Manfred Max Neef's Human Scale Development and Geoethics

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Abstract

Manfred Max-Neef (1932 – 2019) was a Chilean economist, development scholar and activist who, among other notable contributions, articulated the Human Scale Development approach (HSD), centred on the fulfilment of basic human needs. HSD is based on a separation between the fundamental human needs and the satisfiers of those needs (i.e. ways of actualising/fulfilling them), on a classification/theorization of both the needs and the satisfiers and on a methodology for identifying satisfiers that helps to recognize existing obstacles to the fulfilment of needs, to outline preferred alternatives for the actualisation of those needs and to devise ways for realising these alternatives. This work aims to explore some relationships between HSD and geoethics. It is argued that HSD can support geoethics not only theoretically, but also practically through the identification of (geo)ethically compatible satisfiers of human needs. Geoethics, at the same time, can support HSD again theoretically and practically as well, first of all by helping to resolve conflicts between different choices of satisfiers.

1. Introduction

Manfred Max-Neef (1932 – 2019) was a Chilean economist, development scholar and activist. He taught economics at the University of California at Berkeley in the 1960s, served as visiting professor at several universities in the U.S. and Latin America, worked on development projects in Latin America for different institutions among which the UN Food and Agriculture Organization, and was the rector of the Universidad Austral de Chile from 1994 to 2002. In 1981 he founded in Chile the Centre for the Study and Promotion of Urban, Rural and Development Alternatives (CEPAUR), an NGO which sought to reorient development in terms of stimulating local self-reliance, satisfying fundamental human needs and, more generally, advocating a return to the human scale. Max-Neef was long time member of the Club of Rome.

Among the numerous publications authored or contributed to by Max-Neef three books need to be mentioned here. In 1982, he wrote "From the Outside Looking In, Experiences in Barefoot Economics". This work was published by the Dag Hammarskjöld Foundation[1], a Swedish NGO, established in 1962, aimed to advance dialogue and policy for sustainable development and peace. In the book, the author relates two of his own experiences in "barefoot economics" in Ecuador and Brazil, reflects on development projects and experts, criticizes the orthodox development economics and advances a new vision of development from the poor's perspective. In 1991, he published "Human Scale Development, Conception, Application and Further Reflections", with contributions from Antonio Elizalde and Martin Hopenhayn (a Chilean activist, researcher, educator and popularizer the former, and a Chilean philosopher the latter). This is the fundamental book on the Human Scale Development approach. In 2011, Max-Neef published "Economics Unmasked: From Power and Greed to Compassion and the Common Good". This work was co-authored with the American-Dutch experimental physicist Philip Bartlett Smith, who after retirement focused on the subjects of disarmament, environment and energy, poverty and world economics.

In "Human Scale Development", Max-Neef proposes an approach to development that is based on fulfilling basic human needs. This approach involves four key aspects:

- Identifying and classifying these needs.
- Distinguishing between needs and satisfiers, which are the ways of fulfilling those needs.

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[1] https://www.daghammarskjold.se (accessed 17 May 2023).

- Classifying and theorizing the satisfiers.
- Utilizing a methodology, which includes structured workshops, to specify systems of satisfiers. This helps acknowledge existing obstacles to fulfilling needs within a given society or group, identify preferred alternatives for meeting those needs, and devise ways to bring these alternatives into reality.

This paper reflects on the connections between the Human Scale Development approach (HSD) and geoethics. HSD can not only provide theoretical support for the implementation of geoethics, but also practical support by identifying (geo)ethically compatible satisfiers of basic human needs. Geoethics can serve as a theoretical framework for HSD and as an ethical foundation for resolving conflicts between different choices of satisfiers.

2. Manfred Max Neef's Human Scale Development and further works

2.1 The basic framework

HSD was articulated by Max-Neef in the 1980s in connection with his critiques of the neo-liberalist policies that characterized the development discourses and practices in Latin America, and of the existing representative political systems [Max-Neef, 1991].

The HSD approach is founded on a distinction between: 1) fundamental human needs, common to all mankind and changing only with the pace of evolution; 2) satisfiers of these needs, understood as ways of actualising them, which vary according to history, culture and circumstances; 3) economic goods, that are means by which individuals empower the satisfiers to meet their fundamental needs and change from time to time (e.g. with fashions), and amongst cultures, social strata and groups [Max-Neef, 1991].

