Ecological and Cultural Footprints – Recognition, Measurement and Quantification

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Abstract:

With the advent of globalization, the economic process re-engineering has started to propagate a new economic order. Profound socio-economic transformations are involved in the age of information society. Obviously, globalization is not merely an economic phenomenon; rather it pervades the entire field of human activities including culture and ecology. The set of principles, observations and experiences that constitute the way we look into reality have been changed and redefined. Novel changes have been made in the ambience of culture (involving society and politics), ecology, trade and commerce. These waves of changes are creating two distinct footprints i.e., *ecological footprints* and *cultural footprints (*which is nothing but a complex mixture of *ethical footprints, social footprints and political footprints*). These multiple footprints are affecting our sentiments, emotions and aspirations with both positive and negative implications. Thus, these footprints legitimately deserve proper accounting. Obviously, there is a strong need for measurement and quantification. Measurement and quantification are undoubtedly very important aspects of accounting, but what seems to be of greater importance is recognition. Recognizing an item means including it in the financial statements. Measurement and quantification are the last stages in arriving at the numbers at which items are to be included in the financial statements. The objective of the article is to provide a snapshot about the extensity, intensity and propensity of the changing faces of ecology and culture with the help of ecological and cultural footprint accounting.

Key Words: *ecological footprints, ethical footprints, social footprints and political footprints.*

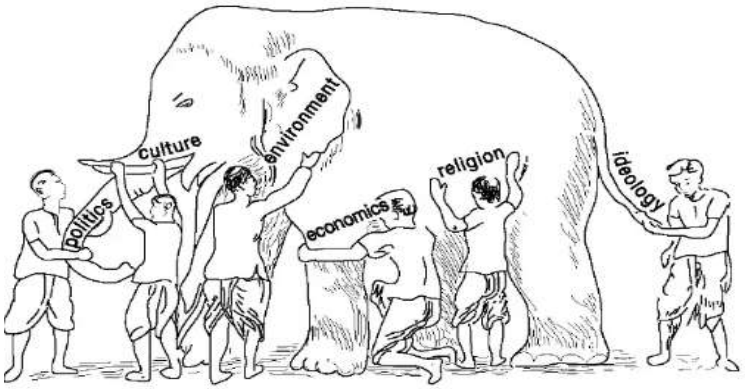
I. Prologue

"Someone is sitting in the shade today because someone planted a tree a long ago". – Warren Buffett.

We may not be interested in globalization but globalization is interested about us. It is the *Economic Process Re-engineering* to propagate a new economic order. It is predominantly characterized by the wave of information technology (i.e., the foundation on which the super structure of globalization is built up). The technologies like AI, IoT, machine learning, digitization, and analytics, are bringing about creative destruction in every facets of our life. Profound socio-economic transformations are involved in the age of information society. The intensity, extensity and propensity of these transformations are yet to be captured by the sociological imagination. Obviously, globalization is not merely an economic phenomenon; rather it pervades the entire field of human activities including

culture and ecology. The set of principles, observations and experiences that constitute the way we look into reality have been changed and redefined. Novel changes have been made in the ambience of culture (involving society and politics), ecology, trade and commerce. There has been a paradigm shift in analysing cultural, ecological and economic metamorphoses occurring across the world. In fact, we are heading from 'paradigm shift' towards 'paradigm lost', where there is no model at all to fall back upon for resolving emerging waves of changes. These waves of changes are creating two distinct footprints. Namely, *ecological footprints* and *cultural footprints* (which is nothing but a complex mixture of *ethical footprints, social footprints and political footprints*). The focus of our attention is to justify the accounting imperatives of the changing scenario.

Globalization has four main dimensions: economic, political, cultural, ecological, with ideological aspects of each category like market globalism, justice globalism, religious globalism. Steger compares the current study of globalization to the ancient Buddhist parable of blind scholars and their first encounter with an elephant. Similar to the blind scholars, some globalization scholars are too focused on compacting globalization into a singular process and clashes over "which aspect of social life constitutes its primary domain" prevail. [1] **Steger, Manfred B. (2003),**



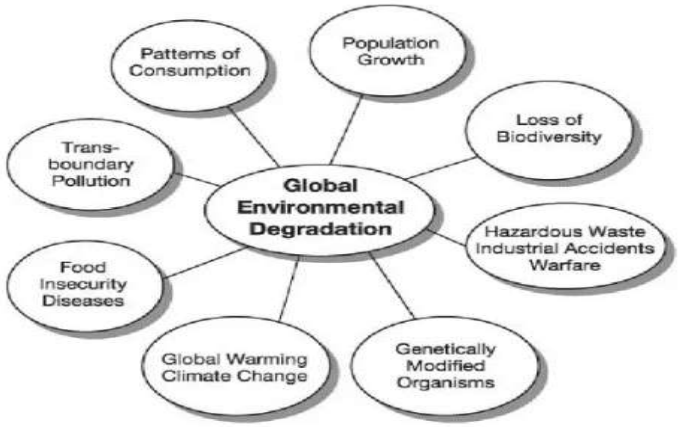
. The globalization scholars and the elephant.

Globalization may be viewed as the widening, deepening and speeding up of worldwide interconnectedness in all aspects of contemporary social life, from the cultural to the criminal, the financial to the spiritual. But beyond a general acknowledgement of real or perceived intensification of global interconnectedness there is substantial disagreement among different schools of thought. For the hyperglobalizers, globalization defines a new era in which peoples everywhere are increasingly subject to the disciplines of global marketplace. By contrast, the sceptics argue that globalization is essentially a myth which conceals the reality of an international economy increasingly segmented into three major regional blocks. For the transformationalists, contemporary patterns of globalization are conceived as historically unprecedented such that states and societies across the globe are experiencing a process of profound change. Transformationalist thesis is a conviction that, at the dawn of a new millennium, globalization is a central driving force behind the rapid social, political and economic changes that are reshaping modern societies and world order. [2] **Held, David, et al., 1999.**

