is perfectly compatible with “Neo-Scholastic” economic theory, which recognizes the central role of personal gifts (or their opposite, crimes) and distributive justice, which is essentially a collective gift, as explained in Mueller (2014) summarized in Table 5–1, p. 130. (Figure 2).⁷

Concept and Measurement of Modern SF

The holistic concept of SF⁸ expresses the readiness of social entities and their ability to preserve a good life for their members in a “unity of order” through the strategic management of future changes. The framework for a good life is provided by the four normative standards Peace and Security, Attachment, Care, and Balance, with strategic management required in the fields of ecology–geopolitics, technology, socioeconomy, and culture—which have been called pillars. The degree of SF is expressed through the quantification of the SFI,⁹ the logic of which is derived from the multidisciplinary conceptual foundations just summarized. The SFI is conceived as the matrix of the aforementioned normative standards and pillars. As a result, SF is based on nine essential dimensions, and 28 selected indicators.

Normative Standards

The Social Futuring Project defined the following four normative standards:

- I. *Peace and Security* is the minimum substance of a “unity of order,” which enables social entities to reproduce, raise children, and provide for themselves and others a safe environment, make predictions, set goals, and functionally influence their future operation using fundamental assets.
- II. *Attachment* is essential for healthy bodily, psychological, intellectual, and spiritual human development. The most basic unit of Attachment is the family, which determines the consciousness of what a “relationship, dignity, equity, authority and hierarchy are; what is good and bad, just and unjust; what is love, gift and reciprocity” (Csak 2018, p. 37). Family bonds are also essential in enabling Attachment to larger communities, such as nations or religious groups.
- III. *Care* (Material Advancement and Freedom) is defined as “the maintenance of material goods ... entailing ... production, distribution and acquisition; use and disposition of private or public goods; extendable management skills; and, therefore an image of wealth and the nature of work” (Csak 2018, pp. 37–38). Freedom is the self-determination and self-reliance to actualize one’s potential control of one’s own fate.
- IV. *Balance* is a real and perceived social state free from extreme social differences and reflecting responsibility across generations—the precondition of a good life, well-being, and

generativity, freeing people from unproductive societal comparisons (such as envy).

These four normative standards are ranked in hierarchical order: without a minimum of Peace and Security there can be no Attachment, Care, or Balance; without a minimum level of Attachment, there can be no Care and Balance; and without a minimum level of Care, no Balance is possible.

The Social Futuring Project started by developing a country-level index for three practical reasons. First, a country is the largest social entity with a defined leader (the government or state) that represents its constituent members, generally through democratic institutions. Second, data are available for many countries, allowing the first indices to be constructed from current data sources rather than requiring the research project to solve two problems at once: constructing an index while generating new data. Third, just as the concept of SF needed to define itself in comparison to other concepts or approaches in the social sciences, a new index must establish its place among existing indices.¹⁰ Therefore, starting with countries that are part of other currently existing indices allows the SFI to distinguish itself by highlighting the differences from and similarities to such other regularly published indices.

Pillars

According to similar logic, we can differentiate and define the following four pillars:

1. The *Ecological–Geopolitical pillar* captures a social entity's basic assets (energy, water, land, etc.) and geopolitical positions without which it would not have resources to maintain itself and provide its members with stability and freedom of choice.
2. The *Technological pillar*, by making life easier, assures the undisturbed development of a social entity's general functionality.
3. The *Socioeconomic pillar* includes the material (capital, labor, schooling, and Gross Domestic Product [GDP], etc.) and social factors (family, fertility, work–life balance, inequalities, etc.) of the reproduction of human life.
4. The *Cultural pillar* relates to the factors of religiousness and traditions, focusing on the role of social institutions that overarch generations.

Pyramid and Dimensions

As a result, the matrix-like framework of the four normative standards and the four pillars combined defines the following nine essential dimensions of the SFI:

1. *Defense and safety*: The ability and sense of duty to create and maintain a country's integrity and internal and external order.
2. *Assets*: Creation and maintenance of critical and strategic resources.
3. *Functionality*: The systematic and creative deployment of natural and human-made infrastructure in order to create competitive foundations.
4. *Patriotism*: The ability to translate family and interpersonal attachments into belonging to greater communities, such as the nation.
5. *Family*: The creation of primary bonds between parents, children, and close kin.
6. *Spirituality*: The transcendent efforts (like religion and tradition) that support the long-term subsistence of a social entity.
7. *Self-reliance*: Members of a social entity—using their abilities—exploit their opportunities in order to provide well-being for themselves and their loved ones.
8. *Material advancement*: The provisioning and maintenance of material existence without jeopardizing future generations' room to maneuver.
9. *Well-being and generativity*: The management of extreme social differences, the harmonization of reality and expectations, reaching contentment while avoiding the use of opiates and promoting others' development.

These nine dimensions may be classified according to two aspects: (1) the basic forms of social futuring, namely (i) proactive, when social entities are able to influence future changes directly in order to deploy their long-term potential, (ii) active, when they are able to improve their functional operation by exploiting opportunities resulting from expected changes, and (iii) reactive, when, in order to maintain their way of life, the entities can manage the risks that may stem from future changes; (2) whether the phenomena and processes inherent in the different dimensions can be influenced by targeted policy measures (policy sensitivity, yes/no) (Figure 3).

Methodology Used to Compile the SFI

The SFI is a composite index of sub-indexes comprising a hierarchical indicator system based on the conceptual framework defined by the