The proposed list of human needs [Guillén-Royo, 2016] was developed according to the following premises:

- The list had to be easily comprehensible and each need had to be readily recognizable as one's own.

- All the fundamental needs had to be included, but they had to be limited in number and labelled clearly and simply.
- Needs had to be easily identified as targets of satisfiers (although the correspondence between needs and satisfiers is not one-to-one).
- The classification had to facilitate the identification of satisfiers that do not contribute or inhibit the actualisation of needs.
- The classification had to be useful for working out alternative systems, capable of generating satisfiers for the needs of every individual as an integral being, and replacing non-inclusive satisfiers with others than can actualise several needs (ibid.).

In HSD, satisfiers are organized within the grid of a matrix (Figure 1). The nine horizontal rows corresponds to nine fundamental needs classified according to the axiological categories of Subsistence, Protection, Affection, Understanding, Participation, Idleness, Creation, Identity and Freedom. In the four vertical columns needs are classified according to the existential categories of Being, Having, Doing and Interacting. The column labelled "Being" registers attributes, personal or collective, usually expressed as nouns. The column labelled "Having" registers elements such as institutions, norms, mechanisms, tools (not in a material sense), and laws that can be expressed in one or more words. The column labelled "Doing" registers actions, personal or collective, that can be expressed as verbs and, finally, the column labelled "Interacting" registers locations and milieus as times and spaces [Max-Neef, 1991]. Gasper [2022] proposes to regard the four existential categories as suggestive prompts, rather than as exact ontological building-blocks, and argues that the addition of these categories leads to a matrix and not to a list, allows for a suitably rich treatment of satisfiers and makes people think and be more active in discussions. The need for Transcendence was also contemplated by Max-Neef, but not considered to be universal yet, whereas Gasper [2022] provisionally adds it to the other nine axiological categories. Moreover, in HSD the fundamental human needs should be considered as a system characterized by simultaneities, complementarities and trades-off. Also, the HSD matrix might vary considerably if completed by individuals or groups from diverse cultures and in different historical moment [Max-Neef, 1991].

	Being	Having	Doing	Interacting
Subsistence				
Protection				
Affection				
Understanding				
Participation				
Idleness				
Creation				
Identity				
Freedom				

Figure 1. *Matrix of fundamental human needs; satisfiers are to be placed in the empty cells.*

Max-Neef [1991] identifies five types of satisfiers. Violators or destroyers are satisfiers which are applied with the aim of actualising a need, but actually prevent the possibility of its fulfilment over time and impair the actualisation of other needs. Pseudo satisfiers produce a false sense of satisfaction of a need, but later they impede the possibility of actualising that very same need. Inhibiting satisfiers generally over-satisfy a given need, thereby restricting the possibility of actualising other needs. Singular satisfiers fulfil one particular need and are neutral regarding the others. Synergic satisfiers, finally, satisfy a given need while contributing to the fulfilment of other needs. Max-Neef further distinguishes between exogenous satisfiers, generated outside a given community and often imposed, induced, ritualized or institutionalized, and endogenous satisfiers, generated by a community at the grassroot level, although sometimes originated by processes promoted by the state. The author clearly encourages the production, when possible, of endogenous satisfiers, but does not argue in favour of isolationism. The HSD approach, rather, promotes the idea of self-reliance, understood as a process

capable of encouraging horizontal relations, balanced interdependencies, participation in decision making, social creativity, political self-determination, a fair distribution of wealth and tolerance for the diversity of identities [Max-Neef, 1991]. In the author's view self-reliance becomes a turning point in the articulation of human beings with nature and technology, of the personal with the social, of the micro with the macro, of autonomy with planning and of civil society with the state [Max-Neef, 1991].

Max-Neef [1991] provides some examples of satisfiers. An arms race is a violator that supposedly satisfies the need for protection, but actually impairs the fulfilment of the needs for subsistence, affection, participation and freedom. Authoritarianism, too, apparently satisfies the need for protection, but prevents the actualisation of the needs for affection, understanding, participation, creation, identity and freedom. Over-exploitation of natural resources is a pseudo-satisfier of the need for subsistence, first of all because, in time, it compromises the ecosystems functions from which human subsistence depends. Obsessive economic productivity is an inhibiting satisfier that, because of the way it actualises (at least partially) the need for freedom, it impairs the possibility of fulfilling the needs for subsistence, protection, affection, participation and idleness. Professional armies are singular satisfiers of the need for protection and, finally, breast-feeding is a synergic satisfier that fulfils the need for subsistence and stimulates the actualisation of the needs for protection, affection and identity. Figure 2 shows the first two rows of an example matrix contained in Max-Neef [1991]. Food appears in Figure 2 as a satisfier of Subsistence while, for instance, rice and carrots represent corresponding goods. Needs and satisfiers should not be considered in isolation, but regarded as interactive elements of a system [Max-Neef, 1991; Gasper, 2022; Guillén-Royo, 2016].

