

BEYOND GDP: DEFINITION AND MAKING OF NEW WELFARE INDICATORS, REFLECTING ON CONCEPTUAL AND METHODOLOGICAL ISSUES

Elena Camino*

*University of Turin, Italy - elena.camino@unito.it

The theme of the panel was proposed by **Filomena Maggino**, a scholar expert in statistics applied to social research. Particularly, Prof. Maggino investigates on the definition and implementation of systems of indicators, on the analysis and statistical measurement of subjective data (attitudes, opinions, preferences, perceptions, skills, ...), on the construction of models and methods of social data. Prof. Maggino introduced the topic with the following remarks: *“The definition of well-being, and consequently his observation and its monitoring, has to deal with the complexity of reality, on the one hand, and, on the other, with the limit imposed by its finiteness. In this sense, the definition and adoption of new indicators to measure the well-being of the Nations requires a paradigm shift and a mentality change in all social actors; on the other hand, it raises several methodological problems related to the complexity of reality and its of his observation. The panel aims to show the role of the new indicators in this perspective, highlighting how closely the methodological and technical implications bring with them also conceptual consequences.”*

The conceptual consequences are inseparable from the practical consequences: the imaginaries and narratives that underpin the ideas of well-being, equity, satisfaction of needs are 'translated' into political choices and social practices that shape the people's lives.

Participants in the Panel presented various perspectives that emphasize the interplay between knowledge, technology, power and local processes of social and global transformation: transformation that increasingly records a widening of the “scissor” not only between rich and poor, but between those who can rely on natural resources and those who cannot, between those who live in healthy environments and those who are forced to cohabit with pollution and degradation.

The main theme of the presentations was a critical reflection and a profound revision of the indicators of well-being (and of the policies which follow). The speakers called attention to other cultures, respectively, the Indian and Latin American, who embody worldviews and lifestyles very different from those - currently dominant - of Western society.

NANNI SALIO AND THE GANDHIAN ECONOMICS

Nanni Salio is the President of Centro Studi Sereno Regis, that since the eighties of the last century promotes a culture of nonviolence in all its forms. In this conversation Nanni Salio emphasizes the importance and relevance of Gandhi's thought, especially in the realm of economics. In 1909 Gandhi wrote a booklet, *Hind Swaraj*, which summed up his conception of nonviolence in the field of politics and economics, laying the foundations for the future “school of Gandhian economists”. In his analysis Gandhi developed a harsh criticism of the “modern Western civilization”, in anticipation of the main aspects of today's systemic crisis (economic, ecological, social), and outlined an alternative model of development and lifestyle, nonviolent and sustainable. Gandhi also introduced critical elements useful to the current debate about the role, limits and dangers of techno-science: such critical issues were subsequently developed, among others, by Jerry Ravetz, Silvio Funtowicz and Vandana Shiva. In 1935 Richard Gregg was inspired by Gandhi in his work on “voluntary simplicity”: a theme then taken up by other authors such as Schumacher and Helena Norberg-Hodge, and from the school of the “degrowth” of Latouche. Gandhi's ideas were tested in India, during the struggle for independence, thanks to the collaboration of Vinoba Bhave and Joseph Kumarappa, and were systematized by Romesh Diwan, who proposed a model of nonviolent economy, providing a clear theoretical and practical basis from which to build an alternative to the current global systemic crisis.

Nanni Salio, after pointing out that a number of experiments on a small scale towards sustainability are underway in various parts of the world (demonstrating the relevance of the Gandhian message) underlines the need for an effort by the university cooperation institution to network with these realities, that offer narratives and experiences quite different from the imaginary still dominant, which puts the techno-scientific innovation in the service of economic growth and competitiveness.

SIMONE CONTU AND THE INTERPRETATION OF THE BIOPHYSICAL WELFARE

Simone Contu is an expert in the calculation of the Ecological Footprint (IE), an indicator that measures the consumption of nature on the part of individuals, communities and nations. The IE analyzes the socio-environmental relations from a point of view in some ways complementary to that proposed by GDP. The speaker presented a case study: once again, as in the previous report, the participants are invited to look to India. The vigorous economic

development of India in recent decades is recorded and measured by the conspicuous growth of GD. However recently some scholars, using the methodology of material flow accounting (MFA) to and from India during the period 1961 to 2008, have highlighted the growing unsustainability of the choices made by this country. The “development” is accompanied by a dramatic deterioration of the environment, with negative consequences especially for rural people and indigenous communities, who, until a few decades ago, were the largest component of the Indian population, which was based mainly on the social structure of “village”. The situation in India, with ever more numerous and intense socio-environmental conflicts, effectively and dramatically demonstrates the need to take account simultaneously of two boundaries within which the human communities must learn to live: the social limits that require to reduce imbalances that lead to poverty and social inequity, and the biophysical limits of the planet, which demand a careful and limited use of fluxes and transformations of natural resources.

Starting from the different visions of India offered respectively by GDP and by IE Simone Contu (in collaboration with Elena Camino) has provided a brief review of “development”, “progress”, “welfare” indicators that in recent decades have been increasingly designed, and progressively integrated with measures of environmental sustainability. In addition to illustrating some of the potential, sometimes the effectiveness, often the limits of a quantitative approach to the relationship between human communities and the environment, Simone Contu stressed the importance of the ideas that drive the imaginaries - the world views - and the responsibility of scholars to produce and / or sustain new concepts in order to translate them into measures and policy guidelines.

LISTEN TO THE VOICES OF THE “STAKEHOLDERS”

Paola Camisani has recently completed one year of National Voluntary Service. She was engaged in such service, with Davide Vaccaro, between 2012 and 2013 at the Centro Studi Sereno Regis: they both carried on a research on socio-environmental conflicts underway in India. The two young people have collected video interviews, testimonies, films that express the voices and reasons of the parties involved (partly accessible on web site: www.indiaincrociodisguardi.it).

Paola continued the research, reflecting on the changes that have gradually affected the “international cooperation”, for a long time (and partly still now) committed to optimize the transfer of knowledge and technology from North to South of the planet. The imaginary of an unlimited economic growth, and the belief that the “developed” countries can teach to the “poor” or “developing” communities, has ruled the political scene and the economic choices for decades. The academic world has contributed to consolidate the idea of a guiding role of the West against culturally “backward” peoples in the South of the world.

Today, international cooperation and academic research must face problems and contradictions that have emerged as a result of the choices based on such vision of unlimited growth and technological pride: land grabbing, urban marginalization, pollution, social inequality, etc. In India, these contradictions have assumed dramatic proportions: a situation little known to the western public, and so far addressed in a fragmentary way by the actors of cooperation. Protest movements composed of women, peasants, natives are resisting to the process of a “development” that result in an increasing dispossession of local communities from their land, due to the construction of dams, mines, industrial plants. These movements are bearers of an idea of development which is quite different from the dominant one: they emphasize the dependence of mankind from natural systems and the urgent need to combine ecology and equity within a planet with evident biophysical limits. The voices of these communities should become a reference for academics and for the people and entities responsible of cooperation projects: we need to overcome the distinction between “experts” and “non-experts”, and build all together new knowledge and new realities.

Massimo Pallottino and Salvatore Monni, even if they refer to contexts totally different from India, arrive at conclusions that are well integrated with the previous ones: starting from a critique of liberal thought they propose to draw elements of reflection from ongoing movements in Latin America that offer a bio-centric perspective of the world, based on the recognition of Pachamama, Mother Earth. Within this perspective emerges the idea of “Buen Vivir”, a state of harmony and collective well-being (“good life”, not “Live better”). The Buen Vivir places at the centre the experience of each single people, and in so doing it differs from any perspective of a process of homogeneous globalization, that appears as one of the main features of the international cooperation approach. The practical dimension that characterizes many experiences of Buen Vivir is accompanied by interesting initiatives in the legal and institutional realm, as documented by the Constitution of Montecristi and by the National Plans of Buen Vivir 2009-2013 and 2013-2017, that represent an attempt to transfer the values of Buen Vivir from practice to norm.

While referring to research, experiences and reflections drawn from very different cultures and countries, the conclusions that emerge from this Panel converge in stressing the inadequacy not only of the development model based on unlimited economic growth and the superiority of western civilization, but of a vision of the world, typical of the Western world and increasingly exasperated by modern techno- science, which envisions humanity as separate from the natural systems. By the speakers and panelists who have offered their contribution an invitation has also emerged to the academics involved in international co-operation to move into a position of respectful listening towards other cultures, and to become aware that every international cooperation project aimed at improving the condition of “well-being” must be contextualized in a globalized world, where increasingly limited resources are should be distributed combining ecology and equity.

FROM ENFORCEMENT TO DIALOGUE. LISTENING TO THE VOICES OF STAKEHOLDERS: A CHALLENGE FOR UNIVERSITY

Paola Bianca Camisani*, Elena Camino^o

*Centro Studi Sereno Regis - paola@serenoregis.org

^oIRIS - elena.camino@unito.it

ABSTRACT

In the past the “international cooperation” focussed on optimizing the transfer of knowledge and technology from North to South. The imagery of a limitless economic growth and the certainty that “developed” countries could guide and teach to every other country (“underdeveloped” or “developing” countries) has dominated the political scene as well as economic choices for decades. The academia has contributed to strengthen the idea of identifying the Western world as a role model for those populations that are also culturally “backwards”. Nowadays, the international cooperation and the academia have to face issues and contradictions that arose as a consequence of these past choices (land grabbing, urban marginalization, pollution, inequality, etc.). In India these contradictions have assumed dramatic proportions, are not acknowledged by the public and, to date, are dealt with fragmentarily by cooperation actors. Mines, dams, power stations and industrial plants have made “necessary” the need to expropriate millions of peasants and tribals from their own villages, and have reduced the availability of land used for agriculture. Protest movements composed of women, peasants and tribals are opposed to these processes, and act with the aim to defend their territory and preserve their traditions. Such movements are carriers of a development imagery that is different from the dominant one: they highlight the interdependence of humanity with natural systems, as well as the urgent need to combine ecology and equity within a planet with obvious biophysical limitations. The authors undertaking this study have focussed on the socio-environmental conflicts currently taking place in India. The data were collected through video interviews, testimonies and films which reported opinions and motivations of stakeholders (some can be accessed on the web site www.indiaincrociodisguardi.it). The opinions of these individuals need to become a reference both for the academia and for people responsible for cooperation. There is the need to overcome the differentiation between “experts” and non-experts in order to build new knowledge and new realities together.

A RESEARCH FROM BELOW

This research has been initiated through a partnership between the Centro Studi Sereno Regis, the ASSEFA Group of Torino and the Interdisciplinary Research Centre on Sustainability (IRIS), and involved the participation of two young people engaged in the Civil Service. In the year of volunteering (2012–2013) Davide and Paola have carried out a search for the presence and extent of socio-environmental conflicts in India. In such conflicts many local communities are involved, who adopt a variety of nonviolent protests against the subtraction of their goods and belongings: houses, land, rivers, forests, etc.. The preliminary results of this research made it possible to create a website (www.indiaincrociodisguardi.it) being now in progress. In this paper the two Authors aim to clarify the reasons that have led to the research and to illustrate some of the material already present in the website.

Several research centres and academic institutions have studied – from different points of view – the socio-environmental conflicts that since some decades are sweeping through India; they have analyzed the underlying dynamics and the social, cultural, economic, environmental impact according to an academic perspective. The sources of information most affordable and accessible are those published in international scientific journals, that are considered as most reliable thank to the “peer –review” control.

However, despite the efforts made in recent years to take a multi-and inter-disciplinary look, and despite the growing opportunities for dialogue and discussion among scholars not only of different academic disciplines, but also of different nationalities, cultures, imaginaries, the contribution of academic studies to the interpretation of socio-environmental conflicts remains mostly theoretical and restricted to single disciplines. The knowledge - now very wide - provided by academic research have so far been largely ineffective in leading to solutions that allow to transcend the conflicts while respecting the rights of all parties involved.

The opportunity to surf the web and have access to non-academic material (we can say “biased”) offers interesting occasions to seize, through the multiplicity of points of view expressed, the complexity and dramatic nature that characterize many of these conflicts when they are placed in their real context.

We chose to start from video files, easily and freely accessible on websites, expressing “live” the voice of local

populations, the main players of most of these conflicts. We found many short documentaries, home movies, parts of TV news, in which images and words put us in direct contact with the “stakeholders”.

Starting from these documents we then deepened our investigation, searching newspaper articles, press releases of institutions, governments and firms, research papers, essays that would allow us to place the situations witnessed in the videos within a wider scenario.

In some cases we were able to download, or receive prior authorization, or even buy the films (mostly shot by Indians filmmakers, journalists, activists) that starting from specific situations supplied by the amateur video documents deepened the issue highlighting more wide connections in space and time.

This material, as a whole, represents an important evidence of the forms of nonviolent protest and opposition by local communities (mostly the inhabitants of small villages, or fishermen, or tribal groups living on the margins of the remaining forests of India) in front of the decisions of Indian or multinational companies and enterprises (often with the approval of local governments) to use the territories in which these communities have always been living to dig a mine, settle an industrial plant, build a dam or start a power plant.

KINDS OF CONFLICTS

It is difficult to squeeze in few lines the complexity of such a heterogeneous reality. Actually, these situations are spread over a wide area, all over the vast Indian territory, and are different from each other, involving different actors each time. However our research led to highlight certain analogies: here we mention two of them.