II. Ecological Footprints

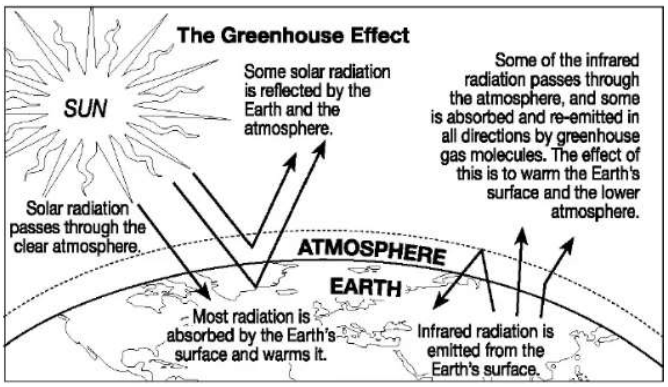
We travel together, passengers on a little spaceship, dependent on its vulnerable reserves of air and soil, all committed, for our safety, to its security and peace. Preserved from annihilation only by the care, the work and the love we give our fragile craft".-Adlai E. Stevenson

When a paper mill dumps chemical wastes into a river, the paper-making boosts the GDP, but no deduction is made for the costs associated with the water pollution. Conversely, no addition is made to the GDP for the air and water cleaned by wetlands or old-growth forests. Such perversities and omissions are deeply embedded in the way we measure economic activity, and form part of the intellectual foundation for anti-ecological economic policies. Obviously, we are supposed to expand the GDP to include the changing faces of ecology. At the same time, we are also supposed to check the market failure. Market failure is a situation where prices do not capture 'external' costs and benefits to third parties. In the absence of corrective policies, the market blindly rewards productivity as measured by price. Consequently, in an environment of competitive pricing, activities detrimental to the ecology are being glorified as pollution costs associated with these controversial activities are not being reflected in product pricing.



Major manifestations and consequences of global environmental degradation.

It has become impossible to ignore the fact that people everywhere in this planet are increasingly linked to each other through the air they breathe, the climate they depend upon, the food they eat, and the water they drink. In spite of this obvious lesson of interdependence, our planet's ecosystems are subjected to continuous human assault in other to secure wasteful lifestyles. [3] **Steger, Manfred B. (2003).** The ecology is a life-sustaining system consisting of both living and non-living entities, e.g., air, water, soil, bio-diversity etc, many of which are interconnected with each other. The relationship between human civilization and ecology may be traced back to the period of *Adam* and *Eve*. Since time immemorial human civilization survives on the consumption of ecological resources. Such consumption does not create any problem so long as it remains sustainable and not detrimental to the ecology. However, the industrial revolution made it possible to use greater quantum of ecological resources leading to their fast depletion. The increasing amount of domestic wastes and industrial effluents in the form of solid, liquid, gas, particulate matter etc. are degrading the ecology through diversified pollution to such an astronomical scale that the self-healing mechanism of the ecology has started collapsing to a great extent. In an attempt to curb the increasing rate of pollution, a number of laws have been enacted with the initiative of the government and several monitoring bodies have been established to enforce these laws. [4] **Steger, Manfred B.** Within this legal framework, accountants can play a positive role in controlling sustainability of the ecology. Again, apart from this normal-legal-financial role the accountants can also help in the generation and dissemination of ecological information in quantitative and qualitative terms to increase public awareness about ecological damage.



Thus, tracking footprints over time can provide a clear indictor of progress toward sustainability and a clear indicator of resource injustice. The footprint's greatest strength may be in its conceptual simplicity as an indicator of sustainability. It is very clear that, if a society's footprint (appropriated bio productivity) is larger than its available bio productivity, it will not be able to sustain itself in the long term unless it appropriates biocapacity from others. Thus, tracking footprints over time can provide a clear indictor of progress toward sustainability and a clear indicator of resource injustice.

The objective of the project is to provide a snapshot about the extensity, intensity and propensity of the changing faces of ecology with the help of ecological footprint accounting. The ecological footprint is a measure of our resource use, and indicates the extent to which we are overshooting the available biocapacity of the earth. If we total up all the biocapacity and divide it by the global population, we end up with a fair share of approximately 1.8 global hectares per person. Citizens in Europe generally consume so many resources that, if everyone were to live like us, we'd need three times the biocapacity of the earth to support us. Biocapacity and ecological footprints are calculated as follows:

$$YF = \frac{Y_{UK}}{Y_{WORLD}} \qquad BC = A \times YF \times EQF$$

$$Ha \times \frac{Ha_{WORLD}}{Ha_{UK}} \times \frac{GHa_{WORLD}}{Ha_{UK}}$$

Where YF = yield factor for a particular type of land for a particular country (e.g., cropland in the UK), BC = biocapacity {Multiply the area (in hectares) by the yield factor, and by the equivalence factor}, EQF = the relative productivity of a particular type of land (e.g., cropland) to the world average productivity of all land.

However, Eco-footprints have many limitations e.g., it does not consider any economic, political or cultural factors. Further, 78% of the surface of the earth, which is deemed to lack any biocapacity (deep oceans, deserts, mountains). Because of these limitations, ecological foot printing should be used as one tool amongst many. [5] **www.acrewoods.net.** The electricity industry is central to the world's economy and for economic development, particularly for third world countries. Nevertheless, ecological footprint (environmental degradation resulting in occupational health and safety risks to employees and the public at large) created during the generation, distribution and transmission of electricity is required to be identified and measured. [6] **www.icontrolpollution.com.**

III. Cultural Footprints

Globalization has economic roots and cultural (i.e., ethical, social and political) consequences. Thus, it also has brought into focus the power of culture in this global environment - the power to bind and to divide in a time when the tensions between integration and separation tug at every issue that is relevant to international relations. **So, the impact of globalization on culture merits discussion along with the accounting imperatives.** Culture is a very broad concept; it is frequently used to describe the whole of human experience. In order to avoid the ensuing problem of overgeneralization, it is important to make analytical distinctions between aspects of social life. For example, we associate the adjective 'economic ' with the production, exchange, and consumption of commodities. If we are discussing the 'political ', we mean practice related to the generation and distribution of power in societies. If we are taking about the 'cultural', we are concerned with the symbolic construction, articulation, and dissemination of meaning. [7] **Steger, Manfred B. (2003).** The process of globalization is considered to have lot of influence on culture, environment and human development, political and economic systems.