	Being	Having	Doing	Interacting
Subsistence	Physical health, mental health, equilibrium, sense of humour, adaptability	Food, shelter, work	Feed, procreate, rest, work	Living environment, social setting
Protection	Care, adaptability, autonomy, equilibrium, solidarity	Insurance systems, social security, health systems, rights, family, work	Cooperate, prevent, plan, take care of, cure, help	Living space, social environment, dwelling
…	…	…	…	…

Figure 2. *Excerpt of an HSD example matrix [Max-Neef, 1991].*

According to Gasper [2022], the plurality and diversity needs in HSD leads to an increased sense of openness and awareness regarding the fundamental aspects of human existence. Satisfiers may have themselves a multidimensional nature. For instance, Max-Neef [1991] writes that "work constitutes much more than a factor of production: it fosters creativity, mobilizes social energy, preserves communal identity, deploys solidarity and utilizes organizational experience and popular knowledge for the satisfaction of individual and collective needs. Work has, then, a qualitative dimension which cannot be accounted for either by instrumental models of analysis or by economic manipulations of production functions".

Moreover, any fundamental human need that is not adequately satisfied reveals a human poverty; one should, therefore, speak of poverties and not of poverty, and it is reductive to define poverty solely based on income thresholds. Also, each poverty may lead to a (collective) pathology [Max-Neef, 1991]. In HSD, however, needs are also understood as potentials. According to Max-Neef [1991] "to the degree that needs engage, motivate and mobilize people, they are a potential and eventually may become a resource; the need to participate is a potential for participation, just as the need for affection is a potential for affection".

The HSD approach comprises a methodology, based on structured workshops, for using the matrix of needs and satisfiers as a community analytical and improvement tool, accessible to people regardless of their degree of formal education and any philosophical imperfections of the matrix itself [Gasper, 2022]. The purpose of the workshops is to allow participants to reflect on their society in the light of the HSD theory. The goal is, first, to build in a participatory fashion a needs-satisfiers matrix containing the main violators/destroyers that affect the actualisation of human needs in a given society, community or institution; these violators/destroyers represent the most important problems that must be dealt with [Max-Neef, 1991]. When time and circumstances allow, the workshops participants are later asked, also, to produce a matrix representing their Utopia, i.e. their ideal ways of actualising the needs. The two matrices should allow identifying endogenous or, if necessary, exogenous "bridging" satisfiers to go from an undesirable situation to a desirable one [Max-Neef, 1991]. The situation depicted in the utopian matrix may or may not be fully attainable, but the satisfiers in the matrix should not be devised through limited thinking, nor simply be the opposite of the violators/destroyers identified previously.

2.2 Further developments

Gasper [2022] notes three types of use of the HSD approach in recent literature, namely: i) uses that employ the list of nine fundamental axiological needs to obtain more adequate pictures of the life-situations of the poor and marginalized; ii) full use of the HSD process, as envisaged by Max-Neef, for investigating and promoting local (preferably sustainable) development; iii) uses in new areas of policy evaluation and design [e.g. Guillén-Royo, 2020]. This testifies the flexibility of the HSD approach which, in the words of Max-Neef [1991], "is an open option which is justified only to the extent that we understand it, internalize it and implement it through a praxis that is in itself a process in constant motion". In this section we briefly elaborate on some analyses and developments concerning the scope and implementation of the HSD framework.