- a) The time scale: they are mostly long-lasting conflicts, with alternating phases of conflict (sometimes violent) and phases in which the conflict seems “solved”, when in fact it is only dormant, ready to re-emerge, perhaps in new ways, with new subjects [1];
- b) the geographic scale: most of the socio-environmental conflicts in India have international or global relevance, because the flows of money, information, matter and energy that are moved in such conflicts involve realities and interests located in parts of the world far apart from the local context.

To a reading necessarily 'schematic' another feature shared by many of the conflicts concerns the characteristics of the two “parties”. On the one hand there are the advocates of “doing”, animated by the belief that human ingenuity can control and dominate nature thanks to the availability of advanced scientific and technological knowledge and tools, and holders of a power (not only in terms of economic and financial power, but also physical) capable to transform at an increasing rate natural ecosystems in artificial systems. On the other hand it is frequently read that the opponents are labelled as “naysayers”, as supporters of “not-doing”, by giving this term a negative connotation: stillness, inertia, idleness, longing, ... This interpretation is the outcome of a powerful collective imaginary of our society, often implicit and unconscious.

With regard to the conflicts on environmental issues, we focused on four themes: the construction of large dams, establishment of large manufacturing plants, opening and exploitation of mines, construction of nuclear power plants. In all cases, these are projects that are put forward at some central level (“top-down”) and presented as required for “progress” (intended as economic and industrial development of the country), and whose implementation implies the involvement, often adverse, of the local communities living in the selected areas (farmers, fishermen and indigenous peoples).

The building of large dams

Since the 60s of last century, the Indian government has put in place ambitious programs that involve the construction of an extensive system of dams in order to meet the growing energy needs of the nation, bring water to irrigate large areas and to quench the thirst of great urban centers. Alone, the “Narmada Valley project” envisaged building 30 large dams, 135 medium and 3,000 small dams. Not all have been realized, however it is estimated that to date have been displaced - just for this program - between 16 and 40 million people [2]. For some years now the government is working on a new project that foresees the construction of an intricate system of dams on the slopes of the Himalayas. Farmers, herders, and tribal populations of the areas that are expected to be under water struggling for years against the decisions of the central government and federal in order to avoid abandoning their places of origin. Others, whose homes and land are now under water, ask to receive at least the economic compensation, which never arrived.

The building of nuclear plants

To meet the energy needs of a growing population both numerically and in consumption, the Indian government is putting in place a comprehensive nuclear program. This program aims to achieve the energy availability of 14,600 MW by 2020 and provide 25% of energy needs through nuclear power by 2050 [3]. The building of nuclear power plants requires not only a huge economic effort, the occupation and militarization of a large area, the re-release into the sea of water at a temperature higher than that picked up. The exercise of a nuclear plant implies, as input, feeding with nuclear

fuel extracted from mines (uranium and thorium), and as output the production of radioactive waste whose disposal still remains problematic. Not only local groups (mostly fishermen and farmers who are directly affected) oppose against the construction of nuclear power plants: also organized groups at the international level are opposed to the production and handling of radioactive material, which can have persistent and large range effects and can be converted to military use.

Industrial plants

To promote the economic development of the country, the Indian government in 2000 launched a plan that included the establishment of Special Economic Zones (SEZ): geographical areas identified in order to attract foreign capital and to encourage the installation of productive activities, which are subject to legislation substantially facilitated as regards labour and taxes. The industrial production requires huge amounts of energy and matter, and occupies large areas of land. In addition waste from manufacturing processes - often not properly disposed of - pollute the environment and spoil the landscape. Such situations lead to interfere with the economic, social and cultural life of the communities in which they are installed. As many plants require large areas of land, these are subtracted to the inhabitants, who are forced to leave their villages, or are compelled to work in the factories, with rules and working conditions often to the limits of exploitation and security. In many situations local communities rebel against this situation, often with nonviolent methods, and are confronted with paramilitaries troops and forces who, recruited by these companies, and with the consent of the government, interdict access to the areas traditionally occupied by the inhabitants, and given now in concession to the owners of the establishments.

Extraction of minerals

India is a country rich in mineral resources, and is located at the top for the production of some minerals that are considered "strategic": coal, iron ore, chromite and bauxite. Most of the mineral deposits can be found in the greenest regions of the country, rich in forests and streams. The forests of the so-called 'iron belt' are inhabited by a number of Adivasi communities, indigenous peoples for whom the natural environment is not only a valuable source of livelihood, but also has an important religious, symbolic and social significance. The intensive exploitation of mineral deposits devastates the land with often irreparable damage, pollute the air and water, uproots people and communities. This gives rise to the opposition by many local populations across India, protesting against the ravages made by mining activities. Among the minerals that are mined there are also uranium and thorium, of which the Indian State need increasing amounts to feed the nuclear power plants already present and those it intends to build. The inhabitants of the places of extraction of radioactive materials since many decades are fighting to expose damages caused from the extraction, storage and transportation of these minerals on people's health and living systems of the affected areas.

Common traits in different conflicts

To suffer the consequences of processes connected to industrialization and increased consumption are those who belong, according to the Western imagination, to the poorest social strata. Actually, in many cases these communities do not consider themselves poor, on the contrary: they are rich in social relations, culture, well-being, to the extent that they can draw on the produce of the land, the forests, the sea [4]. By subtracting their natural goods they are forcibly transformed into "ecological refugees", dispossed people.

The interventions mentioned above subtract land to farmers, peasants, tribal people Dalits who traditionally depend on the land for their livelihood. The ideology of development, which sees the industrialization as the means to increase the income of the people in order to achieve the 'progress', has forced millions of people to lose their homes, their small plot of land, the access to coast. As pointed out by Martinez Alier [5], to suffer the consequences of the growing ecological deficit are and will be more and more the communities who depend directly on local biocapacity, and are therefore dependent on the health and productivity of the ecosystems in which they live. In the Indian social system (and not only ...) these are low-income communities, whose assets are often not convertible into cash. Instead, those who belong to the richest sections - even if they do not have direct access to natural resources - have enough money to buy food and consumer goods, sourced locally or imported from abroad.

The conflicts that we investigated are taking place locally, but are expressions of national and transnational issues. The global nature of these conflicts is given not only by the correlations between distant realities in a globalized world, but also by the presence of several similarities.

These conflicts arise from two different visions of reality and development: one that relies on economic and industrial growth, and the other aimed at achieving equity and sustainability. The imaginary of economic development delegitimizes one of the parties in conflict, often stereotyping those who defend their territory such as anachronistic, nostalgic, struggling against the natural flow of the story.

They are asymmetric conflicts. On the one hand there is the state and / or multinational companies, with powerful economic means and control over media, on the other hand movements are composed of farmers, fishermen, women and tribal people who do not have access to financial resources or to the media.

They include forms of structural violence: the projects are imposed from without consulting the parties involved.

Any form of opposition is repressed by force and often with deployment of police forces. The more powerful party in the conflict usually stands as a champion of legality, democracy and development, accusing opponents of being violent and subversive. Often however, it is the dominant party that eludes state laws and the rights of the populations who are opposing to major infrastructural projects.

Conflicts arise for the defence of one or more ecosystems against the perspectives of intensive exploitation by the government and / or where the alleged owners who normally reside in areas away from the place. They are conflicts in which the movements fight for the recognition of needs that were previously not considered because it was assumed that they could be satisfied: having enough healthy food, clean water, shelter from the weather and so on. The reason for the conflict is not the preservation of nature as such, but the safety of some sections of nature as living spaces of some communities. In economic terms a habitat can provide important resources to the livelihood and for the production of goods, while in cultural terms it provides social and cultural meanings that transcend material aspects.

Many of these conflicts are made invisible because they take place in periphery (suburbs of the cities, remote places in the country sides, South of the world), far from the eyes (and interests) of affluent citizens. The mass media, controlled by the dominant power are able to mute the voices of dissent and to manipulate information about the nature of the conflict.

The erosion of ecosystems undermines the basis on which the livelihoods of some communities relies and in many cases it can lead to situations of extreme poverty. Poverty is not just about low income: it regards also other aspects such as the possibility to access to nature and to basic public services, and the right to participate in decision-making processes. As already mentioned, those who hold low incomes do not necessarily live in situations of poverty if they are able to rely on nature and social networks: the case of subsistence economies that are based on values other than those expressible in money terms.

TESTIMONIES AND EVIDENCES FROM BELOW

We refer to the web-site www.indiaincrociodisguardi.it for a wider overview of the evidences that we have gathered.

In the next pages we present some case studies, introducing each of them through the voices and the images of the communities involved. Such “bottom-up”, emotional and emphatic perspective is then enriched with a historical setting of the conflict, and a reflexive overview based on essays and research articles produced by NGOs, grassroots organizations, research and academic centres. We also seek to extend the boundaries of the geographical and social context, in order to seize the international or global relevance of the issue.

Uranium mines – Jadugoda

Video evidences

- a) *Buddha weeps in Jadugoda, Ragi Kana Ko Bonga Buru, INDIA, 1999.* The destruction of the natural environment and the social impact of a uranium mine in Jadugoda.
- b) *Jadugoda the black magic, by Shriprakash, India, 2009.* Documentary based on the 2007 study, Black Magic of Uranium at Jadugoda, conducted by the Indian Doctors for Peace and Development, explores the harsh realities of indigenous peoples living near the Jadugoda mine, mill and tailings dam.
- c) *Toxic Neglect, Moushumi Basu, India, 2011.* Documentary about Jadugoda narrated by the villagers themselves. It shows the impact of radiations on local population.

General Info

The Jaduguda Mine is an uranium mine located near Jaduguda village (Jharkhand). The exploitation of the mine began in 1967 and recently new deposits has been discovered in the area. Jadugoda is the main source of uranium for all India. In Jadugoda, there is a constant exposure to low level radioactive emission. Waste from the mines is dumped in open fields, and uranium ore is transported in uncovered dumpers. The company supplied mine tailings as construction material to the villagers. The Santhal, Munda and Ho tribes who live near the mining operation areas are badly affected: children are born with swollen heads, blood disorders and skeletal distortions.. Animals such as cows and buffaloes are suffering from rare diseases.

According to the Uranium Corporation of India Limited - UCIL (a Public Sector Enterprise under the Department of Atomic Energy), the various studies carried out by experts have proved beyond doubt that the diseases prevalent in the villages around UCIL workings are not due to radiation but attributed to malnutrition, malaria and unhygienic living conditions etc. Fear of radiation is essentially human made and mediated phenomenon by a small section of the media without checking out the facts. Most of the apprehensions are based on a false understanding of the facts

(<http://www.ucil.gov.in/web/myths.html>).

The affected communities organized many forms of protest, as stage dharnas (method of seeking justice by sitting at the door of one's debtor or wrongdoer and fasting until justice is obtained) and demand job and cash compensation from time to time.

In July 2013 the UCIL announced that new rich deposits of uranium between existing uranium mines near Jadugora have been discovered. According to the Director and Corporate Communication, UCIL: "The findings will certainly expand the life of country's first uranium mine in Jadugora by at least five to six years".

Main stakeholders

- Uranium Corporation of India Limited (UCIL): a Public Sector Enterprise under the Department of Atomic Energy; Central and State governments.
- Groups of local inhabitants displaced for mining operations, people living in villages affected by radiations. Several NGO supporting the fight - Jharkandi Organization Against Radiations (JOAR), Jharkhandi Organisation for Human Rights and the Bindrai Institute of Research and Social Action.

Academic sources

- H. Koide, Radioactive contamination around Jadugoda uranium mine in India, Kyoto University, Japan, 2004.
- S. Rahman, Study on health status of indigenous people around Jadugoda uranium mines in India, Indian Doctors for Peace and Development, 2008.

Non-academic sources

- Jharkhandi Organization Against Radiation (JOAR) web site: jadugoda.jharkhand.org.in.
- World Information Service on Energie (WISE): <http://www.wise-uranium.org/umopjdg.html>.
- J.A. Schertow, Jadugoda The Black Magic, Intercontinental cry magazine, essential news and film on the world's indigenous peoples, 20 june 2009: <http://intercontinentalcry.org/jadugoda-the-black-magic/>.
- M. Basu, No expansion until promises are met, Infochange environment, Jadugoda, May 2009.
- Indian Doctors for Peace and Development, Black Magic of Uranium at Jadugoda, IDPD publications, Kitxhulu Nagar, Punjab, 2007.
- Association for India's development (AID): <http://jadugoda.net/>.
- Uranium Corporation of India Ltd., Myth. On line: <http://www.ucil.gov.in/web/myths.html>.

The larger context

According to the Indian programme to expand the nuclear energy sector, intensive researches in the field are been done searching for new uranium mines, in order to reduce the dependence of the uranium fuel supply from other countries. UCIL signals that new projects are starting up:

- A large uranium reserve in the carbonate host rock near **Tummalapalle** (Andhra Pradesh) has been planned for development. All clearances including approval of Government of India have been obtained. Construction activities for an underground mine up to a depth of 300m and a processing plant based on alkali leaching (under pressure) technology have been initiated.
- Near **Lambapur** (Andhra Pradesh) substantial uranium reserves have been identified and UCIL is in the process of obtaining clearances for construction of three underground and one open pit mines in the area and a processing plant at Seripally, 52 k away from the mine site.