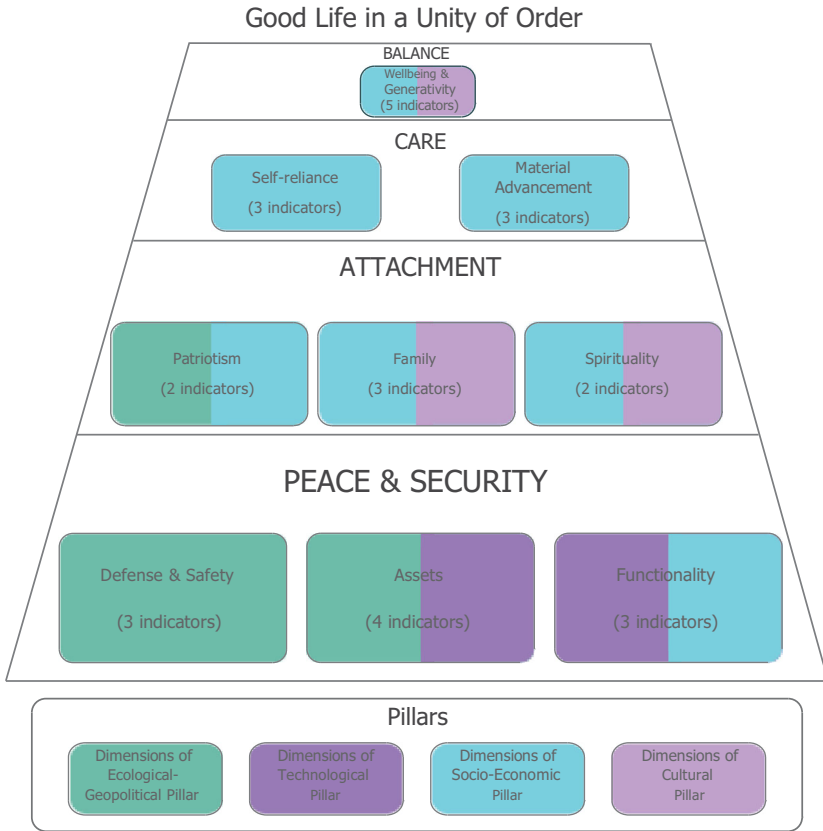


Figure 3. Outlines of the SFI.

Social Futuring Initiative. Simply put, the SFI is a weighted average of carefully selected indicators, which best capture the elements of SF.¹¹

The SFI comprises 28 indicators that were selected with the assistance of normative standard-based expert panels. All indicators are normalized—after outliers were handled—on a scale of 0 to 100. The indicators are weighted and aggregated according to the structure of the SFI framework.

In order to best grasp and convey the concept of the indicator, a hierarchical structure was selected from a number of indicator system structures. The hierarchical structure makes it possible to create sub-indicators at different levels to examine the contexts of the conceptual framework, which makes the analysis even deeper. In general, such indicator systems are the most suitable choice for presenting complex, multidimensional phenomena.

In order to connect the normative standards with the pillars defined in the wider framework, definitions were prepared to describe the

phenomena of nine essential paired intersections of the two aspects, based on which appropriate indicators could be selected. Namely, they should:

- be without or have limited overlap with other indicators, and
- be associated with a measurable range.

Several workshops served to finalize and fine-tune the indicator set to avoid overlaps, as well as to maintain a balance between the different elements of the framework. The first set covered around 120 indicators, which was reduced to the final 28 essential indicators, which are deemed relevant and conform to the aforementioned basic principles.

Indicators

Peace and Security Normative Standard: Defense and Safety Dimension

1. *Political stability and absence of violence or terrorism* (direction: positive, weight: 3.33%): Political stability and the absence of violence or terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution (i.e., ranging from approximately -2.5 to 2.5). *Unit of measure*: index (-2.5 to 2.5). *Source of data*: WB. <http://info.worldbank.org/governance/wgi/Home/Reports>

2. *Robbery* (direction: negative, weight: 3.33%): Robbery is a property crime that involves the use of violence or threat of violence. Theft of property from a person, overcoming resistance by force or threat of force. Robbery included muggings, bagsnatching, and theft with violence. *Unit of measure*: per 100,000 population. *Source of data*: United Nations Office on Drugs and Crime (UNODC) UNODC. <https://dataunodc.un.org/crime/robbery>

3. *Military expenditure* (direction: positive, weight: 3.33%): Military expenditure data from Stockholm International Peace Research Institute (SIPRI) are derived from the North Atlantic Treaty Organization definition, which includes all current and capital expenditure on armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities. *Unit of measure*: percent of GDP. *Source of data*: WB. <https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS>

Peace and Security Normative Standard: Assets Dimension

4. *Ecological balance* (direction: positive, weight: 5%): The difference between a population's Ecological Footprint and a country's biocapacity. If a country's demand exceeds its biocapacity, it has an ecological deficit.

If a country's biocapacity exceeds its Ecological Footprint, it has an ecological reserve. *Unit of measure*: global hectare. *Source of data*: Global Footprint Network. <http://data.footprintnetwork.org/#/exploreData>

5. *Arable land* (direction: positive, weight: 5%): Arable land (hectares per person) includes land defined by the Food and Agriculture Organization (FAO) as land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land dedicated to market or kitchen gardens, and land temporarily fallow. Land abandoned as a result of shifting cultivation is excluded. *Unit of measure*: hectares per person. *Source of data*: WB. <http://wdi.worldbank.org/table/3.1#>

6. *Net energy imports* (direction: negative, weight: 5%): Net energy imports are estimated as energy use minus production, both measured in oil equivalents. *Unit of measure*: percent of energy use. *Source of data*: WB. <http://wdi.worldbank.org/table/3.8>

7. *Renewable water resources* (direction: positive, weight: 5%): Total annual actual renewable water resources per inhabitant [Total renewable water resources per capita] = [Total renewable water resources]*1,000,000/[Total population]. *Unit of measure*: cubic meter/inhabitant/year. *Source of data*: FAO. <http://www.fao.org/nr/water/aquastat/data/query/index.html>

Peace and Security Normative Standard: Functionality Dimension

8. *High-technology exports* (direction: positive, weight: 3.33%): High-technology exports are products with high research and development intensity, such as those associated with aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery. (Data are given as percentages of manufactured exports.) Because industrial sectors specializing in a few high-technology products may also produce low-technology products, the product approach is more appropriate for international trade. *Unit of measure*: percent of manufactured exports. *Source of data*: WB. <https://data.worldbank.org/indicator/TX.VAL.TECH.MF.ZS>

9. *Road density (per capita)* (direction: positive, weight: 3.33%): Road density is the ratio of the length of the country's total road network to the country's population. The road network includes all roads in the country: motorways, highways, main or national roads, secondary or regional roads, and other urban and rural roads. The Global Roads Inventory Project is a harmonized global dataset of approximately 60 geo-spatial datasets on road infrastructure. The resulting dataset covers 222 countries and includes over 21 million km of roads, which is two to three times the total length included in the currently best available country-based global roads datasets. *Unit of measure*: km per capita. *Source of*

data: Global Roads Inventory Project + own calculation. https://stats.oecd.org/Index.aspx?DataSetCode=ITF_INDICATORS

10. *Households broadband Internet connection* (direction: positive, weight: 3.33%): Household broadband access provides a measure of the uptake of broadband technology by household. It refers to the share of households that have purchased subscriptions to fixed-line or mobile broadband services. *Unit of measure*: percent of households. *Source of data*: Organisation for Economic Co-operation and Development (OECD). <https://goingdigital.oecd.org/en/indicator/13/>

Attachment Normative Standard: Patriotism Dimension

11. *Persons living abroad* (direction: negative, weight: 3.75%): Proportion of (estimates of) the international migrant (midyear) stock, by origin and the total mid-year population. *Unit of measure*: percent of population of origin country. *Source of data*: United Nations. <https://www.un.org/en/development/desa/population/migration/data/estimates2/estimates19.asp>