Jolibert et. al. [2011] extend the HSD approach to address an environmental conflict that include non-humans. This work, certainly of potential interest for geoethics, is examined in Sect. 3.3. It suffices to note, here, that in the paper the notions of divergent (or conflicting) and convergent satisfiers are introduced. A divergent satisfier fulfils the needs of some, but - contrary to what a convergent satisfier does – it also compromises the actualisation of needs for others (including non-humans). Furthermore, Jolibert et al. [2014] apply HSD for promoting sustainable development in the context of regional scenario building and stakeholder conflict resolution. In this work a satisfier is qualified as sustainable if it meets one or several needs without impeding the actualisation of other needs, including those of other living beings, and unsustainable otherwise. Consequently, divergent satisfiers are unsustainable while convergent satisfier are sustainable.

Max-Neef [1991] describes a workshop for producing the violators/destroyers matrix, divided in two days and five phases and attended by fifty participants. However, Guillén-Royo [2016] notes that most recorded applications of the HSD matrix did not follow all of these phases, consistently with the flexibility of the HSD approach, conceived from the beginning as a proposal adaptable to different contexts and circumstances [Max-Neef, 1991; Guillén-Royo, 2016]. The author, moreover, proposes the simplified structure of an HSD workshop outlined in Table 1.

Phase	Goal	Workshop	Matrix
1	Co-generating a negative synthesis matrix	One or several workshops with groups of to 10 people	Original matrix with 36 cells to fill with harmful satisfiers. Participants are to reach a consensus on the one or two most harmful satisfiers in each cells
2	Co-generating a utopian synthesis matrix	One or several workshops with groups of 5 to 10 people	Original matrix to fill with singular and synergic satisfiers. Consensus on the one or two most synergic in each cell
3	Identifying synergic bridging satisfiers	Previous participants presented with the two synthesis matrices are invited to identify synergic bridging satisfiers or strategies, both exogenous and endogenous. Participants discusses in plenary or are divided in four groups	Either use the original matrix or the ways of Being, Having, Doing and Interacting that will enable advancing toward the utopian situation summarized with 3 or 4 categories of satisfiers

Table 1. *Simplified structure of an HSD workshops [Guillén-Royo, 2016].*

Guillén-Royo [2016], in her report about an experience with HSD in Lleida (Spain), mentions complexity, confusion, isolation, individualism and time pressures as negative satisfiers, while simplicity, subsistence, community-centred society and time sovereignty appear in the utopian matrix. Bridging satisfiers were, in this case, the regulation of working time, direct democracy, the (re)localisation of production activities and self-knowledge [Guillén-Royo, 2010].

Spiering and Del Valle Barrera [2021] present two other adaptations of the HSD methodology that comprise six phases, i.e.: (1) joint understanding of the problem and terminology, (2) problem analysis, (3) vision building, (4) strategy development, (5) monitoring and evaluation and (6) reflection on the whole process. The negative, utopian and synthesis matrices are built, respectively, during phases (2), (3) and (4).

Guillén-Royo [2016] discusses at length the methodological foundations of the HSD workshops, the role of the workshops facilitators/coordinators and the problems that may arise and lead, basically, to biased need-satisfiers matrices. Only a brief account on these topics can be given here.

HSD relies on people's participation in every stage of the development process [Guillén-Royo, 2016], so that HSD researches and practitioners should engage with communities and groups in a horizontal manner, without prescribing solutions as in many traditional expert-user relationships [Guillén-Royo, 2016]. According to both Max-Neef [1991] and Guillén-Royo [2016] addressing strategies for sustainable

development implies interdependent individual and societal transformations that cannot be properly identified and implemented from a detached position. Guillén-Royo [2016] considers Participatory Action Research (PAR) as the most suitable research design for researcher willing to study HSD processes, and as an adequate frame for carrying out HSD projects. PAR can be described as an "inquiry that is done by or with insiders to an organisation or community, but never to or onto them" [Herr and Anderson, 2005]. When using PAR researchers and practitioners engage in a reciprocal collaboration with participants, or even in a collaboration led by insiders [Guillén-Royo, 2016]. Guillén-Royo stresses the empowering potential of the methodology, which can enable the poor and marginalised to become the main actors in their own development processes [Guillén-Royo, 2016]. However, the implementation of PAR and HSD may be affected by criticalities such as the reproduction of vertical, power or dominance relations (e.g. topics and goals of development projects decided outside the communities involved, limited participation of women or minorities, group influence etc.). Guillén-Royo [2016] discusses these problems and their possible solutions, and the interested reader is referred to her book for further details.