The extraction activities of uranium minerals are strictly connected to the functioning of nuclear power plants.

Conflicts related to mines are quite similar to those concerning installation and operation of power plants: one of the most recent and controversial case is that going on in Tamilnadu, near to the village of Kudankulam.

Nuclear power plants - Kodankulam

Video evidences

- a) *Selvi, J. Karat, India, 2013*. Selvi was 10 yrs old when she first participated in an anti-nuclear protest in Kanyakumari. In this interview, she talks about how she feels deceived and unsafe with a nuclear power plant in her backyard (<http://www.youtube.com/watch?v=R88J4sOX6A0>).
- b) *Vennila, J. Karat, India, 2013*. Vennila is a young woman who was born and brought up in Idinthakarai, the

present hub of the Koodankulam anti-nuclear protests. She describes her life in the village and why freedom is the dearest thing to her. The documentary is made by an activist herself (<http://www.youtube.com/watch?v=FvLkYVfnsNE>).

- c) *Tamizharasi, J. Karat, India, 2013*. Talks about the indifference Tamil Nadu government has shown towards the anti-nuclear protestors of Idinthakarai and how she believes that in the end, victory will be hers. The documentary is made by an activist herself (<http://www.youtube.com/watch?v=qgMCNIsKYvU>).

General info

Uranium mined in Jadugonda is used also in Kodankulam nuclear power plant (Tamil Nadu). The plant is the result of an inter-governmental agreement made between India and Russia in 1998, establishing that the Russians were expected to provide the reactor designs and supply the major equipment. Tamil Nadu will receive 925 MWe out of the 2,000 MWe to be generated from the two reactors at Kudankulam. Karnataka will receive 442 MWe, Kerala 266 MWe, Puducherry 67 MWe and the unallocated share will be 300 MWe. The construction on the plant began on March 2002, but faced several delays due to the anti-nuclear protests voiced by locals, occasionally supported by international grouping. The first reactor of the plant attained criticality on 13 July 2013 and the plant is now operating.

According to the villagers, no public hearing was held, it is an authoritarian project imposed to people. More than 1 million people live within the 30 km radius of the plant, which far exceeds the Atomic Energy Regulatory Board stipulations. It is quite impossible to evacuate so many people quickly and efficiently in case of a nuclear disaster.

The people of Koodankulam village were misled by false promises such as 10,000 jobs, water from Pechiparai dam in Kanyakumari district, and fantastic development of the region. Fishermen claim that the warm water released from the plant can impact on the fish catch and will effect on life and livelihood of local inhabitants. Anti-nuclear protests continue to reverberate in the Idinthakarai village, the fishing hamlet which has been the ground zero for protests for almost two years. SP Udhayakumar, Convenor of the People's Movement Against Nuclear Energy (PMNAE), the organisation which has spearheaded the protests, said the protests will continue since satisfactory answers have not been given by the authorities regarding safety issues concerning the plant, which he said was commissioned in a rush.

To allay the fear of local peoples over safety of the plant, the Atomic Energy Commission had set up an expert committee which concluded in its report that KKNPP meets with all current safety requirements and is thus safe for operation [6].

Main stakeholders

- Local populations - People's Movement Against Nuclear Energy (PAMNE).
- Nuclear Power Corporation of India Ltd. (NPCIL) - Atomic Energy Regulatory Board (AERB) - Ministry of Environment and Forests (MoEF) - Tamil Nadu Pollution Control Board (TNPCB).

The larger context

As of January 18, 2013 in 31 countries 437 nuclear power plant units with an installed electric net capacity of about 372 GW are in operation and 68 plants with an installed capacity of 65 GW are in 15 countries under construction. (<http://www.euronuclear.org/info/encyclopedia/n/nuclear-power-plant-world-wide.htm>). 29 are under construction in China, 7 in India, 11 in the Russian Federation.

The conflict in Kudankulam is only one – the most present actually in the media – among a number of similar conflicts present worldwide. But the information on the media is scarce, perhaps due to the military and strategic relevance this issue.

Problems still unresolved at the Fukushima plant feed the hopes of those who want to abolish nuclear power plants. On the other hand, many see in nuclear energy a partial solution to global warming.

Non academic sources

- PANME: <https://www.facebook.com/pages/Peoples-Movement-Against-NuclearEnergy/231063120300804> and on Wikipedia (http://en.wikipedia.org/wiki/People's_Movement_Against_Nuclear_Energy).
- Stop kodankulam power plant project, group on facebook: <https://www.facebook.com/groups/stopkodankulamatomicplant/>.
- Nuclear power protest in Kodankulam, south India, group on facebook: <https://www.facebook.com/groups/satyagraha.kumar/>.
- NDTV (New Delhi Television) collection of articles written by main national news paper on Kodankulam Power Plant from 2011 to nowadays, <http://www.ndtv.com/topic/kodankulam-nuclear-power-plant>.

The Renuka Dam

Video evidences

- *A Dam Old Story, Tarini Manchanda, India, 2010*. A film about Himachal Pradesh's precious Renuka Valley - home to biodiverse forests, fertile lands and people who have been living and farming in India's northern mountains for generations. This valley lies in the submergence area for a dam project that is meant to supply Delhi with water. The film takes a look at the stakes for this dam, and asks whether Delhi needs this dam or Himachal's water, at all (<https://www.facebook.com/video/video.php?v=278815012131675>).
- *Renukaji in Delhi's taps, Kurush Canteenwala, India, 2009*. A documentary made as part of the Infochange Media Fellowship 2009 starts in thirsty Delhi and travels to the Renuka valley (Himachal Pradesh) where families in 17 panchayats will be thrown off their fertile land to make way for the Renuka dam that will supply water to Delhi. Those living in the area point to the many crops they grow and from which they make a decent living, and ask what they can do and where they can go when their land is taken away. The documentary highlights the powerlessness of ordinary people in a democracy and skewed city development that has destroyed Delhi's own water resources and causes it to prey on the resources of people 300 miles away (<http://bllip.tv/infochange/renukaji-in-delhi-s-taps-3344044>).

General info

About 300 km north of Delhi in the Sirmour District of Himachal Pradesh, a controversy is brewing over plans to construct the Renuka dam in order to supply drinking water to Delhi at a cost of 3900 crore (\$ 860 million). The dam has been proposed on the Giri River in Himachal Pradesh and is expected to provide Delhi 275 million gallons of water a day. In 2010 concern was expressed by governmental people that further stalling of the project will jeopardise the city's water security.

In 2011 the Renuka Dam project has crossed a major hurdle with the National Green Tribunal (NGT) giving a go-ahead to HPPCL to award compensation to those whose land has been acquired for it.

The project is expected to displace 750 families in 37 villages, and about 1600 hectares of fertile land and forests (including part of a wildlife sanctuary) will be submerged. Sirmour has relatively poor infrastructure and health facilities with nearly 23% of households residing below the poverty line. A report on the project says, as a result of submerging land, there is little doubt that the dam will "directly affect the food security and sovereignty of the families".

In 2012 the villagers protesting against the land acquisition have alleged the district collector of forcing Gram Sabhas (village councils) to pass illegal resolution in favour of the developers. In August 2013 a group of non-governmental organisations has urged Union Environment and Forests Minister to hear the local people's viewpoint on construction of this hydroelectric project.

Main stakeholders

- Himachal Pradesh Power Corporation Limited (HPPCL).
- 750 families in 37 villages.

The larger context

The construction of the dam attempts to solve the problem of the water supply for the city of Delhi, which has a population of nearly 14 millions (2011). Water shortage is a growing problem in Delhi, and it affects primarily slum dwellers (<http://www.youtube.com/watch?v=AcZCSEZ7JV0>). Faced with limited reservoir storage, aging piped infrastructure, and rapidly growing demand, no Indian city today has a continuous water supply. The drinking water requirements of most of the mega cities in India are met from reservoirs of irrigation/multi-purpose schemes existing in nearby areas and even by long distance transfer. Delhi getting drinking water from Tehri Dam and Chennai city from Krishna Water through Telugu Ganga Project are typical examples.

Non academic sources

- S.K. Ramachandran, Sheila urges Centre to fast track Renuka Dam project, *The Hindu*, April 10, 2012. <http://www.thehindu.com/todays-paper/tp-national/tp-newdelhi/sheila-urges-centre-to-fast-track-renuka-dam-project/article3298596.ece>.
- The ambitious Rs 3,600-crore Renuka Dam project in Sirmour district, which aims at quenching the thirst of Delhi, has crossed a major hurdle with the National Green Tribunal (NGT) giving a go-ahead to HPPCL to award compensation to those whose land has been acquired for it, a project official said today. July 11, 2012 From Business Lines (<http://www.thehindubusinessline.com/news/states/renuka-dam-project-green-tribunal->

[orders-compensation-for-land/article3627808.ece](http://mbmnewsnetwork.com/2013/02/siyu-village-to-lose-its-existence-in-40-mw-renuka-dam-project/)).

- Siyu village to lose its existence in 40 MW Renuka Dam, MBM News Network, february 26, 2013 (<http://mbmnewsnetwork.com/2013/02/siyu-village-to-lose-its-existence-in-40-mw-renuka-dam-project/>).
- Krishnak Mukti Sangram Samiti rejects design panel report on Subansiri dam, The Times of India”, 11 June 2013 (<http://timesofindia.indiatimes.com/topic/Renuka-Dam-Sangarsh-Samiti>).

Academic sources

- R. Sagane, Water management in mega-cities in India: Mumbai, Delhi, Calcutta and Chennai. In “Water for urban areas: challenges and perspectives. Water resources management and policy.”, J.I. Uitto & A.K. Biswas, Eds. United Nations University, 2000.
- R. Dayal, Water: A Critical Infrastructure in India’s Growth Vision. In “India Infrastructure Report 2011”, Water: policy and performance for sustainable development, pp. 360-369, 2011.

WHY A RESEARCH ON VIDEO TESTIMONIES

As we have shown, in tackling socio-environmental issues in India we focused mainly on direct video sources produced by amateur video makers, activists, local committees. Often images are raw, shot with mobile phones or other means of fortune, through which the various stakeholders report on their experiences and expose their views about the events in question. We believe that this approach is important for several reasons.

The reasons expressed by villagers and activists, and the opinions and reflections about the social and environmental impact reported on the web sites of the movements themselves, are the free testimony of people who live in a well known context, and want to express their point of view on the issue. A point of view which proposes a different narrative about development as compared to the most widespread and dominant view. This narrative is more attentive to the needs of local people and more aware of the impact on the environment and human health. As stated by Baviskar [7], now that the misuse and abuse of the environment are becoming increasingly contested, we need new perspectives for understanding issues socio-environmental conflicts. The analysis of the conflict from the perspective of those who suffer from these dynamics can be a useful approach to promote a deeper understanding.

Communication by means of video images represents a stark and direct expressive means. On the one hand it is an easy tool to use for those who want to communicate ideas and to witness a reality. On the other hand, mainly thanks to the images, the ideas it conveys can reach a larger and more diverse public than the written word, engaging on a rational as well as an emotional level both the academics of the prestigious universities, the interested citizens and the illiterate peasants unaware of what is happening outside their own territory.

A CHANGING PERSPECTIVE

Since several years actors of cooperation and scholars are critically questioning the mainstream approach to development. To name just a few among many, Escobar [8], Malighetti [9], Esteva, [10], Sachs [11], Dreze & Sen [12].

Meanwhile a radical criticism is undermining the basis of the mainstream techno-scientific approach, ever more dependent on the financial and economic power: “According to the ‘post-normal’ science perspective, the ideal of rigorous scientific demonstration is replaced by that of open public dialogue. Citizens become both critics and creators in the knowledge production process as part of an extended peer community. Their contribution is not to be patronised by such labels as “local”, “practical”, “ethical” or “spiritual” knowledge. A plurality of co-ordinated legitimate perspectives (with their own value commitments and framings) is accepted. The strength and relevance of scientific evidence is capable of assessment by citizens. All sides come to the dialogue ready to learn, or else the process is a sham.” [13]

According to this perspective, it is hoped that academia, cooperation operators and civil society undertake joint pathways of research and action, in which the distinction between ‘experts’ and the public / users is definitely removed. An example of the institutional acknowledgment of such new approach may be *EJOLT* (Environmental Justice Organizations, Liabilities and Trade), a large collaborative project bringing science and society together to catalogue ecological distribution conflicts and work towards confronting environmental injustice (<http://www.ejolt.org/>) [14].

NON VIOLENCE AS A MEAN AND A GOAL

A relevant aspect that emerges from the video material we have looked at is the prevalence of a nonviolent approach on the part of local communities in India. The ancient roots of India civilization resurface in the struggles that rural communities are leading, all over the country, with the aim to defend their land and culture, and the spiritual

relationship with nature.

From Gandhi to Martin Luther King, to get to the case studies that we have examined, nonviolent movements have repeatedly been shown to be able to deal with (and sometimes overcome) crises and conflicts, proposing agreed solutions based on the needs of the community at large. However, they often find themselves in an asymmetrical position with respect to the other party, represented mostly by national or super-national institutions, who enjoy a much larger financial and economic power, and exert a strict control over the media.