12. *Registered voters who actually voted* (direction: positive, weight: 3.75%): The total number of votes cast (valid or invalid) divided by the number of names on the electoral register, expressed as a percentage. *Unit of measure*: percent. *Source of data*: IDEA. <https://www.idea.int/data-tools/question-view/521>

Attachment Normative Standard: Family Dimension

13. *Employees working very long hours—work–life balance* (direction: negative, weight: 5%): Percentage of all employees usually working 50 hours or more per week. *Unit of measure*: percent. *Source of data*: OECD <https://stats.oecd.org/Index.aspx?DataSetCode=BLI#>

14. *Value of family benefits* (direction: positive, weight: 5%): Total family benefits for a two-parent, dual-earner family for two children with a youngest child aged six, as % of average full-time earnings. *Unit of measure*: percent of average full-time earnings. *Source of data*: OECD. <https://stats.oecd.org/Index.aspx?QueryId=79865#>

15. *Single-person households* (direction: negative, weight: 5%): Share of single-person households among all households. *Unit of measure*: percent. *Source of data*: Eurostat. http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ilc_lvph02&lang=en

Attachment Normative Standard: Spirituality Dimension

16. *Important to follow traditions and customs* (direction: negative, weight: 3.75%): On a scale from 1 to 6, where 1 means “very much like me” and 6 means “not at all like me.” *Unit of measure*: scale 1 to 6. *Source of data*:

World Values Survey (WVS). <http://www.worldvaluessurvey.org/WVSDocumentationWV6.jsp>

17. *Self-reported religiosity* (direction: positive, weight: 3.75%): The share of those who claimed to be religious to the question. Are you: (1) A religious person, (2) Not a religious person, (3) A dedicated atheist? *Unit of measure*: percent. *Source of data*: WVS. <http://www.worldvaluessurvey.org/WVSONline.jsp> – <http://www.europeansocialsurvey.org/>

Care Normative Standard: Self-Reliance Dimension

18. *Mean years of schooling* (direction: positive, weight: 3.33%): Average number of years of education received by people ages 25 and older, converted from education attainment levels using official durations for each level. *Unit of measure*: years. *Source of data*: UNDP. <http://hdr.undp.org/en/indicators/103006>

19. *Unemployment rate* (direction: negative, weight: 3.33%): The unemployment rate is the number of unemployed people as a percentage of the labor force, where the latter consists of the unemployed plus those in paid or self-employment. Unemployed people are those who report that they are without work, but that they are available for work and that they have taken active steps to find work in the last four weeks. *Unit of measure*: percent. *Source of data*: OECD. https://stats.oecd.org/Index.aspx?DataSetCode=LFS_SEXAGE_I_R

20. *Life expectancy (mix)* (direction: positive, weight: 3.33%): Life expectancy at birth is defined as how long, on average, a newborn can expect to live, if current death rates do not change. The indicator is calculated as the product of the long-term change (2010 to 2017) and the distance to the maximum of the current value. *Unit of measure*: percent. *Source of data*: OECD. https://stats.oecd.org/sdmx-json/data/DP_LIVE/LIFEEXP.../OECD/contentType=csv&detail=code&separator=comma&csv-lang=en

Care Normative Standard: Material Advancement Dimension

21. *Household expenditure* (direction: positive, weight: 3.33%): Household spending is the amount of final consumption expenditure of resident households to meet their everyday needs, such as food, clothing, housing (rent), energy, transport, durable goods (notably cars), health costs, leisure, and miscellaneous services. The indicator shows the latter's expenditure relative to GDP. *Unit of measure*: percent of GDP. *Source of data*: OECD. https://stats.oecd.org/Index.aspx?DataSetCode=SNA_TABLE5

22. *Child relative income poverty rate* (direction: negative, weight: 3.33%): The percentage of children (0 to 17 years old) with an equalized household disposable income (i.e., an income after taxes and transfers

adjusted for household size) below the poverty threshold. The poverty threshold is set here at 50% of the median disposable income in each country. *Unit of measure:* percent of population 0 to 17 years old. *Source of data:* OECD. http://www.oecd.org/els/soc/CO_2_2_Child_Poverty.xlsx

23. *GDP/capita (mix)* (direction: positive, weight: 3.33%): GDP is the standard measure of value added created through the production of goods and services in a country during a certain period. The indicator is calculated as the product of long-term change (2010–2017) and the distance from the OECD average of the current value in USD. *Unit of measure:* percent. *Source of data:* OECD. https://stats.oecd.org/Index.aspx?DataSetCode=SNA_TABLE1

Balance Normative Standard: Well-Being and Generativity Dimension

24. *Transition of educational attainment level from parents to current adults* (direction: positive, weight: 2%): Transition from the previous generation—from the preprimary, primary, and lower secondary education of parents to tertiary education. *Unit of measure:* percent. *Source of data:* Eurostat. http://appsso.eurostat.ec.europa.eu/nui/show.do?lang=en&dataset=ilc_igtp01

25. *Fertility (mix)* (direction: positive, weight: 2%): The total fertility rate in a specific year is defined as the total number of children that would be born to each woman if she were to live to the end of her child-bearing years and give birth to children in alignment with the prevailing age-specific fertility rates. The indicator is calculated as the product of the long-term change (2010–2017) and the distance to the OECD average of the current value. *Unit of measure:* percent. *Source of data:* OECD. https://stats.oecd.org/viewhtml.aspx?datasetcode=HEALTH_DEMR&lang=en#

26. *Age dependency* (direction: negative, weight: 2%): The proportion of dependents (people younger than 15 or older than 64) in the working-age population (15–64). *Unit of measure:* percent of working-age population. *Source of data:* WB. <https://data.worldbank.org/indicator/SP.POP.DPND>

27. *Antidepressant usage* (direction: negative, weight: 2%): Antidepressant drugs consumption in defined daily dose (DDD), which is the assumed average maintenance dose per day for a drug used following its main indication for an adult. *Unit of measure:* DDD per 1,000 people per day. *Source of data:* OECD. <http://dx.doi.org/10.1787/888933605540>

28. *Gini-coefficient (income)* (direction: negative, weight: 2%): The Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz

curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality. *Unit of measure:* 0–100. *Source of data:* OECD. <https://data.oecd.org/inequality/incomeinequality.htm>

SFI Main Results

Analysis of OECD countries' overall SFI ranking shows that the top three countries are Canada, Australia, and Norway, while the bottom three are Portugal, Japan, and Mexico. As for the range of the SFI, the maximum achievable score is 100 points, out of which the top country (Canada) scores 70 points, while the bottom country (Mexico) achieves 35.6 points. This range of values shows that there are significant differences between leading and lagging countries. There are instances, however, when only marginal differences can be seen between countries (allowing for the possibility of draws due to equal scores).