2.3 Comparison with other approaches to human needs and development

Guillén-Royo [2016] and Gasper [2022] compare HSD with Maslow's hierarchy of needs [e.g. Maslow, 1943; Mcleod, 2022], Doyal and Gough's theory of human needs [e.g. Doyal and Gough, 1991] and Sen's and Nussbaum's capability (or capabilities) approach [e.g. Sen, 1989 and 2004; Nussbaum, 2000].

Gasper [2022] identifies seven main sets of features of the HSD approach, namely: (A) a broad specification of needs based on nine axiological categories, (B) an understanding of needs as both lacks and potentials, (C) a contrast between needs, satisfiers and goods, (D) plural modes of existence, which together with A and C originate the matrix in Table 1, (E) a theory of the satisfiers types and interactions, (F) a methodology for using elements A − E in situation analysis and planning, (G) a focus on needs as a system and as tools for examining life realities in their entirety.

According to Guillén-Royo [2016] HSD differs from Doyal and Gough's theory of human needs and Sen's and Nussbaum's capability approach in that in HSD needs represent both deprivations and potentials for people's transformative actions. What is more, in HSD satisfiers are systemically related and interdependent, while

the other two approaches imply a linear relationship between socio-economic, technical and environmental factors on the one hand, and human wellbeing on the other. This means that these factors, if available, are expected to improve the satisfaction of humans needs or enhance the capabilities, while HSD focuses on healthy systems of satisfiers, rather than on satisfiers, or specific satisfiers features, with a particular negative or positive effects on needs.

According to Gasper [2022] Maslow's needs can also be understood as a system and the distinction between needs and satisfier was already present in Malmann [1980] and is implicit in Doyal and Gough's theory and Sen's works, while Max Neef's exploration of multiple types of satisfier is very fertile and could well be original. Guillén-Royo [2016] concludes that HSD, Doyal and Gough's theory and the capability approach appear as complementary as they focus the development process on human beings and not on economic interests, and that any of the three proposals is better suited to address human wellbeing, now and in the future, than those focused on economic growth, including green growth (cf. Sect. 3.3).

The capability approach influenced the Human Development paradigm - which became the leading view of the United Nations Development Program [e.g. Osmani, 2016] - as well as the formulation of the Human Development Index [e.g. Stanton, 2007]. The HSD method, on the other hand, has been applied in a number of projects [e.g. Max-Neef, 1991; Smith and Max-Neef, 2013; Guillén-Royo, 2016] and, like the other approaches considered above, is referred to and elaborated on in thousands of papers. Among these papers it may be appropriate to mention, here, that of Spiering and Del Valle Barrera [2021] who argue that HSD can be used to address complex sustainability challenges and is a valid method for Transformative Science; this latter seeks to contribute to sustainability by analysing and describing the profound transformations required to achieve it, co-creating and assessing possible solutions and carrying out an educational mandate [Spiering and Del Valle Barrera, 2021]. Finally, Cruz et al. [2009] propose a qualitative numerical index for expressing the degree of needs fulfilment in HSD.

3. HSD and Geoethics

3.1 Geoethics: a brief outline

Humans have become a geological force [Chakrabarty, 2018] and Peppoloni and Di Capua, in their book "Geoethics" [2022], note that: "for some years now there has

been a growing awareness in the geoscience community that technical and scientific knowledge must be accompanied by philosophical reflection and a practice that considers the interaction between human beings and the Earth as a specific object of analysis. This analysis can define the best ways to implement this relationship, in the light of shared values that overcome the differences of the various social-ecological and cultural contexts". Accordingly, Di Capua and Peppoloni [2023] propose the following expanded definition of geoethics: "Geoethics is a field of theoretical and applied ethics focused on studies related to human-Earth system nexus. Geoethics is the research and reflection on the principles and values which underpin appropriate behaviours and practices, wherever human activities interact with the Earth system. Geoethics deals with ways of creating a global ethics framework for guiding individual and social human behaviours, while considering human relational domains, plurality of human needs and visions, planetary boundaries, and geo-ecological tipping points. Geoethics deals with the ethical, social, and cultural implications of geoscience knowledge, education, research, practice, and communication and with the social role and responsibilities of geoscientists".