The world system theory works in an appropriate manner to that direction. The world system theory basically reflects the social change experienced in the current world whereby there is a massive interaction of activities, people and the telecommunication sector. It is important to note that modernization or change of various ways through which individuals and entities carry on their activities is influenced by social change. The act of interaction between people from different localities is enhanced by specific parameters such as international trade, information technology, infrastructure, social media etc. [8] **Kerkmez, Ray.** In contemporary social theory there is an awakening or rather reawakening of interest in the social relevance as well as intrinsic significance of culture and cultural change. Culture is evidently being taken more seriously as a relatively independent variable by sociologists. [9] **Robertson, Ronald (1988).** Thus, the concept of organization culture – the set of values, beliefs and behaviours that determine "how things get done" in an organization – evolves slowly. New ways of working start to become the new normal. So, finding ways to measure, document and broadcast how culture shifts are imperative. Measurement helps us to pay close attention to what is happening around us and to find the organization's unique matrices. It is useful to think about measurement not as one magical score, but as a convergence of multiple data points. Measuring the impact of a cultural transformation is complex and multifaceted, but it is also achievable and necessary. Culture can and should be measured. [10] **Anderson, Gretchen (2019).** Culture is society's way of creating social connectivity among a group of people through origin, belief, institutions, religion, music and art. In business, culture is often defined by shared behaviours, experiences and interactions among people in the workplace. The first four dimensions of culture (individualism and collectivism, power distance, masculinity and femininity, and uncertainty avoidance) dealt with areas that different societies handled differently. Later, a fifth dimension that highlighted differences between long term and short-term orientation was added. [11] **Tuleja, Dr. Elizabeth.** The recognition that the ecological sustainability of human societies is now in serious questions has given rise to sociological theorizing addressing the role of the environment in societies. One version of the theorizing is the greening of classical theory. Another version – from the perspectives of human ecology, modernization and political economy – is devoted to understanding how human societies impact the physical environment. The IPAT model – a well-known model in the field of industrial ecology specifies that environmental *Impacts* are the multiplicative product of *Population*, *Affluence* and *Technology. Hence, I = PAT.* Empirical study reveals that cultural issues, such as population, economic production, urbanization and geographical factors have effect on the comprehensive measure of environmental impact – the ecological footprint. However, political freedoms, civil liberties and state environmentalism have no effect. [12] **York, R., Rosa, E. A., & Dietz, T. (2003).** Globalization has accelerated convergence and fusion of cultures of different countries along with international division of labour, international movement of capital, human and individual resources, standardization of legislation, economic and technological processes. [13] **Sadykova Raikhana (2014).** However, the *cultural footprints* (i.e., the homogenizing influences of globalization on culture) are most often condemned by the cultural romanticists. Globalization promotes integration and removes not only the cultural barriers but many of the ethical, social and political dimensions of culture. Quite naturally, these create conflict along cultural fault lines, which is precisely where conflict so often erupts. Many societies, particularly indigenous peoples, view culture as their richest heritage, without which they have no roots, history or soul. Its value is other than

monetary. To commodify it is to destroy it. A threat to one's culture becomes a threat to one's God or one's ancestors and, therefore, to one's core identity. Thus, globalization is accentuating the cultural conflicts which have both positive and negative impacts. "The fundamental source of conflict in this new world will not be primarily ideological or primarily economic. The great divisions among humankind and the dominating source of conflict will be cultural. The clash of civilizations will dominate global politics." (Huntington, 1993).[14] **https://www.globalization101.org.**

i) Social Footprints

"All progress has resulted from people who took unpopular positions. All change is the result of a change in the contemporary state of mind".-Adlai E. Stevenson

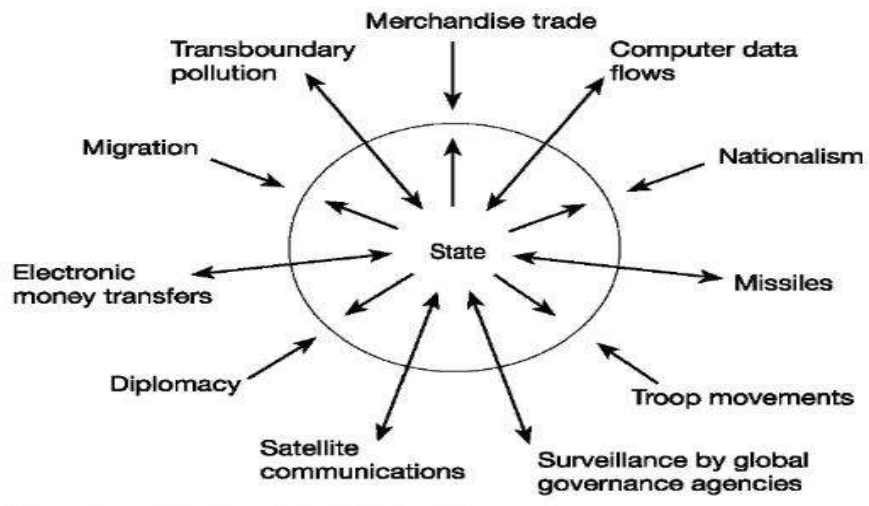
The need to find an angle from which to observe processes and relationships undergoing radical upheaval, resulting in novel configurations of the social landscape, stimulated the sociological imagination and challenged the conceptual frameworks which hitherto had served to analyze social realities. [15] **Lyon, David (1999).** Sociological imagination can add new and unexpected depth to cultural analysis. The authentic footprints of the social transformation can be traced back to the dawn of modernity. Modernity refers to the social order that emerged following the French enlightenment. During the 18th century there emerged in the French-speaking world a widespread movement of criticism of existing institutions and beliefs which came to be called the "Enlightenment". The objects of enlightened criticism ranged from the established church, judicial practice, freedom of speech, art, literature and manners in general, the role of the King, and economic reform. [16] **oll.libertyfund.org**. It refers to the social order based on the power of human reason. Story of modernity was the story of social changes. Science legitimated itself as the torchbearer of these changes. Five distinct-yet-interrelated waves of changes were involved in this process. The first wave was characterized by differentiation. It created a new principle of social integration in every sphere of social life by making women's special sphere domestic and men's public. 'Breadwinners' were distinguished from 'housewives' even where both partners were employed (male chauvinism along with a strong under-current of female chauvinism). Joint families disintegrated into nuclear families and became units of consumption rather than saving (role played by different family members were started to be outsourced at the cost of the drainage of family exchequer). The second wave was characterized by rationalism. It was one of the hallmarks of modernity. The scientist's experiment-observation-conclusion signified the application of the tool of rationality. The third wave was characterized by urbanism. It was overwhelmingly a modern experience which was marked by formal and 'contractual relations' and sometimes 'transactional relations' between the sexes. The fourth wave was characterized by 'discipline'. It emerged as a system backup for rationality. On the public arena, military type discipline had made a long-lasting impression and on the domestic arena, it had made a great impact on manners. The fifth wave was characterized by 'secularity'. It accentuated the changing fortunes of religion to the extent that it overwhelmingly reduced the influence of religion on social life, leaving only a narrow margin under the uncertain sway of religion. The epitome of modernity was the sense of belongingness to the rise of individualism. Autonomous individuals were liberated from the erstwhile social tradition and settled down to a new kind of relationships predominantly guided by instrumental reason. Modernity was the *Social Process Analysis* to propagate a new social order. Nevertheless, it was self-