Since 1983 Robert Chambers [15] contended that researchers, scientists, administrators and fieldworkers rarely appreciate the richness and validity of rural people's knowledge or the hidden nature of rural poverty. His suggestion was "to put the last first". In 1997 he modified his sentence, claiming that it was necessary "to put the first last" [16]. With this in mind the leaders of international cooperation and academic research might definitely chose an approach to the problems that involves listening and enhancing the 'voices' coming from the stakeholders directly involved, and from movements active on a local basis and committed to protect the human rights and promote environmental sustainability. Such attitude might help to promote a transformation in two important areas:

- a) it would enable questioning and gradually overcoming the imaginary hold by the techno-scientific, objective "experts", who increasingly address research projects towards unsustainable scenarios, drain funds and shape the decisions of the powerful, actively contributing to social and environmental unsustainability;
- b) it would allow the imaginary of equity and sustainability to translate into narratives composed thanks to the contribution of all stakeholders' voices, promoting decisions that respect human rights and nature, based on non-violent tools and aims.

Now the voices of the rural communities are more easy to find, as we have shown: the web is a rich source of information, if one is just willing to sail on it and listen. Our website, www.indiaincrociodisguardi.it, is only a little example, focused on India, but the material that we collected is really worth to be seen and listened to.

REFERENCES

- [1] J. Galtung. Peace By Peaceful Means: Peace and Conflict, Development and Civilization. International Peace Research Institute, Oslo, 1996.
- [2] A.G. Nilsen, The river and the range: dispossession and resistance in Narmada Valley, India, school of politics and international relations, University of Nottingham, p. 10, 2009.
- [3] World Nuclear Association. Nuclear power in India, <http://www.world-nuclear.org/info/Country-Profiles/Countries-G-N/India/#.Uhy7wZJM87w>.
- [4] M. Gadgil and R. Guha, Ecology and Equity. Penguin, 1995.
- [5] J. Martinez- Alier. The Environmentalism of the Poor: A study of ecological conflicts and valuation, Edward Elgar Pub, 2003.
- [6] G. Balachandran, K. Patil, IDSA Comment, Kudankulam Nuclear Power Plant: how safe is safe enough? IDSA, 2013. On line: http://www.idsa.in/idsacomments/KudankulamNuclearPowerPlant_balakapil_030813.
- [7] A. Baviskar, Contested grounds: essays on Nature, Culture and Power, Oxford University Press, 2008.
- [8] A. Escobar, Encountering Development: the making and unmaking of the third world. Princeton University press, 1995.
- [9] R. Malighetti (a cura di), Oltre lo sviluppo. Le prospettive dell'antropologia, Meltemi, Roma, 2005.
- [10] G. Esteva and M. S. Prakash, Grassroots post-modernism: remaking the soil of cultures, London & New Jersey: Zed Books, 1998.
- [11] W. Sachs, The Archaeology of the Development Idea. Pennsylvania State University, 1990.
- [12] Dreze J. & Sen A. Putting growth in its place. Outlook India, Nov 14, 2011.
- [13] S. Funtowics, 2006, cited in A. Guimarães Pereira and S. Funtowicz. Knowledge representation and mediation for transdisciplinary frameworks: tools to inform debates, dialogues & deliberations. International Journal of Transdisciplinary Research Vol. 1, No. 1, Pages 34-50, 2006.
- [14] H. Healy, J. Martinez-Alier, L. Temper, M. Walter, J-F. Gerber, Ecological Economics from the Ground Up. Routledge 2013.
- [15] R. Chambers, Rural Development: Putting the last first. Routledge, 1983.
- [16] R. Chambers, Whose Reality Counts?: Putting the First Last. Intermediate Technology Publications, 1997.

SUSTAINABILITY: FROM THE IMAGINARIES TO THE INDICATORS...AND BACK? THE CASE OF INDIA

Simone Contu^{*}, Elena Camino[°]

^{*} IRIS, Interdisciplinary Research Institute on Sustainability - simonecontu@yahoo.it

[°] IRIS, Interdisciplinary Research Institute on Sustainability - elena.camino@unito.it

ABSTRACT

The vigorous economic development occurred in India in the last decades has been documented by the conspicuous growth of GDP. However recently Singh et al. (2012), by quantifying flows and transformations of matter through India in the period from 1961 to 2008, highlight the growing unsustainability of the choices made by this great country. The 'development' is associated with an increasing deterioration of the environment, with dramatic consequences especially for rural populations and indigenous communities, which were, until a few decades ago, the largest component of the Indian population, mainly based on the social structure of the "village". India is home to ever more numerous and severe socio-environmental conflicts. The situation in India impressively demonstrates the need to take account of two boundaries within which human communities must learn to live: the social limits that require to reduce social imbalances that are cause of poverty and inequity (Rowarth, 2012), and biophysical constraints of the planet, that require a restricted and cautious use of humans' powered flows and transformations of natural resources (Rockstrom et al., 2009).

In our contribution we will offer a brief review of indicators and indices of "development", "progress", "well-being" that in recent decades have been increasingly compared, combined and finally twisted with measures of environmental sustainability. We will outline some of the imaginaries and narratives that characterized the academic research in this area.

In addition to illustrating some of the potentialities, sometimes the effectiveness, often the limits of a quantitative approach to the relationship between human communities and the environment, we will try to highlight the importance of the ideas that drive the imaginaries, and the responsibility of scholars in producing and / or accommodate new concepts and translating them into "scientific" measures and policy guidance.

All dialogues have to cross borders—cultural, political and, above all, psychological. [...] Dialogue of cultures can acquire new depth if it engages communities and cultures at the receiving end of the system and reaffirms their right to intellectual—yes, intellectual, not only social—dignity. The oppressed do have their own, often-implicit theories of oppression and have no obligation to be guided by our ideas of the scientific, the rational and the dignified. They have every right to be historically, economically and politically incorrect. [1]

WHY INDIA? WHICH INDIA?

One of us had the chance to get to know - since years '80 of 1900 - the situation and background of some most deprived and marginalized communities of rural India. Moreover she had the opportunity to observe and somehow partner the conceptual development and the field work of a Gandhian NGO, the Association for Sarva Seva Farms (ASSEFA). ASSEFA is primarily a "movement", committed "to the up-liftment of the social, cultural and economic life of all and to establish self-sufficient, self-reliant and self-managed communities based on the principles of love, sharing and social justice" (ASSEFA annual Report 2013)¹.

In recent decades, while Indian GDP (gross domestic product) was going up, rural communities involved in ASSEFA projects were facing increasing difficulties to cope with the deteriorating economic and socio-environmental conditions. Rampant urbanization, failing monsoons, declining groundwater levels, rising costs of food and commodities conflicted with the narratives of the "shining" India. In Italy a growing number of people withdrew its support to ASSEFA projects, in the belief that India was now become rich. A powerful imaginary was driving people's thinking: India was perceived as a nation moving from low to high income, from underdeveloped to developed, from "third" to "first" world partner. Indians were finally moving from backwardness to modernity, as evidenced by the growth of GDP.

¹ ASSEFA is based in Tamilnadu, but projects are going on in 8 Indian States. In 2013 ASSEFA staff and volunteers are 3864. The women self-help groups (SHGs) are now between 200 and 250; 629 teachers – with innovative school programs, which include yoga and non-violent education - take care of more than 15.000 students in 130 schools.

AN IRRESISTIBLE TENDENCY TO CLASSIFY AND SORT

The dialogue – always respectful and loving – intertwined with the leaders of ASSEFA resulted in an increasing dissatisfaction and questioning with regard to many aspects of the life and culture of the “First World”. The peripheral point of view of Indian villages shed light on the peculiar characteristics of the Western thought [2]: the haunting objectifying approach to the world and the overwhelming propensity to label, categorize and sort “objects” even when they are incommensurable entities (as cultures and traditions), driven by an unwarranted feeling of superiority towards other civilizations.

The objectifying approach to the world is also at the root of the western scientific thought, together with the presumed “neutrality” and “universality” of science, and the trust that modern techno-science offers both an accurate, quantitative description of the world, as well as instructions and tools to take action in order to solve any kind of problems. The cloud of data of any sort that go mushrooming up - supported by the exponential increase in storage capacity and data handling of modern computers - show however the difficulty to reassemble the complexity of real-life contexts from data collected from a multiplicity of measures taken thanks to fragmented analytical views. According to Bateson [3: 165]: *“The continuum of nature is constantly broken down into a discontinuum of variables in the act of description”*.

The critical approach to western civilization and science was advanced in India by Gandhi more than a century ago in the booklet *Hind Swaraj*²: *“This civilization is such that one has only to be patient and it will be self-destroyed”*. (pag. 19). Such critical approach included also western science, as it was recently recalled by Anup San Ninan [4] . According to his in-depth examination of the original writings of Gandhi and his associates, the author concludes that Gandhians *“engaged science and technology as a contextually contingent social process and integrated it into a mass political movement, by identifying techno-science as a site of political action”*.

DATA COLLECTION IN THE GLOBALIZING WORLD

Obviously data are important: specifically, as regards the efforts being made to monitor the process of globalization and to measure the consequences of the burden that the increasing human presence is loading on the planet, we are witnessing a growing amount of relevant information describing and documenting the huge transformations that are going on in the global natural stocks and flows. But while data collection proceeds fast and quickly, the gap between the ability of collecting data and the inability to take action to reverse the trend is becoming increasingly clear. Data may be collected, assembled and managed in many different ways: sometimes there are conflicting results between different disciplinary views, and even within the same field interpretations may contrast. Moreover skepticism is growing about the effectiveness of the quantitative, techno-scientific approach in offering wise solutions to the present world crisis: some authors are very much concerned about the unintended, unforeseen and unknown consequences of the human manipulation of the Earth ecosystems.

Among the many approaches suggested to cope with the uncertain future of humans on the Earth, we focus here on two strategies that are significantly divergent.

The quantitative, objective, reliable approach

This approach points to multiply the collection of quantitative data, in the perspective of developing increasingly effective techno-scientific tools to monitor and modify eco-socio-systems. Engelman [5: 17] underlines that “metrics matter”: *“if we are to manage our way to a sound environment and a durable civilization, we’ll need to weight rigorously our progress in ways scientists can support and the rest of us agree on”*.

Experts of all disciplines are deeply involved in researches aiming to collect data in their own fields, from social to natural fields, with the aim of contributing to describe – for the first time in the human civilization – the global state of the Earth, of providing measures to deal with emerging problems and to attain “progress”. Within this imaginary, the role of indicators is growing in importance and relevance.

Perhaps the first indicator, that dates from the middle of the last century, was the GDP, the market value of all officially recognized final goods and services produced within a country in a given period of time. Even if it has been recognized as coarse, simplistic and misleading from the outset (e.g. [6], [7]) it is still largely used to classify and compare nations’ performances and to guide policy.

In the last decades the academic world produced a proliferation of ever new indicators, ranging from disciplinary - based on economic or ecological parameters - to highly interdisciplinary indicators, to the most recent “sustainability” indicators. As a recent paper underlines [8], the appreciation of the role of quantification and the setting up of reliable indicators to monitor the development of our current society grew gradually in the last decade of the XX century. Today the crucial role of indicators is evident, and their use is accepted in an increasing number of fields.

In parallel with the collection of data on single aspects, there is a growing concern to integrate analytical information within a systemic view [9]; Rockström et al. [10] focused on a number of biophysical parameters in order

² <http://www.mk Gandhi.org/swarajya/coverpage.htm>.

to trace the “outer limits” that humanity should not exceed, while Raworth [11] underlined the need to not overstep social boundaries.

However “*we have had considerable success in building measurement tools, but less in knowing how to use them, or for what ends*” [8: 1]. Authors underline “*the enormous room for innovation, tempered by the humility to recognize the limitations of our tools and the wisdom to know when their use is appropriate*” [8: 2].

As Jørgensen et al. [12] underline in a recent review of ecological indicators, “*the guiding paradigm of the indicator activities in the last 10 years has been the idea of sustainability, which strongly demands for the three pillars of environmental, social and economic aspects*” [12: 8]. But since achieving sustainability is fundamentally an ethical challenge [13] value-based indicators are needed – according to the author - to measure and motivate the ethical principles necessary to guide the transition toward sustainability. So, how to reconcile the feature of the supremacy of the scientific approach – ascribed to neutrality and objectivity of data collection – with the acknowledgment of an unavoidable “value” component?

The qualitative, systemic, value based approach

The other approach to cope with the uncertain future of humans on the Earth dates back to ancient civilizations, and has barely survived to the spread of the aggressive western imaginary. It is based on a deep awareness of the human dependence on natural systems, on the need to adapt and develop resilience to ever changing conditions and evolving situations, and on the acceptance of the inescapable ignorance that characterizes human condition.

For people interested to learn from other world views, and willing to listen at the narratives of other cultures, the acceptance of the limits of human power, a cautious use of technology, a respectful attitude towards natural forms and processes have always been present. Such worldview, rooted in the distant past and evolved through millennia, allowed many civilizations to survive and develop in all varieties of ecological conditions. Qualitative, contextually rooted experience and the awareness of the inter-being of all living forms were translated into knowledge and rules governing the conduct of the communities.