For easier comparison, the countries are sorted into four quartiles (Q1, Q2, Q3, and Q4) based on their level of SF. The most futurable countries belong to the first quartile (Q1), the less futurable ones to the second (Q2), even less futurable ones to the third (Q3), and the least futurable ones to the fourth (Q4). In other words, countries in Q4 have the most work to do if they wish to improve futurability, and these burdens gradually decrease as we approach the countries in Q1 (Figure 4).

A Further Perspective on SF: The HFI

The HFI is an updated empirical application of scholastic moral philosophy and economic theory. The “AAA’s” are the three great ancient and medieval moral philosophers Aristotle, Aurelius Augustine, and Thomas Aquinas. The first two provided the philosophical concepts, while Aquinas joined these elements into a systematic and comprehensive moral philosophy and economic theory.

The HFI is informed not only by the ancient and medieval roots of scholastic moral philosophy, but also by the modern critique of country indices. Martin Ravallion (2012), emphasized notably in Mike 2020's comment on Mueller 2020, distinguished two broad types of country indices: (a) theory-driven aggregate measures (e.g., GDP, poverty measures based on household income, net reproduction rate), which are characterized by limited scope (GDP/capity—market income), close correspondence to theory, and the statistical practice of correcting anomalies; and (b) “mashup indices of development,” defined as composite indices for which existing theory and practice provide little or no guidance for their design

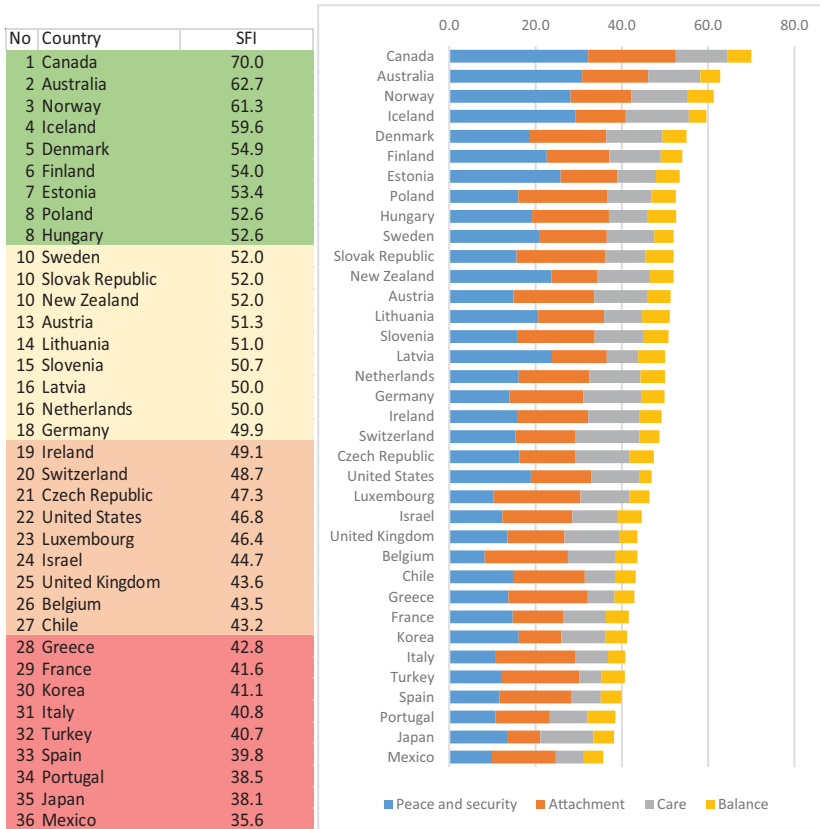


Figure 4. Individual countries' overall SFI ranking.

(e.g., HDI: geometric means of life expectancy, years of schooling, and logarithm of income), which are characterized by a broad scope (human development, flourishing, freedom, governance, etc.), no or much less cogent theory, large gaps between any claimed theory and actual implementation, and a lot of *ad hoc* choices in their creation (p. 1).

However, Ravallion (2012) appeared to make some strong assumptions, apparently presuming interpersonally comparable cardinal utility (pp. 7, 27, 29)—an assumption pronounced unscientific by Lionel Robbins.¹² Although cardinal utility is still often assumed by some economists, a more defensible position is that utility or welfare is only ordinally comparable; that is, we can generally say whether we prefer one state of affairs to another, but not by exactly how much, and utility is not comparable between different persons, so that the frequent assumption that not only first but second differences of utility or welfare are easily measurable, not only for individuals but also measurable between different persons, should be avoided.

The HFI is theory-driven in its conception of human nature. Aristotle famously defined a human being as a “rational,”¹³ “conjugal,”¹⁴ “social,”¹⁵ and “political animal.”¹⁶ But the Church Fathers made further distinctions that Aristotle had not, so that, in addition to the four cardinal moral virtues that Aristotle’s teacher Plato had adumbrated—prudence, temperance, fortitude, and justice (Aquinas, 1982)—Aquinas added the three theological virtues of faith, hope, and charity (Aquinas 1981 II-II Q58 ad3) so that, beyond an account that (like Aristotle’s) distinguished the “scope” of the virtues, Aquinas added differences in their “method”; for example, between rational metaphysics and scripturally based revealed theology.

Moreover, where Aristotle had bisected moral philosophy into ethics and politics, Aquinas re-divided the field into three parts, based on the social unit described: the individual human person, the family household formed by marriage between a man and woman, and the political community, acting jointly through a common government. Aquinas 1993, Foreword and Lectures 1–3. Hence Aquinas distinguished individual, domestic, and political “prudence,” a term he used interchangeably with “economy”: individual, domestic, and political economy.

The HFI, like the SFI, might be called an exercise in SF—an effort not merely to *forecast*, but also actively to *shape* future conditions to facilitate a nation’s human flourishing. Moreover, rather than merely comprising an index of empirical economic data, the HFI combines metaphysical with empirical, biological, and historical categories. The HFI attempts to apply the most broadly applicable moral philosophy to the broadest share of human population living in the 21st century. The HFI is based on the combination of three databases: the Maddison Project Database that estimates national population and GDP per capita back to AD 1; the Barro-Lee database of educational attainment, back to 1820 and projected forward to 2040; and the data and demographic projections of the United Nations Population Division back to 1950 and projected forward to 2100.