contradictory and internally inconsistent to the extent that detraditionalization, secularization and rationalization were seen as a mess. The social realm of modernity may not be disappearing, but it was undergoing radical changes through converging technologies and consumerism—the key catalysts of **postmodernity vis-à-vis globalization**. Thus, globalization is a way of describing a new society-in-the-making.

ii) Political Footprints

"Politics is the art of the possible, the attainable — the art of the next best"- Otto von Bismarck

Globalization is the *Social Process Re-engineering* (SPR) to propagate a new social order. Political activities certainly are not alienated from this process of reengineering. So, the 'process' is also supposed to propagate a new political order. Consequently, political thoughts across the board have experienced a sea change. **Profound transformations are involved while building up a new political order within the local, regional, national and international arena. Cultural conflicts give birth to the movement for multiculturalism. Multiculturalism is a political demand, a demand of groups that feel they are downtrodden, or ignored, or repressed. These transformations are yet to be captured by the sociological evolution at the individual, societal and political levels.** Social evolution has been started to deconstruct the male-female dichotomy where feminine subjectivity is a means of empowerment. So-called patriarchy has made a paradigm shift in a very subtle way. The feminists have tried to reverse the trend — the dawn of feminism. This role reversal is perceived in every sphere of human life, from philosophy to sex. Automatically ascribing people to particular roles has been scrapped through the concept of meritocracy and achievements are recognized by the free competition of skills and abilities. 'Breadwinners' are no longer distinguished from 'housewives' and the theory of making women's special sphere domestic has been scrapped. The information age definitely indicates greater flexibility in every aspects of social life. 'Physically handicapped' has been redrafted as 'physically challenged' or 'differently abled' and 'pros' has been redefined as 'sex worker'. To eulogize gay man, the others are referred to as 'straight man' instead of 'normal man'. Thus, it is an age of politically correct expressions.



The nation-state in a globalizing world.

Thus, during the shifting of ideological boundaries, 'current fragmentation of established ideologies and the revived uncertainty concerning whether ideology still exists' have highlighted the difficulty of capturing the changing morphologies of political belief systems. Political belief systems are ephemeral constellations whose shifting

morphologies demand periodic scholarly reassessments. We must be willing to entertain the possibility of wholesale ideological transformations, and thus be prepared to rethink, revise, and perhaps replace outdated conceptual morphologies that no longer capture the dynamics of actually existing political belief systems. It requires considerable intellectual imagination to redraw old ideological boundaries and reclassify ideological systems. [17] **Steger, Manfred B. (2005).** The modern socio-political order of nation states that gradually emerged in the seventeenth century is moving toward the 'postmodern' condition of globality. Indeed, like 'modernization' and other verbal nouns that end in the suffix '-ization', the term 'globalization' suggests a dynamic best captured by the notion of 'development' or 'unfolding' along discernible patterns. Such unfolding may occur quickly or slowly, but it always corresponds to the idea of change, and, therefore, denotes the alteration of present conditions. [18] **Steger, Manfred B. (2003),**

iii) Ethical Footprints

"I count him braver who overcomes his desires than him who conquers his enemies, for the hardest victory is over self."- Aristotle

Ethics is the principles of right and wrong used by individuals as free moral agents to guide behaviour. Ethics is not static; it grows out of a systematically encouraged reverence for selected customs and habits. Language, religion, political and legal systems, and social customs are the ethical legacies. They are the living artifacts, bits and pieces carried forward through the years on currents of indoctrination, popular acceptance, and unthinking adherence to old ways. Ethics is used by the organizers of society - politicians, theologians, academics, and families - to impose and ensure order. But in the changing scenario any fixed sense of ethics cannot be assumed any more. Ethics of morality, honesty and truth have been subservient to ethics of reality. Once in my childhood, while walking with my father I heard that someone was telling him that a certain shop is just a few meters ahead where a car was garaged. Suddenly, the car started moving. So, I also started running after it as if with the shifting of the car-reference-frame, the shop-subject is also shifting. The analogy signifies that in globalization the ethics is constantly drifting away from its current position whenever there is any shift in the reference frame. During the most crucially formative decades of sociology-namely 1890-1920- Durkheim, Simmel and, more ambiguously Max Waber argued that growing intellectual concern with the economic factor and the rise of economistic doctrines were symptomatic of rather than genuinely analytical with respect to the changes sweeping the western world at that time. [19] **Robertson, Ronald (1987).** The term value itself came to ethics by way of economics and in economics it is used for (a) value in use, that is, the capacity of an object to satisfy a human need and desire, and (b) value in exchange or the amount of one commodity that can be obtained in exchange for another, which in modern times is generally reckoned in terms of money and expressed as the price of the commodity. Objects are never morally good merely because they are objects of satisfaction. Yet in our common speech such things are very commonly referred to as good, simply because they are satisfying to the speaker. We are not likely to make the mistake that morally good things can be estimated in terms of money, but there is a real danger of our supposing from the analogy of economic value in exchange that good things including

the morally good, can always be estimated in quantitative terms so that we can calculate how much pleasure would compensate us. [20] **Lillie, William (2003).**