Old and new narratives

The mental processes of “data collection”, concept formation and retention, and worldview production among every civilization follow patterns consistent with the language used, as language shapes terms and concepts. Every society has its own understanding of how the natural world works, a repertoire of habits, skills, and styles from which members of a society construct their livelihoods. According to the level of proximity / separation disregard from the natural environment, a knowledge–practice–belief complex includes or excludes an intimacy/closeness with land, animals, and plants. It also includes /excludes institutions (rules and norms) about interacting with the environment, and it produces and conveys a worldview that shapes the way people make observations, make sense of their observations and learn. The western scientific solution has been to quantify a few of the variables, whereas the solution in indigenous knowledge has been to find ways of perceiving the continuum of nature and working with it [14].

While still fiercely contested by the mainstream of the western techno-scientific society, this world view is slowly creeping into the narratives aiming to find solutions to enliven the collapsing global civilization (e.g. [15]). Qualitative, value based approaches, respectful of a variety of view, interests and sensibilities have been proposed not only by indigenous people: many “educated” people, from the East as well as from the West, have long developed a critical look on Western imaginary and related narratives: Ivan Illich, Joan Galtung, Gustavo Esteva, Fritz Shumacher, Joseph Cornelius Kumarappa, Anil Agarwal, Madhav Gadgil, Vandana Shiva, Aurelio Peccei, Laura Conti, and many others have been committed to developing a greater awareness of the need to undertake development paths respectful of views and rights of all parties - including the natural systems that host them. Such awareness (and the ensuing decisions and actions) can be developed only through a bottom-up participatory process, where all subjects are included. In tune with such view, some authors directly challenge the dominant science epistemology based on the findings of experts: “*According to the ‘post-normal’ science perspective, “the ideal of rigorous scientific demonstration is replaced by that of open public dialogue. Citizens become both critics and creators in the knowledge production process as part of an extended peer community.”* [16]

Indicators...

A recent report from the Working Group on Monitoring and Indicators [17] involved in the design and collection of data in view of the post-2015 global development agenda stated that, while goals themselves may be inspirational, numerical targets should balance ambition with realism. Forward-looking development targets should reflect a clear consensus and understanding of objectives among policymakers, civil society and the public, and factor in the need to improve the living conditions of a growing global population over the next decades. Indicators of progress towards targets may take various forms; changes in rates, ratios, percentages and differences are the most common.

As clearly pointed up by Hak et al. [8: 1] “*the directions we take will be determined in part by the indicators we choose to measure our progress. This is not just a technical debate (although finding good indicators for prosperity, well-being or happiness is a technical challenge)*”.

By reviewing the most important or most used indicators designed and applied in the last decades, one can seize clues of the implicit world view that oriented scholars (mostly researchers of western academies). A quick overview shows a steady increase from an economic vision to a socio-economic scenario, followed, in recent years, by a growing concern to incorporate environmental aspects and to extend the spatial boundaries.

GDP has been joined in the eighties of last century by new indicators, taking into account a growing variety of parameters, as life expectancy, literacy and levels of employment. Only more recently changes in less-tangible factors have been considered, such as personal dignity, freedom of association, personal safety and freedom from fear of physical harm, and the extent of participation in civil society. The Human Development Index (HDI), introduced in 1990, offered a new way of measuring development by combining indicators of life expectancy, educational attainment and income into a composite index. The breakthrough for the HDI was the creation of a single statistic which was to serve as a frame of reference for both social and economic development.

As long as environmental problems were multiplying, with the increasing scarcity of natural resources and recurring pollution incidents, the need became evident to develop indicators useful to monitor a variety of parameters, from the reduction of agricultural land to the presence of toxins in streams, to the increase of CO₂ in the atmosphere.

In 2002 the European Commission, stimulated by the growing concern about the environmental problems, produced a shortlist of 14 structural indicators to be developed and monitored, 6 of them labeled as regarding the environment: consumption of toxic chemicals, health expectancies, biodiversity index, resource productivity, recycling rate of selected materials, generation of hazardous waste.

From static to dynamic aspects of the environmental issues, and from local to global measures and assessment: this has been the trend in the last twenty years. Indicators have been designed based on material / energy flows as Material and Energy Flow Analysis (MEFA) or Energy Return On Investment (EROI). The human appropriation of photosynthetic production (HANPP), firstly proposed in 1986 [18], has become an important clue to measure the dependence of humanity on natural processes, and the alarming trend towards a growing difference between human demand and ecosystem supply [19].

In recent years, environmental indicators have become a vital component of environmental impact assessments and “state of the environment” reporting. This has increased the influence of environmental indicators on environmental management and policy making at all scales of decision making [20]. Niemeijer and de Groot underline the need to develop a conceptual framework that focuses on the inter-relation of indicators that puts an indicator set at the heart of the selection process and not the individual indicators. The most common frameworks used in indicator based studies are the driving force–pressure–state–impact–response (DPSIR), pressure–state–response (PSR), or driving force–state–response (DSR) conceptual frameworks, which organize and structure indicators in the context of a so-called causal chain.

While most of the indicators remained confined within research centers and government institutions, a new concept was spreading also through the civil society, thanks to the ease of understanding his meaning and of calculating (even if approximately) in a variety of conditions: the ecological footprint (EF) [21]. EF is a standardized measure of human demand for natural capital (Earth's ecosystems) that may be contrasted with the planet's ecological capacity to regenerate. In 2003 the Global Footprint Network (<http://www.footprintnetwork.org/>), a nonprofit organization, was established to enable a sustainable future where all people have the opportunity to live satisfying lives within the means of one planet. It is considered by the designers as an essential step in creating a one-planet future: by measuring human impact on the Earth we can make more informed choices.

Slowly environmental concerns began to be included in the “measure” of human well-being. According the designers (<http://www.happyplanetindex.org/>), the Happy Planet Index (HPI) measures the extent to which countries deliver long, happy, sustainable lives for the people that live in them. The Index uses global data on life expectancy, experienced well-being and Ecological Footprint to calculate this. The index is an efficiency measure, and it ranks countries on how many long and happy lives they produce per unit of environmental input.

In Italy the BES project, born from an initiative of CNEL and ISTAT, recently published the first Report on “Benessere equo e sostenibile”, centred on the monitoring of twelve “well-being” indicators, ranging from health aspects, social relations, quality of services, environment etc. It represents an innovative effort to go beyond GDP (Italian PIL) in focusing on “what really counts” for Italy (http://www.misuredelbenessere.it/index.php?id=22&tx_ttnews%5Btt_news%5D=67&cHash=9a9cf5078476c78cecf443b9810374b7).

The Environmental Performance Index (EPI), designed by Yale University scholars, is a method of quantifying and numerically benchmarking the environmental performance of a state's policies. This index, derived from the Pilot Environmental Performance Index (2002), was designed to supplement the environmental targets set forth in the United Nations Millennium Development Goals. The United Nations' Economic and Social Council is expected to play a major role in the preparation, implementation and follow up of a post-2015 development agenda. The team brings together the efforts of more than 60 UN agencies and international organizations. A Task Team is currently focusing its analytical work on the global partnership for development, monitoring and financing for sustainable development (<http://www.un.org/en/ecosoc/about/mdg.shtml>).

... and world views

According to Hak et al. [8], as indicators move to the centre of social and political debate, we need safeguards to ensure that the methodologies for calculating indicators and the organizations or government services that generate them are objective, trustworthy and protected from political interference. Most of the newest indicators are attempting to cope with the complexity of the socio-economic situations and the natural contexts of the involved communities, and are used not only to rank the “performance” of the countries, but increasingly to direct political action [22]. Conceptually the indicators are still deeply rooted in a western imaginary, compelling to rank and sort socio-environmental performance of incomparably different communities and contexts in a single list, according to a linear progression. Powerful international institutions are prompting to direct research areas and development projects according to a narrative that conveys a Western vision of “well-being”, “satisfaction”, “happiness”, as well as a top-down approach, centered on the “experts” advise and reached thanks to technological innovations: according to Assadourian and Prugh [23] *“If we are to manage our way to a sound environment and a durable civilization we’ll need to weigh rigorously our progress in ways scientists can support and the rest of us agree on”*. Erlich’s confidence in “scientific facts” [24] is translated into the need to find frames and narratives to convince the public to behave according to experts’ advice.

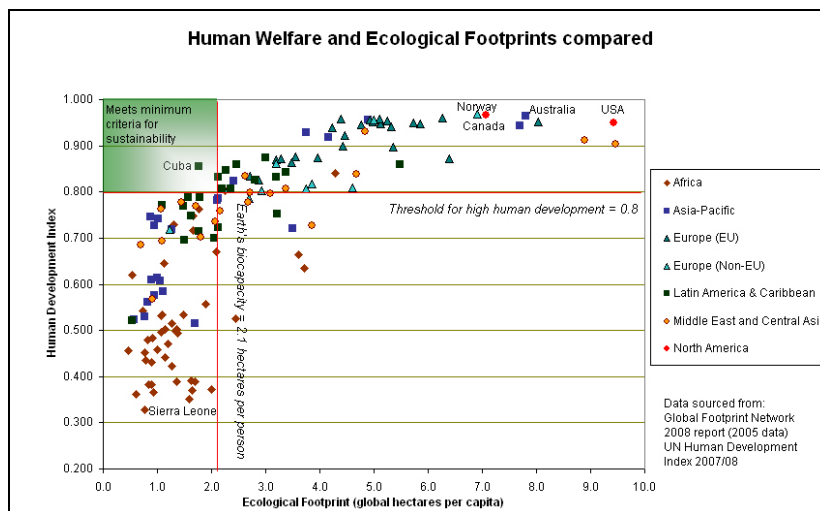
The relevance of data collection, thanks to the improvements in ITC area, is emphasized by Helbing [9: 51] *“It will take a massively data-driven approach that builds on a serious collaboration between the natural, engineering, and social sciences, aiming at a grand integration of knowledge. This approach to real-life techno-socio-economic-environmental systems is expected to enable new response strategies to a number of twenty-first century challenges”*.

The powerful imaginary of techno-science is implicit in many of the key concepts leading to the research and measure of indicators: “development”, “progress”, “modernity”, “innovation”. As Kearnes and Macnaghten observe [25: 282] the narratives associated with techno-scientific imaginaries *“are premised on a set of hopes or promises of what future social life should comprise, how the human body should be envisaged, how new transportation systems and infrastructures should be developed, how future warfare should be conducted, and how technological innovation determines particular social outcomes”*.

Finally, most indicators are seeking to measure and monitor entities, as nations, whose boundaries have by now become highly porous, in the globalized world: it is the planetary level where the environmental limits to development have now become quite evident [26], and where equity and ecology are to be reconciled [7].

INCOMPATIBLE TARGETS?

There has been an abundance of targets of all types for various phenomena from the economic to the socio-environmental sustainability domain. But not a definitive acknowledgment of the incompatibility between different targets. Yet, a plot which combines two indicators (the Human Development Index and the Ecological Footprint) gives clear minimum conditions for sustainable human development and shows how much more we need to “think inside the box.”



The goal (the green square on the upper left of the plot) is the minimum sustainable development quadrant. The concept has been recently emphasized by Raworth [11] *“Between the social foundation and the planetary ceiling lies an area - shaped like a doughnut - which is the safe and just space for humanity to thrive in. The 21st century’s unprecedented journey is to move into that space from both sides: to eradicate poverty and inequity for all, within the means of the*

planet's limited resources". *With fewer words the concept was neatly expressed by Gandhi more than a century ago: "Earth provides enough to satisfy every man's needs, but not every man's greed".*

INDIA'S CONTRADICTIONARY ASPECTS

India – this great country that counts more than 1 billion and 200 millions people – is now shaken by two incompatible world visions and targets. A few examples illustrate the gap between the Gandhian imaginary, still present in the Indian culture and courageously witnessed and pursued by root based communities and intellectuals, and the western world view, abruptly imported in the last thirty years along with the choices of the central government in league with powerful national enterprises and multinational corporations.

Who is grabbing the land?

A Report by Rowden [27] explores the role of Indian agricultural companies that have been involved in the recent trend in large-scale overseas acquisitions of farmland, criticised as "land grabbing". The Indian government is concerned with its long-term food and water security and has loosened regulations on Indian companies investing in overseas operations. A Governmental Working Group on Agriculture Production in 2010 suggested that, like many other countries who have shopped for land abroad for growing crops to meet consumption needs, Indian companies could also be encouraged to buy lands in other countries for producing pulses and edible oils. "We should seriously consider these options," the Working Group recommended, "for at least 2 million tons of pulses and 5 million tons of edible oil for 15-20 years".

Finally, Rowden's report gives voice to those Indian activists fighting for small farmers rights and against the "land grabbing" going on within India. As Rowden reports, for Indian citizens, local political resistance to foreign corporate takeovers of local farmland is nothing new. Communities all over India have been resisting dispossession from their villages on the grounds that they have a prosperous bio-diverse economy, where food is produced according to the needs of the people: they claim that projects aiming to convert fertile land into power and industrial plants, mines, dams would reduce bio-capacity and threaten their self-reliance.

Thousands of adivasis, farmers, labourers, forest dwellers, fish workers, hawkers, small traders, urban and rural poor from across 15 Indian states and over a hundred grassroots movements rallied in New Delhi in August 2011. These groups criticised the priorities of the new draft legislation, which considers urbanisation and industrialisation (that subtract fertile lands to rural communities) as "inevitable", but not social justice and equity as necessary.

What is poverty, and how it is measured?