A matrix of the indicators that comprise the index is shown and described below.

1. *Rational*. Rationality is measured by the share of the adult population with tertiary education—not because those with an advanced degree are more *rational* than other humans—the use of any human language is sufficient to establish rationality—but because data on tertiary education are also useful in projecting and forecasting national indices of real output.
2. *Conjugal*. That humans are what Aristotle called a “conjugal” or sexual animal is reflected in the marital net reproduction rate. The

net reproduction rate (NRR) is a composite that estimates how many surviving daughters the average woman would bear if her experience matched that of women at all ages in the year for which the NRR is calculated. By counting only surviving daughters, the NRR adjusts the birth rate for mortality as well as fertility. This mortality adjustment makes the NRR more useful for many purposes than the more widely used total fertility rate (TFR), because fertility tends to be higher when the mortality rate is higher. The “marital” reproduction rate adjusts the NRR to include only infants born within wedlock. Conceived in this way, the HFI avoids the contentious debate about “same-sex marriage,” since all such unions, as such, are sterile.

3. *Productive.* A third adjustment reflects an important aspect of social and economic development: the modern household specializes, like the ancient household, in the production and maintenance of human persons. But the ancient household also has two specialized modern offshoots: the for-profit business firm and the nonprofit foundation. Unlike most other indices, the HFI does not include such measures of market output as GNP or GDP—although (as we will see) its components can be used to predict them. The third indicator is the share of national resources devoted to international monetary reserves that facilitate exchange of products among different countries. The reserve measure used in the HFI is $(1 + \text{net monetary reserves/gross national income})$ —“net” meaning official reserve assets minus official reserve liabilities. Ordinarily, the reserve component will be greater than 1. But when a national currency is used as an official international reserve, such “reserves” are actually debts of the reserve currency country. This can lead to the result that the reserve currency country’s net reserves are actually negative, which encourages the expansion of its domestic and foreign debt.
4. *Social (or civic).* A fourth adjustment reflects the fact that not only the modern business firm, but also the not-for-profit institution is a modern offshoot of the ancient household. While the modern business firm specializes in the production and maintenance of property, which Theodore Schultz called “nonhuman capital,” Schultz (1961, p. 2). The concept was developed by Michael et al. 1973, Becker 1974, Becker 1976, Becker 1991, Becker 1996, rigorously systematized by Kendrick (1976), and updated by Kendrick (1994). The nonprofit institution specializes in the granting of gifts and performing acts of service to persons outside the modern household. The latter development is reflected in the Civil Society Participation Rate, as measured by IDEA.

5. *Political.* A further irreducible dimension of human nature is that humankind is what Aristotle called a *zoon politikon*, or “political animal.” This dimension is captured in the HFI by average voter turnout in national elections, as measured by IDEA (ultimately derived from national sources). Nearly all former communist or totalitarian countries have experienced sharp rises in their citizens’ participation in nonprofit institutions, but also in political life, particularly voting for representative government. A couple of countries, including China and North Korea, are rated as having zero participation in political life. But since zero leads to undefined mathematical results in many cases, the HFI is aggregated from arithmetic rather than geometric averages. (The elaborate and widely cited HDI was originally based on arithmetic averages, but the formula was shifted to a geometric average, resulting in many practical anomalies, as Ravallion (2012) showed.)
6. *Spiritual.* The concept of creation *ex nihilo* is essentially philosophical, but simply did not exist in ancient pagan philosophy. Humanity’s understanding of their identity as not only a rational, conjugal, and political, but also a created, and thus spiritual or religious animal, is reflected in the rate of weekly worship, as recorded by the WVS. The weekly rate of religious worship has a strong correlation with measures of fertility, including the NRR and TFR. Paradoxically, differences among religions and religious denominations chiefly concern intangible and thus immeasurable realities, such as the existence and nature of God or the human soul. Yet, as the strong empirical link between worship and fertility shows, some of the strongest differences in empirical behavior stem precisely from people’s different understandings about such intangible realities.
7. *Animal.* Since humans are *animals*, not disembodied intellects, it is necessary to include three basic physiological aspects that humans share with other higher animals—the need for water, food, and also to exert or use energy. Therefore, the HFI reflects these three animal realities: (a) the percentage of a nation’s population with potable water, (b) a nation’s degree of food self-sufficiency, and (c) the degree of national self-sufficiency in (for sustainability, renewable) sources of energy. Water, food, and energy self-sufficiency are an important *strategic* consideration for any country, since all are prerequisites for national self-determination; but *renewable* energy self-sufficiency adds to these strategic considerations the long-run *sustainability* of any country’s policies. Renewable energy independence is presented as a memo item. This item indicates how far most countries remain from sustainable energy independence; yet the relative country rankings change

surprisingly little whether the HFI energy indicator refers to total or renewable energy independence.

The HFI, then, is comprehensive regarding all the irreducible dimensions of human nature as a rational, conjugal, political, and spiritual animal, applied to nations in the 21st century, and maps these dimensions rather simply into corresponding single indicators (along with three indicators to represent the three basic requirements of human animation).

To state these considerations in the negative, any nation is failing to flourish when its people are irrational or uneducated, when its population is shrinking, when its families are falling apart, when its people ignore the two great commandments to love God and neighbor, or when they are oppressed through either their country's own or foreign governments. While comprehensive, the HFI could never claim to be *exhaustive* in measuring human flourishing. But the HFI still does represent a comprehensive and valuable starting point, and one simple enough for a single researcher to calculate.

The formula for the HFI is:

$$HFI = ter * netrespt * mnrr * [(civil + vote + ww)/3] \\ * [(h2o + food + nrg)/3]$$

where *ter* = share of adult population with tertiary schooling, *mnrr* is the marital net reproduction rate [= *nrr***iw*, the net reproduction rate *nrr* times the share of births to married women *iw* ("in wedlock")], *netrespt* is (1 + net monetary reserves [official assets less official liabilities])/GNI), *civil* is IDEA's Civil Society Participation Rate, *ww* ("weekly worship") is the share of the adult population attending religious services at least weekly according to the WVS, *vote* is the voter turnout in national elections recorded by IDEA, *h2o* is the share of the population with treated water according to the United Nation's Aquastat, *food* is the degree of food self-sufficiency in % = (1 - food imports/merchandise exports), and *nrg* = total energy production/consumption, according to the U.S. Department of Energy. When data on the share of births in and out of wedlock are not available, for such countries *hfi* is used as opposed to *hfim* (marital HFI) omitting *iw*.

The HFI in effect distinguishes primary from secondary characteristics and indicators by giving proportional weight to the first three variables (which never register a zero value), while weighting the other six variables equally using arithmetic means. This combination is necessary to avoid mathematical anomalies resulting from when the value for a variable is zero, since dividing by zero leads to undefined results.