IV. Recognition, Measurement & Quantification

Recognition, Measurement & Quantification of ecological and cultural footprints involves identification of element of human activities or products or services that can interact with the ecology and culture and can bring changes to the ecology, whether adverse or beneficial, wholly or partially resulting from the human activities.

"The business of pinning numbers on things— which is what we mean by measurement—has become a pandemic activity in modern science and human affairs. The attitude seems to be: if it exists, measure it. Impelled by this spirit, we have taken the measure of many things formally considered to lie beyond the bounds of quantification. In the process we have scandalized the conservatives, created occasional chaos, and stirred a ferment that holds rich promise for the better ordering of knowledge" [21] **Stevens (1959).** "The stature of a science is commonly measured by the degree to which it makes use of mathematics. Yet mathematics is not itself a science, in any empirical sense, but a formal, logical, symbolic system—a game of signs and rules" **(Stevens, 1951, p. 1).** Lévi-Strauss was very much a pioneer in the development of hermeneutically oriented formal measurement models of culture. One of the earliest and still most recognizable examples of Lévi-Strauss' efforts can be found in his essay on "The Structural Study of Myth." Lévi-Strauss applies to provide a reading of the Oedipus myth. he argues that the goal of an interpretation is different when one works at the level of myth than when one works at the level of a linguistic statement. Although myths are a part of language and must (in general) be modelled in an analogous fashion (in terms of the relations that link them together as a system), Lévi-Strauss also makes clear that myths operate in a different discursive register. Rather than looking to find the patterns of relations that link particular phonemes, morphemes or sememes together into coherent sounds, concepts, and sentences, Lévi-Strauss argues that it is necessary to look for the relevant "mythemes" that make up the "gross constituent units" of the myth. This involves the task of linking sentences together in patterns of relations and, more than this, an investigation of the various "bundles of relations" that constitute the core elements of the myth. [22] **John W. Mohr.** Culture matters in business: Facebook just spent an astonishing $ 19 billion to acquire WhatsApp because of WhatsApp's international presence. Culture also matters politically: a few countries have tried to block Twitter. Studies that measure cultural attitudes usually rely on people to take specific content units (such as tweets or Facebook posts) and then give them a numerical rating for specific cultural dimension. It might be possible to use machine learning to develop a sentiment analysis tool that detects cultural attitudes. [23] **Laurenson, Lydia.** In fact, Culture is one of the most enduring components of international business and international management theorizing and empirical investigation. Key topics, such as the multinational enterprise, internationalization, and cross-country activities, inevitably connect to culture as a broad context or specific factor that cannot be ignored. There is a critical link between the theoretical conceptualization of culture and its measurement. In other words, the definitions of culture are not independent of the measurement approaches applied. Cultures are composed of individuals, and yet, that the aggregation of the individual measures using mainstream

statistical approaches might not always be the best way to arrive at understanding and capturing culture at that level. The value of the measurement of culture is in the ability to use it in a predictive manner. One promising area of future work is to look at predicting culture, rather than using culture to predict something else.[24] **Dan V Caprar (2015).**

"If you cannot measure it, you cannot improve it." (Lord Kelvin). Recent business scandals illustrate, an organisation's culture can be working against the very ethical values the company declares in its corporate communications. Numbers can form part of our understanding of culture but they often need interpreting, which requires judgement. Directors need both quantitative and qualitative data. They need to look beyond the raw figures to understand the underlying message and compare the results with other indicators to see whether they confirm the picture. Evaluating culture involves monitoring process as well as data. Critical indicators might be based on the expectations of key stakeholders i.e., groups that the company cannot afford to alienate. Directors also need to consider factors that will inform them about morale and motivation among staff, suppliers and customers, as well as levels of operational stress that might lead to conduct and other types of risk. [25] **Philippa Foster.** One direct method of measuring and evaluating cultural changes brought about by globalization is to study the shifting global patterns of language use. The globalization of languages can be viewed as a process by which some languages are increasingly used in international communication while others lose their prominence and even disappear for lack of speakers. It points to the strengthening of homogenizing cultural forces. Although, people carry their languages with them when they migrate and travel. However, migration patterns affect the spread of languages. [26] **Steger, Manfred B. (2003).** There is a need to analyse the impacts of cultural heritage promotion, and developing specific indicators and benchmarks in relation to the direct and indirect contribution of cultural heritage to economic and social development processes. In fact, cultural heritage can drive development and improve quality of life. [27] **Dr. Robert Pickard (2017).** One of the challenges of a culturally-sensitive development agenda is the ability to measure its impact. The attempt to quantify the specific contribution of a "culturally appropriate" development policy is unavoidably complex. In response, UNESCO has provided an evidence-based picture of culture's role in development. This includes the development of a Framework for Cultural Statistics and an operational project, "UNESCO Culture for Development Indicator Suite" [28] **UNESCO.** Engaged theory is a useful methodological framework for understanding social complexity. It crosses the fields of sociology, anthropology, political studies, history, philosophy, and global studies and provides a framework that moves from detailed empirical analysis about things, people and processes in the world to abstract theory about the constitution and social framing of those things, people and processes. [29] **https://en.wikipedia.org.** Ecological writers are preoccupied with the 'holy grail' of generating 'a new and encompassing world view and this view is regarded as capable of transforming human politics and society'. For example, deep ecology asserts that we need to change our view from anthropocentrism to ecocentrism. Aesthetics thus performs a crucial role, establishing ways of feeling and perceiving their place in World. (Darbra, et al., 2008) Over the years, there is a growing concern about the environment and the potential risks associated with many human activities and new technologies have created increasing interest in environmental risk assessment, a critical, essential tool in any decision-making process in business. (Thornton, 2009), also notes that, failure to effectively incorporate and manage risks can more, often