When size of income is thought to indicate social perfection, as it does in the economic model of society, one is inclined to interpret any other society which does not follow that model as "low income". [...] As soon as the scale of incomes had been established, order reigned on a confused globe: horizontally, such different worlds as those of the Zapotec people of Mexico, the Tuareg of north Africa and Rajasthanis of India could be classed together; whilst a vertical comparison to "rich" nations demanded relegating them to a position of almost immeasurable inferiority. [28]

As Nussbaumer et al. [29] remind us, indicators are not merely data; rather, they extend beyond basic statistics to provide a deeper understanding of the main issues and to highlight important relations that are not evident using basic statistics. Even if single indicators are straightforward to handle, such metrics present a narrow picture of the issue measured. Complex issues such as human development are multidimensional in their very nature. As a compromise between the simplicity of uni-dimensional indicators and the need to account for the multidimensional nature of some issues, composite indices were created.

One of the most debated concepts is that of "poverty", and assigning weights to such complex index can be challenging and is an arbitrary and value-driven process. Shrivastava and Kothari [30] point out that there is debate on the dominant trends in poverty in India: at one extreme are market-friendly economists who have spotted a definitive reduction of poverty over the last two decades. They are concerned with measurable changes, as the rise in wages and the growing purchase of consumer durables. At the other extreme are serious sceptics, and experienced observers of local situations, with an eye for changes in the qualitative dimensions of poverty (availability of work, security of employment, working conditions etc.): they are critical towards the dominant approach based on numerical data on income, that obscures the underlying causes of poverty, such social inequality and power relations.

According to these authors [30: 87] the widespread hunger persists in India not despite growth, but perhaps because of it: the virtual dismantling of the country's food security, land acquisition from farmers for the purpose of industrialization, diverting cultivation of food towards non food cash crops are among the causes of such situation. India is exporting large quantities of food even as hundreds of millions of people are hungry, either because they are deprived of land or/and because of price inflation of food prices. Rural poverty increased also by the increasing diversion of land for creating new infrastructures (roads, ports, power stations) and for the extraction of minerals, with horrifying ecological and social impacts [30: 125]. Tens of thousands of hectares of land have been rendered completely

barren and unproductive, mining wastes poison streams and rivers. If India is to feed its own and the world's enormous appetite for minerals, millions of hectares of its land would have to be laid waste [30: 128].

The different conceptual frameworks underlying the design of poverty indicators is evident in a new indicator recently proposed by Khandker et al [31] who take into account the need of energy. According to authors, running modern economies without energy is impossible, and improving the poor's access to modern energy sources can make an important difference to their welfare and can be a catalyst for human development (World Bank, 2000). "Modern" energy is represented by liquid fuels, such as kerosene and LPG, along with electricity, in contrast with biomass fuels (wood, agricultural residue, and dung) that are defined inefficient and risky for human health and for the planet (emission of greenhouse emissions). No mention is done to renewable as compared to non renewable fuels. The paper, as clearly stated by the authors, postulates that energy is essential not only for supporting a decent quality of life but also for continued growth and productivity.

How far is this frame of mind as compared with the personal point of view of a young peasant, to whom the scenery may appear to be totally different! Remigius de Souza [32] helped his mother to make "sheni"³ from the heap of dung collected in the field.. These were stacked and stored mainly for monsoon. It was a "free" energy – fuel – for cooking; this practice still continues. *"The cow dung helped us to help grow food in the farms, helped to cook our food, and helped us to maintain our mud house; thus helped us to sustain. And finally the used cow dung went to the soil"*. Since 1996 Vandana Shiva [33] observed that two thirds and more of the power requirements of Indian villages were met by the 80 million work animals. Indian cattle excrete a huge quantity of recoverable manure, half of which is used as fuel, saving a great amount of kerosene, coal and wood. The remaining half is used as fertiliser. According to Vandana Shiva, without recognising this source of sustainable energy production, scholars and economists did not mention that if animals were replaced by tractors India would have to spend more than a thousand million US dollars annually on fossil fuels, increasing dependence and unsustainability.

TWO ALTERNATIVE PICTURES OF THE SAME COUNTRY

Singh et al. [34] try to offer a double reading of the state of India, by comparing two view points, two imaginaries. They publish in an academic journal, *Ecological Economics*, and use the concept of social or industrial metabolism and the corresponding methodology of material flow accounting (MFA) to investigate changes in India's biophysical economy, compatible to standard monetary system of accounts. Following this approach, they aim at analysing the ecological "embeddedness" of India's socioeconomic system [35].

Their paper presents an original study based on quantifying resource use trajectories for India from 1961 up to 2008, in order to explore some of the challenges faced by India and to interpret the meaning of its development rhetoric in a biophysical sense. Some of the derived indicators calculated are also presented in relation to GDP to better understand the relationship between the economy and biophysical flows. From the presented data it is evident that the increase of GDP has been obtained at the expenses of a growing dependence both from non renewable energy input, and of an increasing dependency on imports. If India with a projected population of 1.69 billion in 2050 (UN Population Division, 2010) would have the per capita material use of an industrialized country, this would boost its demand for fossil energy carriers, ores and industrial minerals by a factor of 10 to 15. India's development alone would lead to an increase of global material use by 34%.

According to authors, India needs access to energy and key raw materials, but it is extremely doubtful that it can adopt metabolic patterns typical for industrial economies. India would need a new resource revolution...

Shrivastava and Kothari, at the conclusion of their breathtaking inquiry on the recent impressive and predatory growth history of 'shining' India, urge a fundamental shift towards a radical ecological democracy. Such new way – say these authors - has to be undertaken not by India alone, but at a global level. *"We are rapidly approaching the moment when the choices before us would be stark; an institutionalized, hazardous corporate totalitarianism at indefinite war with the people and the earth, or the consensual emergence of a radical ecological democracy... The middle ground between these two choices is already beginning to vanish"* [30: 331].

UNMASKING IMAGINARIES AND CREATING NEW BARRATIVES

Patomäki and Steger [36] hold that a sustainable global future depends on a fundamental shift from the currently dominant national imaginary to a global imaginary. Most of human reasoning is based on prototypes, framings and metaphors that are seldom explicit; although they can be forged, usually they are merely presupposed in everyday reasoning and debates. The background social imaginary offers explanations of how "we" fit together, how things go on between us, the expectations we have of each other and outsiders, and the deeper normative notions and images that underlie those expectations.

According to Rubin [37: S40] the *"process of creating images of the future is partly intentional, but it also includes*

³ "Sheni" is a 3 cm thick, 30 cm in diameter disc, made by mixing water, rice husk and chopped rice straw, pulverized by feet, and the balls of mix are pressed flat by hand, and sun dried.

subliminal elements. We build up profound presumptions and beliefs about how things are, how they have been, how they develop, and then draw conclusions on how they will be in the future". In society, there also may be the "official truth" of the future, held by those who have authority over people and institutions, or by people who are opinion leaders in some other way. Such images of the future may never have been revealed in all their true colours and shades, or formulated into words, so that they could be publicly analysed and discussed. However as a consequence, the future they represent exists as mere presumptions, it is never questioned, and it is accepted as such.

Which kind of imaginary, what narratives are developing academic scholars in their international cooperation projects?

Swaraj (self reliance), swadeshi (self rule), sarvodaya (the well-being of all), antyodaya (care for the "last man"), ahimsa (nonviolence) may not be old fashion, obsolete concepts, surviving within a few NGOs and backward rural communities. On the contrary, they might be the keys on which build a new imaginary of the world, and contribute to design new – qualitative and openly value-laden "indicators" - both for India and for all the communities sharing the globalized spaces of our shrinking Earth.

REFERENCES

- [1] A. Nandy, Theories of Oppression and another Dialogue of Cultures. Economic and Political Weekly, July 28, 2010.
- [2] T. Ingold, Bringing things to life: creative entanglements in a world of materials. Realities working paper, n. 15, 2010.
- [3] G. Bateson and M.C. Bateson, Angels Fear: Towards an Epistemology of the Sacred, Bantam Books, New York, 1987.
- [4] A.S. Ninan, Gandhi's Technoscience: Sustainability and Technology as Themes of Politics, Sustainable Development, November 5, 2008.
- [5] R. Engelman, The Sustainability Metric. In State of the World 2013: Is Sustainability Still Possible? World Watch Insitute, 2013.
- [6] I. Illich, Tools for conviviality, Harper & Row, 1973.
- [7] W. Sachs, The development dictionary. A guide to knowledge and power. Zed Books, 1992.
- [8] T. Hak, B. Moldan and A.L. Dahl, Editorial. Ecological Indicators vol. 17, pp. 1–3, 2012.
- [9] D. Helbing, Globally networked risks and how to respond. Nature vol. 497, pp. 51-59, 2013.
- [10] J. Rockström, W. Steffen, K. Noone, A. Persson, F.S. Chapin, E.F. Lambin, T.M. Lenton, M. Scheffer, C. Folke, H. Schellnhuber, B. Nykvist, C.A. De Wit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sörlin, P.K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, R. Karlberg, R.W. Corell, V.J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen and J. Foley, Planetary Boundaries: Exploring the Safe Operating Space for Humanity, Ecology and Society vol. 14(2), pp 32, 2009.
- [11] K. Raworth, Can we live inside the doughnut? Why we need planetary and social boundaries, <http://policy-practice.oxfam.org.uk/blog/2012/02/can-we-live-inside-the-doughnut-planetary-and-social-boundaries> (accessed on July 26, 2013).
- [12] S.E. Jørgensen, B. Burkhard and F. Müller, Twenty volumes of ecological indicators – An accounting short review, Ecological Indicators vol. 28, pp. 4–9, 2013.
- [13] A.L. Dahl, Achievement in gaps in indicators for sustainability. Ecological Indicators vol. 17, pp. 14–19, 2012.
- [14] F. Berkes and M.K. Berkes, Ecological complexity, fuzzy logic, and holism in indigenous knowledge. Futures vol. 41, pp. 6–12, 2009.
- [15] Folke et al., Reconnecting to the Biosphere. AMBIO vol. 40, pp 719–738, 2011.
- [16] S. Funtowics, 2006, cited in A. Guimarães Pereira and S. Funtowicz. Knowledge representation and mediation for transdisciplinary frameworks: tools to inform debates, dialogues & deliberations. *International Journal of Transdisciplinary Research Vol. 1(1)*, pp. 34-50, 2006.
- [17] Working group on the global partnership for development beyond 2015: Thematic Think Pieces, http://www.un.org/en/development/desa/policy/untaskteam_undf/them_tp2.shtml.
- [18] P.M. Vitousek, P.R. Ehrlich, A.H. Ehrlich and P.A. Matson, Human appropriation of the products of photosynthesis. Bioscience vol. 36 (6), pp. 368–373, 1986.
- [19] Ting Ma, Chenghu Zhou and Tao Pei, Simulating and estimating tempo-spatial patterns in global human appropriation of net primary production (HANPP): a consumption-based approach. Ecological Indicators 23, 660–667, 2012.
- [20] D. Niemeijer and R.S. de Groot. A conceptual framework for selecting environmental indicator sets. Ecological Indicators vol. 814, pp. 14-25, 2008.
- [21] M. Wackernagel and W. Rees, Our Ecological Footprint, New Society Press, 1996.
- [22] A. de Sherbinin, A. Reuben, M.A. Levy and L. Johnson, Indicators in Practice: How Environmental Indicators are Being Used in Policy and Management Contexts. New Haven and New York: Yale and Columbia Universities, 2013.

- [23] E. Assadourian and T. Prugh, Project Directors. State of the World 2013. Is Sustainability Still Possible? The Worldwatch Institute, Island Press, 2013.
- [24] P.R. Erlich and A.H. Erlich, Can a collapse of global civilization be avoided? Proc. R. Soc. B vol. 280, pp. 2012245, 2012.
- [25] M. Kearnes and P. Macnaghten, 'Introduction: (Re)Imagining Nanotechnology', Science as Culture vol. 15 (4), pp. 279 — 290, 2006.
- [26] Moldan, S. Janouskova and T. Hak, How to understand and measure environmental sustainability: Indicators and targets. Ecological Indicators vol. 17, pp. 4–13, 2012.
- [27] R. Rowden, India's Role in the New Global Farmland Grab An Examination of the Role of the Indian Government and Indian Companies Engaged in Overseas Agricultural Land Acquisitions in Developing Countries. Produced in collaboration with GRAIN and the Economic Research Foundation, New Delhi, 2011, <http://www.globalpolicy.org/world-hunger/land-ownership-and-hunger/50637-indias-role-in-the-new-global-farmland-grab.html> (accessed on July 29th, 2013).
- [28] W. Sachs, The Archaeology of the Development Idea. Pennsylvania State University, 1990.
- [29] P. Nussbaumer, M. Bazilian, V. Modi and K.K. Yumkella, Measuring Energy Poverty: Focusing on What Matters. Oxford Poverty & Human Development Initiative (OPHI) Working Paper n. 42, 2011, <http://dx.doi.org/10.1098/rspb.2012.2845>.
- [30] A. Shrivastava and A Kothari, Churning the Earth: The Making of Global India. Delhi: Viking/Penguin, 2012.
- [31] S.R. Khandker, D.F. Barnes and H.A. Samad, Energy Poverty in Rural and Urban India Are the Energy Poor Also Income Poor? Policy Research Working Paper 5463. The World Bank Development Research Group, Agriculture and Rural Development Team. November 2010.
- [32] R. de Souza, Collecting cow dung for energy <http://remidesouza.blogspot.it/2007/06/collecting-cow-dung-for-energy.html> (accessed on August 23, 2013).
- [33] V. Shiva, The new livestock policy. A policy of ecocide of indigenous cattle breeds and a policy of genocide for India's small farmers, 1996, http://www.mcspotlight.org/campaigns/countries/ind/shiva_ecocide.html.
- [34] S.J. Singh, F. Krausmann, S. Gingrich, H. Haberl, K.-H. Erb, P. Lanz, J. Martinez-Alier and L. Temper, India's biophysical economy, 1961–2008. Sustainability in a national and global context. Ecological Economics vol. 76, pp. 60–69, 2012.
- [35] J. Martinez-Alier, The Socio-ecological Embeddedness of Economic Activity: The Emergence of a Transdisciplinary Field. In: Becker, E., Jahn, T. (Eds.), Sustainability and the Social Sciences. Zed Books, London, pp. 112–139, 1999.
- [36] H. Patomäki and M.B. Steger, Social imaginaries and Big History: Towards a new planetary consciousness? Futures vol. 42 (10) , pp. 1056–1063, 2010.
- [37] Rubin, Hidden, inconsistent, and influential: Images of the future in changing times. Futures vol. 45, pp. S38–S44, 2013.