The implicit maximum value of each HFI variable is in most cases greater than or equal to 1. This would result, for example, if everyone reproduced; obtained an advanced degree; if every nation maintained positive net monetary reserves; if all citizens voted, participated in civil society, and worshiped regularly; and if each nation were self-sufficient in water, food, and energy through some combination of domestic production and international trade. In this way, the HFI thus aims to be both simple and transparent, while avoiding contentious claims (Table 1).

As mentioned, the HFI has been calculated for the 10 most populous countries plus the 36-member OECD. Since two of the largest 10 are OECD members, this leaves a net total of 44 countries. But five smaller OECD countries (Austria, Belgium, Denmark, Luxembourg, and the United Kingdom), comprising just over 1% of the world's population, must be omitted from the HFI calculations due to missing data series. This leaves 39 countries for which complete data are available.

Certainly, many indicators affect the rankings, notably including the degree of energy independence and national differences in voting patterns. (Former communist countries have generally seen a sharp rise in both voting and civic participation since those countries' transitions, while IDEA scores China at zero for democratic voting.) Generally speaking, however, the most populous countries (except for China) rank significantly higher than the OECD countries because of higher fertility rates. For example, Nigeria, Indonesia, Brazil, India, and Mexico are five of the top eight countries in the HFI ranking.

The scholastic moral philosophy relies heavily on natural law—that is, what can be known by reasoning from common experience, regardless of cultural differences. As such, the HFI might be called a thumbnail summary of human nature according to Western civilization. Yet the results indicate that the HFI is not Eurocentric, since it can also be applied meaningfully to countries as large and diverse as Bangladesh, Brazil, China, India, Indonesia, Nigeria, Pakistan, and the United States. Thus it is possible to maintain, for example, that China's ranking in last place and the relatively low ranking of the United States are not due to any cultural bias in the construction of the HFI, but transparent and reasonably objective judgments.

Comparing the SFI and HFI Indices and Discussion

Unfortunately, data limitations prevent a complete country-by-country comparison of the SFI and HFI. The SFI has a complete data series for all 36 member countries of the OECD, which comprise about one-sixth of the world's population and produce about one-half of the world's GDP. The HFI omits five OECD countries due to lack of necessary data

Table 1. OECD + 10 most populous countries, ranked by share of world population, GNI/capita, and HFI.

Rank	Country	Population /world	Rank	World Bank (WB) code	GNI/capita \$int	Rank	WB code	HFI (NRR)	HFI/M (marital NRR)
1	China	0.1794	1	LUX	\$74,400	1	NOR	0.2856	0.1299
2	India	0.175	2	NOR	\$70,530	2	NGA	0.2417	na
3	United States	0.0422	3	CHE	\$82,180	3	IDN	0.1985	na
4	Indonesia	0.0345	4	IRL	\$67,050	4	AUS	0.1634	0.108
5	Pakistan	0.0286	5	USA	\$63,780	5	BRA	0.1462	na
6	Brazil	0.0271	6	NLD	\$56,890	6	IND	0.1071	na
7	Nigeria	0.0269	7	DNK	\$56,410	7	CAN	0.1024	0.0682
8	Bangladesh	0.0217	8	AUT	\$55,300	8	MEX	0.0992	0.0312
9	Russia	0.0186	9	ISL	\$55,190	9	CHE	0.0978	0.0789
10	Mexico	0.016	10	DEU	\$54,560	10	NZL	0.0957	0.0508
11	Japan	0.0159	11	SWE	\$54,030	11	KOR	0.0953	0.0933
12	Turkey	0.0106	12	BEL	\$51,740	12	RUS	0.0921	na
13	Germany	0.0106	13	AUS	\$50,050	13	BGD	0.0897	na
14	France	0.0086	14	FIN	\$48,580	14	POL	0.0891	0.0793
15	United Kingdom	0.0085	15	CAN	\$47,590	15	NLD	0.0852	0.0455
16	Italy	0.0075	16	FRA	\$46,360	16	TUR	0.0843	0.0818
17	South Korea	0.0066	17	GBR	\$45,350	17	HUN	0.0839	0.0497
18	Spain	0.006	18	JPN	\$45,180	18	ISL	0.0839	0.0497
19	Canada	0.0049	19	KOR	\$40,090	19	SWE	0.0839	0.0373
20	Poland	0.0049	20	ISR	\$39,940	20	CZE	0.0819	0.0691
21	Australia	0.0033	21	ESP	\$39,800	21	DEU	0.0816	0.0526
22	Chile	0.0025	22	NZL	\$39,410	22	ISR	na	0.0724
23	Netherlands	0.0022	23	CZE	\$37,530	23	GRC	0.0786	0.0712
24	Belgium	0.0015	24	SLV	\$37,450	24	CHL	0.0774	0.0211
25	Greece	0.0014	25	EST	\$34,970	25	SVN	0.0773	0.0334
26	Czech Republic	0.0014	26	LTU	\$34,320	26	ITA	0.0764	0.0647
27	Sweden	0.0013	27	SVK	\$33,060	27	FIN	0.0752	0.0448
28	Portugal	0.0013	28	PRT	\$32,680	28	USA	0.0748	0.045
29	Hungary	0.0012	29	POL	\$30,010	29	PAK	0.0742	na

(continued)



Table 1. Continued.

Rank	Country	Population /world	Rank	World Bank (WB) code	GNI/ capita \$/int	Rank	WB code	HFI (NRR)	HFIM (marital NRR)
30	Israel	0.0012	30	HUN	\$29,860	30	IRL	0.0725	0.0483
31	Austria	0.0011	31	LTV	\$29,780	31	FRA	0.0704	0.0349
32	Switzerland	0.0011	29	GRC	\$29,670	32	SVK	0.0702	0.0583
33	Denmark	0.0007	30	TUR	\$27,640	33	JPN	0.0636	0.0622
34	Finland	0.0007	31	RUS	\$26,470	34	PRT	0.0625	0.0433
35	Slovakia	0.0007	32	BRA	\$24,450	35	ESP	0.0588	0.0531
36	Norway	0.0007	33	CHL	\$24,190	36	LTU	0.0524	0.0438
37	New Zealand	0.0007	34	MEX	\$19,340	37	EST	0.0521	0.021
38	Ireland	0.0006	35	CHN	\$17,200	38	LVA	0.0372	0.0249
39	Lithuania	0.0004	36	IDN	\$12,670	39	CHN	0.0259	na
40	Slovenia	0.0003	37	IND	\$7,680		Omitted (missing data)/WLD pop.		
41	Latvia	0.0002	38	PAK	\$5,860	0.11%	AUT	na	na
42	Estonia	0.0002	39	NGA	\$5,710	0.14%	BEL	na	na
43	Luxembourg	0.0001	40	BGD	\$4,964	0.07%	DNK	na	na
44	Iceland	0.0001	41	PAK	\$4,898	0.01%	LUX	na	na
—	OECD	0.1664	GDP/WLD	OECD	0.4953	0.85%	GBR	na	na
—	OECD + Top 10*	0.6787		OECD + Top 10	0.8078	1.19%	Total	—	—