than not, lead to serious consequences to a business such as damaged reputation, loss of profits, disruption of productivity or at worst, business shutdown. [30] **Morton, Timothy (2007).** Environmental impact assessment involves identification of ecological aspects like a) Emissions to air b) Releases to water. c) Land contamination/spillage. d) Generation and emission of greenhouse gases. e) Usage of Ozone depleting substances. f) Use of raw materials and natural resources g) Waste Management including disposal of waste. h) Energy emitted (such as Sound, heat, radiation, vibration etc). [31] **www.ksphc.org.** Environmental impact assessment stages include 1. Identification 2. Screening 3. Scoping and Consideration of Alternatives 4. Impact Prediction 5. Mitigation 6. Reporting to Decision-Making Body 7. Public Hearing 8. Review (EIA Report) 9. Decision-Making 10. Post Project Monitoring & Environment Clearance Condition. [32] **www.environmentalpollution.in.** Studies were conducted on the association between ambient air pollution and adverse pregnancy outcomes. Particulate matter, nitrogen dioxide, ozone, and carbon monoxide was used as the markers of ambient air pollution. It was observed that exposure to particulate matter and ozone over the entire pregnancy was significantly associated with higher risk for preterm birth. [33] **Environmental Research (2018).** Biological response of the bioindicators that reveals the presence of the pollutants is now used to monitor the health of an environment or ecosystem. Such organisms can be monitored for changes (morphological, physiological, or behavioural) that may indicate a problem within their ecosystem. Dragonflies and Damselflies - Dragonflies and damselflies (known collectively as the "Odonata") are an important group in biological water quality monitoring, as they are particularly sensitive to pollution. Landfill leachates are potential threats for environmental degradation. Study was conducted to determine the leachate quality, to identify the dominant pollutants and to evaluate the leachate pollution potential of an active and closed dumping ground of an uncontrolled municipal solid waste landfill site in Kolkata, India using leachate pollution index. [34] **www.gjesm.net.** The **Maastricht Globalization Index** was developed by Martens and Zywietz (2006) and later on improved by Martens and Raza (2009) and Figge and Martens (2014). A critical perspective and overview on the measurement of globalization, has been explained in Martens et al. (2015). [35] **Lukas Figge**. The Index initially covered five domains: the political, economic, social–cultural, technological and ecological. However, later on the ecological domain was omitted. [36] **Figge & Pim Martens (2014)**

Maastricht Globalization Index (snapshot)

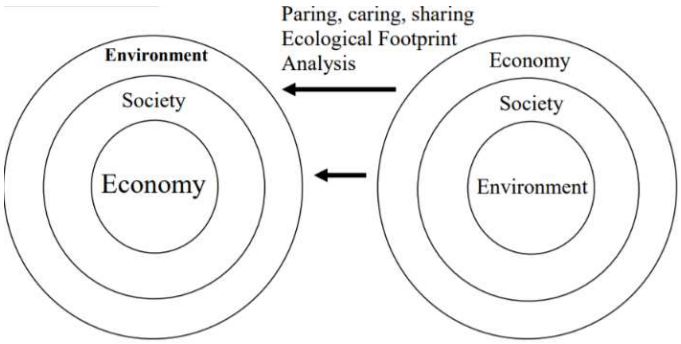
Category	Variable name	Variable definition
Political domain (1/4)	Embassies (1/3) Organizations(1/3) Military (1/3)	Absolute number of in-country embassies and high commissions Absolute number of memberships in international organizations Trade in conventional arms as a share of military spending
Economic domain (1/4)	Trade (1/3) FDI (1/3) Capital (1/3)	Imports + exports of goods and services as a share of GDP Gross foreign direct investment, stocks (% of GDP) Absolute value of net private capital flows (% of GDP)
Social and cultural domain (1/4)	Migrants (1/2) Tourism (1/2)	International migrant stock as a share of population International arrivals + departures per 100 inhabitants
Technological domain (1/4)	Phone (1/2) Internet (1/2)	Mobile cellular subscriptions per 100 inhabitants Internet users as a share of population
Ecological domain (omitted)	Eco footprint	Ecological Footprint of imports and exports as a share of biocapacity

(Sarukhán and Whyte 2005) defined cultural ecosystem services as "the nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences". Cultural ecosystem services have been included in many other typologies of ecosystem services and referred to variously as cultural services (Constanza 1997), life-fulfilling functions (Daily 1999), information functions (de Groot et al. 2002), amenities and fulfilment (Boyd and Banzhaf 2007), cultural and amenity services (de Groot et al. 2010, Kumar 2010), or socio-cultural fulfilment (Wallace 2007). One broadly agreed upon characteristic of cultural ecosystem services is their intangibility. Intangibility has been advanced both as an explanation for their poor appraisal (Sarukhán and Whyte 2005, Adekola and Mitchell 2011, Daw et al. 2011), but also as an impetus for better consideration of them in the future (Chiesura and de Groot 2003, Chan et al. 2011, Smith et al. 2011). The physical, emotional, and mental benefits produced by cultural ecosystem services are often subtle and intuitive in nature (Kenter et al. 2011) and implicitly expressed through indirect manifestations (Anthony et al. 2009). [37] **Milcu, A. Ioana**

Method group	Valuation method	Forest good or service
Revealed preference methods	Market price	Those that are traded in markets, mainly resources (e.g., timber, fuel-wood, cork, nonwood forest products)
	Cost-based	Mainly ecological services: soil protection, water protection, climate regulation
	Hedonic pricing	Services that contribute to the quality of attributes of a certain market good, e.g., air quality, landscape aesthetics, noise reduction
	Travel cost	All ecosystem services that contribute to recreational activities
Stated preference method	Contingent valuation	All goods and services
	Choice experiment	All goods and services