CULTURES OF COOPERATION: STRENGTHENING THE NETWORK WITH GANDHIAN ECONOMISTS

Nanni Salio*

*Centro Studi Sereno Regis - nanni@serenoregis.org

ABSTRACT

In 1909, Gandhi wrote *Hind Swaraj*, which summed up his conception of nonviolence in the field of politics and economics, laying the foundations for the future “school of Gandhian economists”. In his analysis, Gandhi developed a harsh criticism of the “modern Western civilization”, anticipating the main aspects of today's systemic crisis (economic, ecological, social), and outlined a model of development and lifestyle alternative, nonviolent and sustainable. Gandhi also introduced critical elements useful to the current debate about the role, limits and dangers of techno-science taken, among others, by Jerry Ravetz, Silvio Funtowicz and Vandana Shiva. In 1935 Richard Gregg was inspired by Gandhi in his work on “voluntary simplicity”, then taken up by other authors such as Schumacher and Helena Norberg-Hodge and the school of the “degrowth” of Latouche. Gandhi's ideas were tested in India, during the struggle for independence, thanks to the collaboration of Vinoba Bhave and Joseph Kumarappa, and were systematized by Romesh Diwan, who proposed a model of nonviolent economy, providing a clear theoretical and practical basis from which to build an alternative to the current global systemic crisis. Trials are underway in various parts of the world. In India are of particular interest those conducted by Assefa, Barefoot College, Ekta Parishad and Navdanya, all inspired by Gandhian. In the West, the movement of the “Transition Towns” is carrying out numerous experiments on a small scale sustainability-oriented, demonstrating the relevance of the Gandhian message. It should be an effort by the academic co-operation to go on-line with these realities, that from the vision “Gandhian” narrative propose and experiment with very different actions from the imaginary still dominant, which puts the techno-scientific innovation in the service of economic growth and competitiveness.

The Talisman of Gandhi

*I will give you a talisman. Whenever you are in doubt,
or when the self becomes too much with you,
apply the following test.*

*Recall the face of the poorest and the weakest man [woman]
whom you may have seen, and ask yourself,*

if the step you contemplate is going to be of any use to him [her].

Will he [she] gain anything by it?

Will it restore him [her] to a control over his [her] own life and destiny?

*In other words, will it lead to swaraj [freedom]
for the hungry and spiritually starving millions?*

Then you will find your doubts and your self melt away.

HIND SWARAJ

The text of the talisman was found among the papers of Gandhi after his death and can be considered a kind of testament, which summarizes *Hind Swaraj* (HS) in a short, simple and incisive way.

Both works contain a message that brings together the best of the major religious traditions of humanity and should be read, as Gandhi himself seems to suggest, as a poem, of which he is the poet, in the great tradition of classic dramas such as the Bhagavad Gita: “The key to understand that incredibly simple (so simple as to be regarded foolish) booklet (*Hind Swaraj*) is to realise that it is not an attempt to go back to the so-called ignorant, dark ages. But it is an attempt to see the beauty in voluntary simplicity, voluntary poverty and slowness. I have pictured that as my ideal”. [1]

Development models

The structural violence caused by the current model of development has reached such levels to become a sort of pandemic, as claimed by Michael Klare [2]. Gandhi saw this very clearly: “God forbid that India should ever take to industrialism after the manner of the west keeping the world in chains. If [our nation] took to similar economic

exploitation, it would strip the world bare like locusts.” [3]

The criticism of Gandhi, of Vinoba Bhave and Joseph Kumarappa, which together form a “school of Gandhian economists” anticipates the current debate on sustainability: “(While) studying the human institutions, we should never lose sight of that great teacher, mother nature. Anything that we may devise if it is contrary to her ways, she will ruthlessly annihilate it sooner or later. Everything in nature seems to follow a cyclic movement. Water from the sea rises as vapour and falls on land in refreshing showers and returns back to the sea again ... A nation that forgets or ignores this fundamental process in forming its institutions will disintegrate.” [4]

Industrialism

A crucial point in HS which raises many accusations is the criticism of Gandhi to the machines. Over the years he was able to return to the issue. What he refused were not the machines as such, but the craze of the machines: “The craze is for what they call labour-saving machinery. Men go on 'saving labour' till thousands are without work and thrown on the open streets to die of starvation. I want to save time and labour, not for a fraction of mankind, but for all. I want the concentration of wealth, not in the hands of a few but in the hands of all. Today machinery merely helps a few to ride on the backs of millions. The impetus behind it all is not the philanthropy to save labour, but greed...” [5] Moreover: “An improved plough is a good thing. But if by some chance one man could plough up, by some mechanical invention of his, the whole of the land of India and control all the agricultural produce, and if the millions have no other occupation, they would become dunces, as many have already become...” [6].

Gandhi invents a philosophy of “intermediate technologies” that will be resumed later by Ernst Fritz Schumacher: “My machines must be the most elementary type, which can be put in the homes of millions” [7]. And in an equally natural way the spinning wheel is described as “the science reduced to the terms of the masses” [8]. He himself recalls the moment “in London in 1909 I saw in a flash that without the spinning wheel there was no Swaraj” [9].

Gandhi's critique of industrialism is extremely clear: “You cannot build non-violence on a factory civilization, but it can be built on self-contained villages. Even if Hitler so minded, he could not devastate seven hundred thousand non-violent villages. He would himself become non-violent in the process.” [10]

To criticism of Gandhi echoed those of Kumarappa: “In economics, large scale industry is the antithesis of democracy in politics. It is not by chance that the western nations have come by their economic organization. It is a result of their way of thinking in terms of autocracy. They find themselves with dictatorships in political organization, and centralized industries in the economic field. These two go together and we cannot have the one without the other.” [11]

The “Gandhian school” does not raise negative reactions only today: it happened also in those years. In addition to Ambedkar, (leader of the *Dalits*, as he preferred to call the outcasts, rather than *harijan*, a term used by Gandhi) one of the main proponents of industrialism in India was Nehru. “Pandit Nehru wants industrialisation... because he thinks that if it is socialized, it would be free from the evils of capitalism. My opinion is that the evils are inherent in industrialism, and no amount of socialisation can eradicate them” [12].

The confrontation went on until the death of Gandhi, and in a sense even after, as claimed Gvvsds Prasad: “Nehru, during the last months of his life, realized the futility of his approach, particularly after the China war in 1962. He on a number of occasions thereafter expressed the view that Gandhi's approach to India's economic policies had unexpected merits in it. He pointed out on 22 September 1963 in a debate on planning the Lok Sabha: “Agrarian reform is basic to any plan. What is the good of an institution for a few persons here and a few persons there when millions of people in the rural areas do not have a life worth living?” He further argued that what Gandhi did was fundamentally correct. The spinning wheel was a symbol for village industries, which would be needed to serve the most backward Indian villages. Nehru said: “... taking things as they are in India, however rapidly we advance in the machine age -and we will do so- the fact remains that large numbers of our people are not touched and will not be touched by it for a considerable time. Some other methods have to be evolved so that they become partners in production even though the production apparatus of theirs may not be efficient as compared to modern techniques, but we must use that; otherwise it is wasted. We should think more of these very poor countrymen of ours and do something to improve their lot as quickly as we can. This is troubling me great deal.” Nehru was disillusioned with the slow rate of the trickle-down effect, and was groping for a new model of development... Considering its openness to conviction which we find at the end of his life, it seems more than likely that Nehru would have given up his faith in heavy industry if he had been warned of the environmental consequences of the industrial model of development at the end of the twentieth century.” [13]

In the words of Nehru there is the recognition of the failure of development policies followed and imposed by international organizations (World Bank, International Monetary Fund) for decades to come. And the “shining India” even with an annual growth rate close to 10% (before the crisis) is in no way managed to reduce extreme poverty. As stated by George Kent, Hind Swaraj “served then as the basis for building self-reliance, and thus resisting the British raj. It could now serve as a basis for resisting the rule of hunger in India” [14].

These criticisms of the capitalist economy and industrialism can be summarized in what J. Charles Koilpillai proposes to call “impossibility theorems of Gandhi” [15]:

- *First impossibility theorem*: A continuous increase of material wealth does not guarantee happiness because of the tendency that has to multiply even faster.

- *Second impossibility theorem:* It will be impossible for the industrialization to provide a satisfactory solution to the economic problems of humanity.

It is worth noting that to summarize the thought of “Gandhian school” in terms of “impossibility theorems” means to help making a substantial step forward to the economic theory and bring it closer to the rigor with which the two principles of thermodynamics establish the limits of energy transformations. This is a job that only in the second half of the twentieth century will be taken up by Georgescu Roegen [16] and by the school of bio-economy and ecological economics.

THE “SEVEN WORDS” OF NONVIOLENT ECONOMY

The theoretical framework inspired by the nonviolent economic studies produced in India and elsewhere by some economists, in particular by Romesh Diwan, identified seven key words: self-reliance, bread labour, non-possession and non-attachment, trusteeship, non-exploitation, equality, satyagraha.

1. *Self-reliance.* This term (swadeshi in hindi) indicates the absence of dependence, and the reliance on one’s own strength: a form of self-reliant development. Gandhi would regard it as the Swaraj, that is, the struggle for self-liberation of India.

2. *Bread labour.* This term means “minimal manual labour for the production of use-values”. But in general is the job category that is interpreted in quite different terms by Gandhian economy, as compared to classical economics. In the latter, work is considered a disutility by the master who would like to produce without workers, and is often seen as a nuisance by the worker who would like to receive the salary without working. In the Gandhian concept, the work is rather conceived as a normal activity for a living, a means of self-fulfillment and service to others.

3. *Non-possession and non attachment.* Gandhi believed that only those who possessed nothing were actually immune to fear. The property and the need to enjoy and have personal property are the cause of all fears, including the fear for one’s own life. So the man who is not satisfied with the bare minimum to its physical survival cannot be “nonviolent”, at least in the Gandhian meaning of the term.

4. *Trusteeship.* Again, the meaning of this word differs much from the ideas of classic economies (capitalism, communism, mixed economies), characterized by forms of private ownership of the means of production or stalized, or mixed, which are alienating the majority of the population. To overcome alienation and conflict arising from the management of the property, Gandhi proposes the method of the trust, close to the mutual cooperation. Such method is based on the assumption that no one has any right to the property that is the result of complex social phenomena, i.e. the means of production. How to achieve this? Through the “voluntary surrender” and the satyagraha. Examples of the application of such method are the experience of “nonviolent redistribution” of land initiated by Vinoba Bhave after the death of Gandhi through the program of the “Boodhan” (gift of land) and “Gramdan” (gift of the village), that inspired the nonviolent self-management in the villages, particularly the work of ASSEFA movement in Tamil Nadu and now also in other Indian States.

5. *Non-exploitation.* Production must maximize the satisfaction of human needs. Therefore it is to be rejected any technology that, while there are unemployed workers in the community, save the manual labour and favors the concentration of wealth in few hands. Otherwise people are likely to be trapped in a spiral of greed and envy, in which the rich are getting richer and the poor get poorer.

6. *Equality.* The concept of equality is inextricably linked to that of exploitation. According to Gandhi, if the masses want to eliminate the injustices of capitalist society, if they want to change the methods of capitalism, then they must strive to achieve a more equitable distribution of the products of labour ... We should no longer take care of getting what we can, but refuse to take what not everyone can have.

7. *Satyagraha.* It literally means “the force of truth” and is the moral analogous both of war and class struggle, which turns easily into violence. To make a profound social change such as that of nonviolent economy the presence is required of a nonviolent revolutionary minority that must be able to practice the satyagraha, which can be summarized in a few points:

- we must fight for a just cause;
- the struggle must exclude violence in all its forms;
- we need to distinguish between just and unjust laws;
- we must fight without hating the opponent, making a distinction between role and person;
- we have to be able and willing to accept the sacrifice and suffering imposed by the struggle;
- there has to be a concomitant commitment to a constructive program, able to anticipate a positive outcome for all parties in conflict;
- an attitude of humility has to be assumed by those who are engaged in this kind of fight;
- we must assume an attitude of seeking truth and of a sincere acceptance of discipline during the fight.