Note. na = not available.

series (Austria, Belgium, Denmark, Luxembourg, and the United Kingdom, which together comprise just over 1% of the world's population). But besides 31 of 36 OECD countries, the HFI is also calculated for eight of the world's 10 most populous countries, which comprise just over half of the world's population. As a result, the HFI covers 39 countries, which comprise about 67% of the world's population and produce about 80% of the world's GDP.¹⁷

Both indices' indicators are broadly similar in containing (albeit somewhat different) measures of fertility (the NRR in the HFI and TFR in the SFI), education (share of population with tertiary education in the HFI and mean years of schooling and parental education in the SFI), religion (weekly worship in the HFI and self-reported spirituality in the SFI), voting in national elections in both indices, and measures of water, food, and energy use (energy imports in the SFI and energy production/consumption in the HFI).

Because the HFI contains far fewer variables (9) than the SFI (28), the average weight of each variable (e.g., for fertility), is much lower in the SFI than the HFI, and differing weights of SFI variables resulted from recommendations by a panel of experts. This method is necessary to avoid mathematical anomalies resulting when the value for a variable is zero, because dividing by zero leads to undefined results.

But the two indices also differ in that the SFI contains measures of market income (GDP per capita, household income, and relative child poverty), while the HFI does not (although two HFI indicators—population and tertiary education—comprise a good proxy for real GDP in most countries).

While the SFI is calculated for all 36 OECD countries, which comprise about 17% of the world's population, the HFI covers 39 countries that comprise about 67% of the world's population, including the 10 most populous countries in the world, a difference comprising just over half of the world's population (Table 2).

When comparing only the OECD countries, the top three countries are the same in both indices but in different order: Canada, Australia, and Norway in the SFI and Norway, Australia, and Canada in the HFI. Three countries have exactly the same rank in both indices: Australia (2nd), Poland (8th), and the United States (22nd). Despite these similarities, because of different choices of variables and weighting, the two indices lead to some significant differences in individual country rankings. Korea is 30th in the SFI but 7th in the HFI, while Estonia is 7th in the SFI but 30th in the HFI (in large part because of South Korea's relatively high and Estonia's relatively low rates of in-wedlock births and energy self-sufficiency). Perhaps the most striking single difference concerns Mexico, which ranks last (36th) in the SFI but 8th in the HFI among the OECD countries (Table 3).

Table 2. SFI and HFI structures and indicators compared.

2A. SFI:

Normative standards, dimensions, and indicators

I. Peace and security

A. Defense and safety

1. Political stability and absence of violence or terrorism
2. Robbery
3. Military expenditure

B. Assets

4. Ecological balance
5. Arable land
6. Net energy imports
7. Renewable water resources

C. Functionality

8. High-technology exports
9. Road density (per capita)
10. Households with broadband Internet connection

II. Attachment

D. Patriotism

11. Persons living abroad
12. Registered voters who actually voted

E. Family

13. Employees working very long hours—work–life balance
14. Value of family benefits
15. Single-person households

F. Spirituality

16. Important to follow traditions and customs
17. Self-reported religiosity

III. Care

G. Self-reliance

18. Mean years of schooling
19. Unemployment rate
20. Life expectancy (mix) (based on current value and previous change)

H. Material advancement

21. Household's expenditure
22. Child relative income poverty rate
23. GDP/capita (mix) (based on current value and previous change)

IV. Balance

I. Well-being and generativity

24. Transition of educational attainment level from parents to current adults
25. Fertility (mix) (based on current value and previous change)
26. Age dependency
27. Antidepressant usage

2B. HFI

Human Quality

1. Rational
2. Domestic

3. Political
4. Religious

5. Animal

Social unit

1. Individual
2. Marriage
3. Business
4. Nonprofit
5. Government
6. Church
7. Individual

Indicator

- 1 Adult tertiary education, % (*ter*)
2. Marital net reproduction rate ($mnr = nrr^*iw$ [in wedlock])
3. $(1 + \text{net monetary reserves}/\text{GNI})$ (*netrespct*)
4. Civil society participation rate, % (*civil*)
5. Voter turnout in national elections, % (*vote*)
6. Rate of weekly worship (*ww*)
7. Population with improved water % (*h2o*)
8. Food security % = $[1 - \text{food imports}/\text{mdse} [\text{mdse} = \text{merchandise exports}]]$ (*food*)
9. Energy production/consumption % (*nrq*)

Table 3. OECD countries only ranked by the SFI and HFI.

Rank	WBcode	SFI	Rank	WBcode	HFI (based on NRR)	HFIM (based on marital NRR)
1	CAN	70.01	1	NOR	0.2856	0.1299
2	AUS	62.74	2	AUS	0.1634	0.1080
3	NOR	61.28	3	CAN	0.1024	0.0682
4	ISL	59.61	4	MEX	0.0992	0.0312
5	DNK	54.93	5	CHE	0.0978	0.0789
6	FIN	53.97	6	NZL	0.0957	0.0508
7	EST	53.41	7	KOR	0.0953	0.0933
8	POL	52.56	8	POL	0.0891	0.0793
9	HUN	52.55	9	NLD	0.0852	0.0455
10	SWE	52.05	10	TUR	0.0843	0.0818
11	SVK	51.99	11	HUN	0.0839	0.0497
12	NZL	51.98	12	ISL	0.0839	0.0497
13	AUT	51.27	13	SWE	0.0839	0.0373
14	LTU	51.01	14	CZE	0.0819	0.0691
15	SVN	50.68	15	DEU	0.0816	0.0526
16	LVA	50.01	16	ISR	na	0.0724
17	NLD	50.00	17	GRC	0.0786	0.0712
18	DEU	49.91	18	CHL	0.0774	0.0211
19	IRL	49.14	19	SVN	0.0773	0.0334
20	CHE	48.74	20	ITA	0.0764	0.0647
21	CZE	47.31	21	FIN	0.0752	0.0448
22	USA	46.84	22	USA	0.0748	0.0450
23	LUX	46.44	23	IRL	0.0725	0.0483
24	ISR	44.68	24	FRA	0.0704	0.0349
25	GBR	43.64	25	SVK	0.0702	0.0583
26	BEL	43.54	26	JPN	0.0636	0.0622
27	CHL	43.23	27	PRT	0.0625	0.0433
28	GRC	42.81	28	ESP	0.0588	0.0531
29	FRA	41.65	29	LTU	0.0524	0.0438
30	KOR	41.10	30	EST	0.0521	0.0210
31	ITA	40.77	31	LVA	0.0372	0.0249
32	TUR	40.71	—	AUT	na	na
33	ESP	39.80	—	BEL	na	na
34	PRT	38.54	—	DNK	na	na
35	JPN	38.13	—	LUX	na	na
36	MEX	35.63	—	GBR	na	na

Note. na: not available.