There are two main groups of economic valuation methods: revealed preferences methods and stated preference methods. Revealed preference methods are based on actual market behaviour of users of ecosystem goods and services. However, their applicability is limited only to a few ecosystem goods and services. Valuation methods used in revealed preferences methods are *market price, cost based, hedonic pricing and travel cost.* Stated preference methods can be applied to all types of ecosystem goods and services. However, their main disadvantages are that they are based on hypothetical situations and their application is complex and resource consuming. Valuation methods used in revealed preferences methods are *contingent valuation and choice experiment.* Cost based methods category considers all three approaches (damage costs avoided, replacement costs and substitution costs) which are equally applicable. [38] **www.fdocuments.in.** The size and scope of mankind's daily impact on the Earth, if left unchecked, could quickly and easily lead to a dangerous imbalance between the demands of survival on the environment and its limited ability to provide those essential elements. Ecological footprint is the measure of this impact and is a contributing element toward society's environmental consciousness and its accountability toward safety and ecological overuse. However, many cultural factors influence ecological footprint levels and man's attitude toward the environment. Study was conducted to review the socio-cultural influences of locations, ages, socioeconomic statuses and educational backgrounds on ecological footprint. [39]

Oloruntegbe, Temitayo (2013). Thus, culture metrics are an essential part of the culture change journey. They are the only reliable way to know if culture improvement efforts are working. The goal of measuring culture is to accurately observe changes over time, compare the results of one business unit – or employment level, team, or country – with another, using the best possible tool. Quantitative research results (statistical data collected by measuring things in a structured way). Diagnosing culture is best achieved through qualitative research (non-statistical, unstructured and semi-structured techniques such as interviews or group discussions). [40] **Carolyn Taylor.** Circles of Social Life is an approach that guides engaged and collaborative practice in making our cities, locales and organizations more sustainable, resilient, adaptable and liveable. The circle approach provides us with the best way of thinking about and depicting the recursive nature of social life. Social life is rarely enacted as a straight line of cause and effect. [41] **www.circlesofsustainability.org.** As part of this overall approach Circles of Sustainability is a method for understanding and assessing sustainability, and for managing projects directed towards socially sustainable outcomes. It is intended to handle 'seemingly intractable problems' such as outlined in sustainable development debates. The method is mostly used for cities and urban settlements. [42] **en.wikipedia.org**. Conceptually, sustainability is most often diagrammed as three intersecting circles representing the sectors of the Economy, the Environment, and Society. The concentric circles model to the left depicts this dependency-ordering of the three arenas. To the right is the inverse of this arrangement, representing the dysfunctional operation of our society: our decisions are economically driven (the dominant circle) to which we are subservient (middle circle) at the expense of the environment (smallest circle – central to our existence, but generally not considered priority in most decisions). The consequences of this latter model driving our decisions are dire and affect all living things. [43] **http://www.neo-terra.org**



V. Epilogue

"I define postmodern as incredulity towards metanarratives". – Jean-Francois Lyotard

Almost all the grand narratives are in the line of fire. Cultural fault lines (ethical, social and political) are being exposed in the process of *deconstruction.* State of the art cultural transformations are required to be examined in the context of this crisis of narratives. Virtual reality is changing the way we communicate and the way we are perceived. Every time we post a photo, or update our status, we are contributing to our own digital footprint. The nature of knowledge has changed and thereby so has society itself. Ad-hoc narratives are in the making. The multiple footprints (*ecological, ethical, social and political*) are getting registered partially in the cloud memory. Various *Analytics* (mobile service providers, e-commerce sites, social medias etc.) are using these multiple footprints for extension of their social, political and commercial interests and as such, they are affecting our ecological, social and cultural fabrics. Thus, the accounting imperatives (i.e., recognition, measurement and quantification)

of these multiple footprints are very germane issues. While we are somehow able to identify and recognise the footprints but we have made a very little progress in case of measurement, quantification and valuation of those footprints. However, by no means it should be taken to means that our inability to measure and quantify those multiple footprints will deter us to get into the point. There is no denying the fact that the measurement and quantification are undoubtedly very important aspects of accounting, but what seems to be of greater importance is recognition and identification. Once recognised and identified, the concerned footprint legitimizes itself for being included in the financial reporting. Of course, in the absence of proper measurement, quantification and valuation, the concerned footprint will not lend itself to monetary quantification. However, that should not prevent us from inferring about the extensity, intensity and propensity of the changing faces of ecology and culture. We are supposed to apply innovative or creative accounting techniques (quantitative, qualitative and judgemental) to account the impact of the particular footprint on the individual, society and polity.

Bibliography:

[1] Steger, Manfred B., "Globalization: A Very Short Introduction", Oxford University Press, 2003, Page 15

[2] Held, David , McGrew, Anthony G. , Goldblatt, David , Perraton, Jonathan, "Global Transformations: Politics, Economics, and Culture ", Stanford University Press, USA, 1999, Page 2, 7.

[3] Steger, Manfred B., *Op.cit.,* Page 86

[4] Steger, Manfred B., *Ibid.,* Page 87, 89

[5] http://www.acrewoods.net/environment/ecological-footprinting

[6] Retrieved form www.icontrolpollution.com/articles/aspect-identification

[7] Steger, Manfred B., *Op.cit.,* Page 69

[8] Kerkmez, Ray, "World System Theory and Contemporary Globalization- Globalization & Interntional Economic Law", www.academia.edu, Page 3,4,8,9.

[9] Robertson, Ronald, "The Socilogical Significance of Culture: Some General Copnsiderations", SAGE, London 1988, Vol 5, Page 3.

[10] Anderson, Gretchen and Smith, Caroline, "More than a feeling: How do you measure culture?", Leadership, Aug 12, 2019

[11] Tuleja, Dr. Elizabeth, niversity of Notre Dame, Mendoza College of Business

[12] York, R., Rosa, E. A., & Dietz, T. (2003). Footprints on the earth: The environmental consequences of modernity. *American Sociological Review, 68*(2), 279–300.