TECNOSCIENCE

Despite not having received a scientific education, the reflection of Gandhi and his school on “science and technology” anticipates themes of extraordinary relevance. One of the key points is their rejection of technological determinism in science, technology and politics. This anticipated the most recent debate on the neutrality/non-neutrality of science, and the field of science-technology-society (STS) studies. [17]

The action of “Gandhian school” was very concrete and practical: its proponents believed that “the basic objective of science is to enhance a sustainable co-existence of humans and non-human beings.” [18] They gave birth to initiatives to develop a program of “science for the villages”, in which the priority was the “science of charka”, but ranged from health science to that of beekeeping. The AIVIA (All India Village Industries Association), anticipate the centers of “science for the people” that are inspired by a radical proposal regarding “scientists” as “the workers of a community” [19].¹

Gandhi also harshly condemned the widespread practice of vivisection. More generally, with his critical work he helped to lay the foundations for an analysis of the relationship between science, “internal enemy” (literally, “intimate enemy” according Ashis Nandy [20]) and colonial rule: a theme deepened by Ashis Nandy and other authors [21].

Report of this work deserves the contribution of Shiv Visvanathan [22], with an impressive diagram linking together vivisection, factory farms and slaughterhouses, scientific management of assembly lines (which culminated even then in Fordism), concentration camps, nuclear weapons (Hiroshima and Nagasaki), starting from a conception of the body seen as a machine and denouncing the submissive and subordinate role of many scientists, engineers and technologists in the dissemination of unheard practices of violence.

In another passage, quoted by Anup Sam Ninan [23] Gandhi addresses one of the crucial issues of his thought, the relentless pursuit of truth, putting it in relation with the scientific truth: “You should understand ... that I never refuse a scientific truth that has been established. But you should also note that in (the realm of) science what has come to be accepted as truth today is not unlikely to be proved as untruth tomorrow. Sciences founded on the deduction are always bound to suffer this basic imperfection. We cannot therefore regard it as an absolute truth.” [24]

Gandhi is aware of the fact that our human condition leads us to an endless search, a continuous approximation to the truth. His conception of truth is a relative, not absolute truth, as clarified by Giuliano Pontara in an introduction to the anthology of Gandhian writings [25]. Gandhi himself titled his autobiography “Experiments with Truth”, an expression of great wisdom and modernity, which allows us to understand why we can speak of “science of *satyagraha* and nonviolence”. If modern science is a continuous search for truth by “trial and error”, also the method used by Gandhi, on a different terrain - that of ethics - relies on the same principle in the tradition of philosophical speculation of Indian culture.

VOLUNTARY SIMPLICITY, DEGROWTH, SUSTAINABILITY

In proposing the re-reading of HS, Aditya Nigam is inspired by the metaphor of Gandhian “angel of history”, opposed to “angelus novus” of Walter Benjamin: “A *Klee painting named ‘Angelus Novus’ shows an angel looking as though he is about to move away from something he is fixedly contemplating. His eyes are staring, his mouth is open, his wings are spread. This is how one pictures the angel of history. His face is turned toward the past. Where we perceive a chain of events, he sees one single catastrophe which keeps piling wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing in from Paradise; it has got caught in his wings with such violence that the angel can no longer close them. The storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress.*” [26]

This storm is manifested today in all its intensity with a multiplicity of crises (economic / financial, environmental / energy / climate, relational / existential) that create conditions of great instability and whose ultimate root is of a spiritual nature. [27]

Other scholars and social activists have realized that all the prescriptions needed for present day problems are found in Gandhi 100 years ago. Richard Gregg was probably the first in the West to propose the “voluntary simplicity”, in a paper of 1936 published by a religious center of the Quakers in Pennsylvania. [29]

Ivan Illich was one of the most significant personalities and his writings had considerable resonance in the 1970s and 1980s of the last century. Many of his works were inspired directly by HS. In a short essay [30], Illich pays homage to the choice of simplicity and voluntary poverty of Gandhi, with expressions that resemble the beautiful story of Jacques-Henri Bernardin de Saint-Pierre, *The Indian hut* [31], a story that, as recalled by Amitav Ghosh, was “a favorite of Mahatma Gandhi”.

The list of critics of industrial gigantism, which led to a huge “scale error” in the design of human societies, includes many other authors (Lewis Mumford, Lanza del Vasto, Jacques Ellul, Ernst Fritz Schumacher, Aurelio Peccei and Dennis Meadow of the Club of Rome, Wendell Berry) up to the Gandhian economics scholars (Romesh Diwan and,

¹ On this topic we may recall at least the action of ASSEFA, www.assefaitalia.org, the “barefoot college” of Tilonia, www.barefootcollege.org, the center “Navdanya”, www.navdanya.org, directed by Vandana Shiva.

in Italy, Roberto Burlando) who anticipated the proposals of the movement of degrowth of Serge Latouche.

DEAR GANDHI

We can conclude these reflections by asking two questions: what Gandhi would think seeing what is happening in the world today, and where are those who refer to his teachings, who can be called only approximately Gandhian? We can start from a nice conversation between Dilafruz Williams and Pramod Parajuli [32]: “To talk about Gandhi today is to talk about people who eke out their livelihoods directly from the earth and do it in a way that nurtures both biological and cultural diversity.” [33]

“Gandhi's ecologism (if we can call it that) was about rural peasants eking out their subsistence and necessities from a piece of land. In short, he might not have theorized the mathematics of sustainability but he showed us how to pursue sustainable livelihood”. [34] And this is what Joan Martinez-Alier calls “ecology of the poor” which has always learned to live in harmony with nature, preserving the ability to restore. [35]

Compared to the time and knowledge of Gandhi, we are now also able to theorize a bit of “simple” math of sustainability, although Wendell Berry says with honesty that “you can't expect to think about what you don't know, and nobody knows this planet”. [36] It's therefore necessary to act “with caution”, without haste, to avoid “uncorrectable errors”.

Pramod also notes that: “We talk a lot about how Gandhi educated the Indian masses but we easily forget about what the peasants and the masses of India taught him. It seems to me that it was the peasants of Champaran ... who gave Mahatma Gandhi the first bitter taste of the reality of rural India in 1917.” [37]

In addition to Ruskin and Tolstoy, Gandhi's initiation to the problems of the lower classes took place with the direct involvement in their lives, an experience that marked him for the life. From this experience, he was able to develop a process of decolonization and “Pedagogy of the Oppressed” based on the rediscovery of a personal power founded on nonviolence that everyone, including the most simple and humble, possesses. He was able to transform the seeming “weakness” of the oppressed in a policy of small things (the *charka*, the *khadi*, a handful of salt) with which he managed to bend the English rule. “Today, if Gandhi were alive, he would have beamed with delight to know that people are organizing and mobilizing around such trivial matters as food, seeds, plants, medicinal knowledge, patents rights, human genomes, biodiversity and cultural diversity. Just as Gandhi used the *charka* (spinning wheel) and a pinch of salt as symbols of warfare on British colonial rule, today, seeds, medicinal herbs and food have become potent points of resistance and struggle against global trade and homogeneity.” [38]

Ashis Nandy has also reflected on where we can find “Gandhi Today” [39] identifying four different possibilities.

The first two, the “Gandhi of the state and of Indian nationalism” and the “Gandhi of Gandhian” are both figures of speech that contradict the “prophet who wanted to live in the slums of politics”, as defined by Arnold Toynbee. The other two figures, the “Gandhi of the dissolute and unpredictable” and the “Gandhi of the slums”, who roam the world without weapons to subvert the established order are those that induce sympathy and hope for the future.

But there's more, according to Nandy. He declares that in the last twenty years of his work he was inspired by the Gandhian sentence: “those who think that religion has nothing to do with politics do not know anything about religion or politics.” [40] And this led him to discover “a billion Gandhi” in rural populations of the villages in which ordinary people have always lived with an attitude of mutual tolerance, contrary to what happens in the big cities, venues of inter-ethnic and religious violence.

These are some signs of hope. As well as the Buddhists believe that each of us is a potential Buddha, those persuaded of nonviolence may think that in each of us there is a potential Gandhi to cultivate by practicing the teaching that he has left us: “Be the change you want to see in the world”.

REFERENCES

- [1] A. Nigam, “Gandhi - the 'Angel of History': Rereading Hind Swaraj today”, *Economic & Political Weekly*, 14 March, 2009, p.41.
- [2] “Tongram: Michael Klare, A Pandemic of Economic Violence” <http://www.tomdispatch.com/post/175038>.
- [3] Quoted by Madhu Suri Prakash, <http://void.nothingness.org/archives/ra/display/897/index.php>.
- [4] J. Kumarappa, *Public Finance and Poverty*, Navajivan, Ahmedabad, 1939, quoted by Ninan, Anup Sam, “Gandhi's Technoscience: Sustainability and Technology as Themes of Politics”, *Sustainable Development*, November 5, 2008.
- [5] Quoted from Bal Patil, “Gandhi's philosophy of industrial and economic philosophy and its relevance to global meltdown”, www.gandhitopia.org/profiles/blogs/gandhis-philosophy-of. Published in *Young India*, November 13, 1924.
- [6] <http://chemeng.iisc.ernet.in/gandhi/mahatma.html>.
- [7] Harijan, September 29, 1934, quot. by Bal Patil, *op. cit.*
- [8] Bal Patil, *op. cit.*
- [9] Quoted by Anthony Parel, ed., *Gandhi, Freedom and Self-Rule*, Vistaar Publications, Delhi 1997, p.109.

- [10] Harijan, November 4, 1939, quoted by Ninan, Anup Sam (2008), p. 189-190 "Gandhi's Technoscience: Sustainability and Technology as Themes of Politics", *Sustainable Development*, p. 190.
- [11] J. Kumarappa, *Christianity. Its Economy and Way of Life*, Navajivan, Ahmedabad, 1945, p. 114-115, quoted by Ninan, Anup Sam (2008), p. 188 "Gandhi's Technoscience: Sustainability and Technology as Themes of Politics", *Sustainable Development*.
- [12] Harijan, September 29, 1940, quoted by Bal Patil, *op. cit.*
- [13] G. Prasad, "Gandhi's Hind Swaraj - Ist Relevance For Today", *Ahimsa Nonviolence* vol. III, no. 6, nov-dec 2007, p. 483.
- [14] G. Kent, "Swaraj against hunger", p. 2, [www.humiliationstudies.org / documents / KentSwarajAgainstHunger.pdf](http://www.humiliationstudies.org/documents/KentSwarajAgainstHunger.pdf).
- [15] "Five Myths About Gandhian Economics", www.transnational-perspectives.org/transnational/.../article405.pdf.
- [16] *Energia e miti economici*, Bollati Boringhieri, Torino, 1998, *The Entropy Law and the Economic Process*, Harvard University Press, Cambridge, MA, 1971.
- [17] Ninan, Anup Sam, *op. cit.*, p.186.
- [18] *Ibid*, p.191.
- [19] *Ibid*, p. 192
- [20] Ashis Nandy, *The Intimate Enemy*, Oxford University Press, Oxford 1989.
- [21] *Science, hegemony and violence*, <http://www.unu.edu/unupress/unupbooks/uu05se/uu05se00.htm>.
- [22] "On the annals of the laboratory state", <http://www.unu.edu/unupress/unupbooks/uu05se/uu05se0k.htm>.
- [23] *op. cit*, p. 191.
- [24] *Letter to a College Student*, January 17, 1933.
- [25] *Teoria e pratica della nonviolenza*, Einaudi, Torino 1996.
- [26] Quoted by Aditya Nigam, "Gandhi – the 'Angel of History': Reading *Hind Swaraj* today", *Economic & Political Weekly*, 14 March, 2009.
- [27] Lynn White, "The Historical Roots of Our Ecologic Crisis", *Science*, Vol 155 (Number 3767), March 10, 1967.
- [28] Gvvsds Prasad, *op. cit.*, p. 484.
- [29] www.oasis-lln.be/.../the-value-of-voluntary-simplicity-gregg-1936.pdf.
- [30] "The Message of Bapu's hut", <http://www.mkgandhi.org/museum/msgofbapuhut.htm>.
- [31] *La capanna indiana*, Tranchida, Milano 1985.
- [32] "Towards an Environmentalism Of the Global South. A Conversation Around playful Mahatma Gandhi", *Encounter*, vol. 15, no. 2, summer 2002, p. 56-70. On the same theme, see also: Pramod Parajuli, "Revisiting Gandhi and Zapata: Motion of Global Capital, Geographies of Difference and the Formation of Ecological Ethnicities", http://www.idrc.ca/fr/ev-64534-201-1-DO_TOPIC.html.
- [33] Pramod Parajuli, 2002 *op. cit.*, p. 57.
- [34] *Ibid*, p 61.
- [35] Joan Martinez-Alier, *Ecologia dei poveri*, Jaca Book, Milano 2009.
- [36] Madhu Suri Prakash, "The beginning of justice: ending global education and the assumption of scarcity", http://www.ed.uiuc.edu/EPS/PES-Yearbook/93_docs/PRAKASH.HTM.
- [37] *Ibid*, p. 62.
- [38] *Ibid*, p. 59.
- [39] "Gandhi after Gandhi: the fate of dissent in our time", <http://www.littlemag.com/nandy.htm>.
- [40] "A Billion Gandhis", <http://www.outlookindia.com/article.aspx?224252>.