Conclusion

The SFI and HFI represent two systematic exercises in SF: one oriented by modern social science (the SFI) and one (the HFI) by applying scholastic moral philosophy and economics to nations in the 21st century.

The SFI is notable for the much greater detail of its fixed normative, analytical, and discursive framework, at the center of which is “a good life in a unity of order.” The HFI is much simpler in structure and focused on a handful of human traits, and with about one-third as many variables and a different method of weighting, tends to weigh both tangible and intangible form of so-called human capital more heavily. Meanwhile, the SFI places much greater emphasis on several more

modern indicators like market income, broadband access, high-technology exports, antidepressant usage, road density, crime, unemployment, social benefits, and relative income distribution.

Despite their differences in inspiration and implementation, the SFI and HFI lead to nearly identical overall total scores according to the Nature/Society/Economy classification system developed by Kocsis (2020). More research is necessary to broaden the share of the world's population described by both approaches. The fact that the SFI ranks the United States in the third and the HFI ranks China in the fourth quartile, respectively, indicates that the countries with the two largest economies in the world face some serious challenges in coming decades according to two different but internally consistent methods of SF, ancient and modern.

Notes

1. Aquinas 1982 <https://aquinas.cc/la/en/~DeRegno>. "Now the same judgment is to be formed about the end of society as a whole as about the end of one man. If, therefore, the ultimate end of man were some good that existed in himself, then the ultimate end of the multitude to be governed would likewise be for the multitude to acquire such good, and persevere in its possession. If such an ultimate end either of an individual man or a multitude were a corporeal one, namely life and health of body, to govern would then be a physician's charge. If that ultimate end were an abundance of wealth, then knowledge of economics would have the last word in the community's government. If the good of the knowledge of truth were of such a kind that the multitude might attain it, the king would have to be a teacher. It is, however, clear that the end of a multitude gathered together is to live virtuously. For men form a group for the purpose of living well together, a thing which the individual man living alone could not attain, and good life is virtuous life. Therefore, virtuous life is the end for which men gather together. ... [Yet] it is not the ultimate end of an assembled multitude to live virtuously, but through virtuous living to attain to the possession of God."
2. "Welcome to the 24th edition." *Ethnologue 2021* (February 22). Other sources vary somewhat (e.g., Central Intelligence Agency, 2022). "The Ethnologue was founded by Richard S. Pittman, who was motivated by the desire to share information on Bible translation needs around the world with his colleagues as well as with other language researchers." <https://www.ethnologue.com/about/history-ethnologue>.
3. English is among the easiest and Mandarin Chinese among the hardest for English speakers to learn, besides which the extensive use of English provides benefits due to gains from international trade and alliances with the United States (Foreign Service Institute 2022).
4. (Chua, A. (2022). Review of Rosemary Salomone, *The Rise of English: Global Politics and the Power of Language*. New York Times Book Review. February 13, p. 12. Chua cites Antonio Gramsci, but this seems rather like

- a liberal Democrat citing Franklin D. Roosevelt, saying that “ $1 + 1 = 2$ ”: true, but the authority cited is comically irrelevant.
5. The “triad” consists of the sign-using person, signifier (e.g., a word), and referent (thing signified). To use the example given by Walker Percy (1983), “Helen Keller discovering water through [the word] *water*” (p. x).
 6. The BLI (24 variables), the CRI (30), the GRI (12), the HDI (3), the HPI (4), the IDI (12), the SDG (84), the World Happiness Index (6), the SFI (28), and the HFI (9)
 7. Especially Chapters 2 and 3 and summarized in Table 5–1, p. 130. The equations that define and distinguish the classical, neoclassical, and (neo-) scholastic economic theories are also compactly listed in Appendix A of to Mueller (2015 pp. 161–164. Aquinas 1986’s classification of the sciences is summarized in Table 2–1 of Mueller 2014, p. 47.).
 8. For the details of the normative, analytical, and discursive frameworks of SF and their embeddedness in the classical and contemporary social science literature, see and Aczél (2018), Csák (2018), and Szántó (2018).
 9. The detailed explication of the logic of the SFI can be found in Szanto et al. (2019).
 10. For the comparison of SFI with eight similar global indices, see Kocsis (2020).
 11. For the detailed description of the methodology used to compile the SFI, see Szanto et al (2019).
 12. “There is no way of comparing the satisfactions of different people” (Robbins, 1932, p. 140).
 13. “Human beings” “soul ... [is] in itself [partly] possessed of reason, [and partly] capable of obeying reason.” Aristotle 1962 *Politics* Book 7, *Politics*, 1333a and men “naturally desire knowledge”; Aristotle, *Metaphysics*, Book 1 980a. Aristotle 1962 *Politics*, Book 7 1333a and men “naturally desire knowledge”; Aristotle 1987 *Metaphysics* Book 1 980a. <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0052>
 14. “Between man and wife a natural friendship seems to exist, for they are more inclined by nature to conjugal than political society. This is so because the home is older and more necessary than the state, and because generation is common to all animals.” Aristotle, *Nicomachean Ethics*, 8.12.7 <http://www.perseus.tufts.edu/hopper/text?doc=Perseus:text:1999.01.0054:book=8:chapter=12>
 15. “Man is by nature a social being.” Aristotle, *Nicomachean Ethics*, 1097b. Aristotle 1954 *Nicomachen Ethics* 1, 1097b, <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0054%3Abekker+page%3D1097b#note1>
 16. “Man is by nature a political animal.” Aristotle, *Politics*, 1253a. Aristotle 1962, *Politics* 1 1253a; Aquinas 2007 1A. <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0058%3Abook%3D1%3Asection%3D1253a>
 17. <https://www.oecd.org/sdd/prices-ppp/oecd-share-in-world-gdp-stable-at-around-50-per-cent-in-ppp-terms-in-2017.htm>

ORCID

John D. Mueller  <http://orcid.org/0000-0002-8569-8414>

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