[13] Sadykova Raikhana *, Myrzabekov Moldakhmetb , Myrzabekova Ryskeldyc , Moldakhmetkyzy Aluad, Procedia - Social and Behavioral Sciences 122 (2014) 8 – 12 www.sciencedirect.com.

[14] https://www.globalization101.org/uploads/File/Culture/cultall.pdf

[15] Lyon, David, "Post Modernity", University of Minnnesota Press, 1999, Page 46,166.

[16] Retrieved from oll.libertyfund.org/group/the-french-enlightenment.

[17] Steger, Manfred B., "Ideologies of Globalization", Journal of Political Ideologies (February 2005), 10 (1), 11–30

[18] Steger, Manfred B., *Op.cit.,* 2003, Page 64

[19] Robertson, Ronald, "Globalization and Societal Modernisaion : A Note on Japan and Japanese Religion" Sociological Analysis , 1987, www.jstor.org

[20] Lillie, William, "An Introduction to Ethics", Allied Publishers Pvt. Ltd., 2003, Page 208.

[21] (Stevens 1959). "Measurement" sponsored by the American Association for the Advancement of Science (1959, p. 18).

[22] Four Ways to Measure Culture: Social Science, Hermeneutics, and the Cultural Turn John W. Mohr1 and Craig Rawlings

[23] Laurenson, Lydia, "Digital Media influences culture – and it's influenced by culture in turn", Measuring Culture, Retrieved form www.radar.oreilly.com

[24] Conceptualizing and measuring culture in international business and management: From challenges to potential solutions Dan V Caprar1 , Timothy M Devinney2 , Bradley L Kirkman3 and Paula Caligiuri4 1 UNSW Australia, Sydney, Australia; Journal of International Business Studies (2015) 46, 1011–1027 www.jibs.net

[25] Philippa Foster Back CBE, Director Institute of Business Ethics. Retrieved form https://r.search.yahoo.com/_ylt=AwrwI4WhwEBg3mwAxzK7HAx.;_ylu=Y29sbwNzZzMEcG9zAzEEdnRpZAMEc2VjA3Ny/RV=2/RE=1614885153/RO=10/RU=https%3a%2f%2fwww.bsa.org.uk%2fBSA%2ffiles%2fc9%2fc9d8f85c-d532-484c-8766-abfe96f677ce.pdf/RK=2/RS=E3dHudJ5bK4L0R.6tm7qlHFy3So-

[26] Steger, Manfred B., *Op.cit.,* Page 82

[27] Report On Increasing The Competitiveness Of The Cultural Heritage Sector In Armenia This Programme is funded by the European Union Consultant: Dr. Robert Pickard Project Title: Eastern Partnership Culture Programme II ENPI /2014/353745 British Council Date 24th February 2017

[28] Measuring the immeasurable: the impact of culture on development, UNESCO Culture for Development Indicator Suite

[29] https://en.wikipedia.org/wiki/Engaged_theory

[30] Morton, Timothy, "Ecology without nature-Rethinking Environmental aesthetics", Harvard University Press, 2007

[31] www.ksphc.org/pdfs/IMSP/IMSP 19 Identification

[32] Retrieved form www.environmentalpollution.in/eia-2/stages-of.

[33] www.sciencedirect.com/science/article/pii/S...'Ambient air pollution and pregnancy outcomes: A comprehensive review and identification of environmental public health challenges'

Environmental Research Volume 167, November 2018, Pages 144-159

[34] www.gjesm.net/article_16343.html'Leachate characterization and identification of dominant pollutants using leachate pollution index for an uncontrolled landfill site', S. De S. Maiti T. Hazra A. Debsarkar A. Dutta, Department of Civil Engineering, Jadavpur University, Kolkata-700032, India

[35] Lukas Figge, Kay Oebels & Astrid Offermans, The effects of globalization on Ecological Footprints: an empirical analysis *Environment, Development and Sustainability* volume 19, pages863–876(2017)

[36] Lukas Figge & Pim Martens (2014): Globalisation Continues: The Maastricht Globalisation Index Revisited and Updated, Globalizations, DOI: 10.1080/14747731.2014.887389

[37] Milcu, A. Ioana, J. Hanspach, D. Abson, and J. Fischer 2013. "Cultural ecosystem services: a literature review and prospects for future research". *Ecology and Society* 18(3):44. http://dx.doi.org/10.5751/ES-05790-180344

[38] www.fdocuments.in

[39] Kunle. Oloruntegbe, Temitayo. Abayomi. Oluwatelure and Olaniran. Agbayewa, "Eco-cultural Factors and Ecological Footprint as Variables and Measure of Environmental Consciousness and Accounting in Nigeria", Journal of Education and Practice ISSN 2222-1735 (Paper) ISSN 2222-288X (Online) Vol.4, No.16, 2013, www.iiste.org

[40] Carolyn Taylor, "Four Guidelines for Measuring Organisational Culture", www.leaderonomics.com

[41] www.circlesofsustainability.org

[42] en.wikipedia.org/wiki/Circles_of_Sustainability

[43] http://www.neo-terra.org/uploads/2/5/6/4/25644359/3-circle_model-website.pdf

[44] Gadgil Madhav , Guha Ramachandra , "The Use and Abuse of Nature: Incorporating this Fissured Land & Ecology and Equity", Oxford India Paperback, 2004, p 20

[45] Kaviraj, Narahari , "What Is Postmodernism?", K P Bagchi & Co., 2005, Pp.5,

[46] Borucke, M., Moore, D., Cranston, G., Gracey, K., Iha, K., Larson, J., et al. (2013). Accounting for demand and supply of the biosphere's regenerative capacity: The National Footprint Accounts' underlying methodology and framework. *Ecological Indicators, 24*, 518–533.

[47] Jorgenson, A. K., & Clark, B. (2011). Societies consuming nature: A panel study of the ecological footprints of nations, 1960–2003. *Social Science Research, 40*(1), 226–244.

[48] Lamla, M. J. (2009). Long-run determinants of pollution: A robustness analysis. *Ecological Economics, 69*(1), 135–144.[4]