In the same work, moreover, geoethics is qualified as:

- universal and pluralist (it defines an ethical framework for humanity, in the awareness that the respect of the plurality of visions, approaches and tools is essential to assure dignity to all agents and to guarantee a wide range of opportunities for developing more effective actions to face common threats);
- wide (its issues and reflections cover an extensive variety of themes);
- multidisciplinary (its approach favours cooperation and overcoming the sectoral languages of the individual disciplines, to reach the intersection and integration of knowledge);
- synthetic (it expresses a position of synthesis, definable as ecological humanism, between various existential concepts and different conceptions regarding the nexus between human beings and Earth system);
- local and global (its topics of interest concern both local and regional dimensions, as well as the global one related to the entire Earth system);
- pedagogical (it proposes a reference model to cultivate one's ethical dimension, to reach a greater awareness of the value of human identity, not in terms of exercisable power over the other by oneself, but of respect of the dignity of what exists);
- political (it criticizes the materialism, egoism, and consumerism of capitalism, prefiguring a profound cultural change of economic paradigms, and supports the right to knowledge as the foundation of society).

Di Capua and Peppoloni [2022] examine in depth the conceptual framework of geoethics in nine chapters that analyse the origins of the geoethical thought, the transition from ethics to geoethics, the relationship between geoethics and responsibility, the benefits of geoethical actions, the ethical problems and dilemmas in the geosciences that geoethics helps to address, the values of geoethics [e.g. geoheritage and geoconservation, sustainability and prevention), the relationships between geoethics and the problems posed by the anthropogenic global changes and, finally, the role of geoethics in developing an ecological humanism; this latter is not limited to a perspective of survival of the human species, but instead opens up the possibility for human beings to reach an authentic and conscious unity of nature [Di Capua and Peppoloni, 2022].

It is not possible here, and it is beyond the scopes of this paper, to discuss in depth the geoethical framework and the reader is referred, first of all, to the aforementioned book of Di Capua and Peppoloni and to the bibliography therein, and to the website of the International Association for Promoting Geoethics (IAPG)[2].

3.2 The relationships between geoethics and HSD from a general perspective

There is a striking coincidence between the conceptual frameworks of geoethics and HSD, although the former places human needs within a constellation of relationships even wider than that of HSD.

The ecological humanism advocated by geoethics, for instance, strongly resonates with that of Max-Neef. In "From The Outside Looking In" [1982] he writes: "The kind of development in which I believe and which I seek, implies an integral ecological humanism. None of the present systems provides for this, nor has the capacity to correct itself (in order to provide it) without losing the essence of its identity […]. It is no longer a question of adding new variables to old mechanistic models. It is a question of remaking many things from scratch […] of conceiving radically different possibilities […] of understanding that, if it is the role of humans to establish values, then it is the role of nature to establish many of the rules. It is a matter of passing from the pure exploitation of nature and of the poorer people of the world, to a creative and organic integration and interdependence […] of bringing the "invisible" sectors into the forefront of life and of letting them, finally, have their say and "do

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[2] https://www.geoethics.org (accessed 16 May 2023).

their thing" […] of a drastic redistribution of power through the organization of horizontal communal integration […] of passing from destructive giantism to creative smallness".

The respect for the plurality of visions and the dignity of all agents advocated by geoethics is affirmed in Max-Neef's writings and underpins the HSD insistence on communities - with their values and practices - as the first promoters of their own development, and on the participatory character of the HSD workshops. Respect actually precedes the realization that plurality provides opportunities for developing more effective actions to face common threats [Di Capua and Peppoloni, 2023].

Multidisciplinarity and interdisciplinarity are other essential characteristics of geoethics. Max-Neef certainly prizes them, but actually advocates for transdisciplinarity as a different manner of seeing the world, more systemic and holistic, that requires a personal involvement and attempts to gain a greater understanding by extending beyond strict disciplinary boundaries and through several levels of reality and organization [Max-Neef, 1991 and 2005]. For a quick distinction between intra, cross, multi, inter and transdisciplinarity the reader is referred to Jensenius [2012], while for a more recent discussions on transdisciplinarity see, for instance, Rigolot [2020] - who considers Max-Neef's work but goes beyond it - and the Network for Transdisciplinary Research website[3] of the Swiss Academies of Arts and Sciences. See also the original formulation of transdisciplinarity by Piaget [1972].

Even the local/global, pedagogical and political dimensions of geoethics [Peppoloni and Di Capua, 2021] are mirrored in Max-Neef's work. His attention to a balanced local/global articulation and to the value of human identity is accompanied by a criticism of power, materialism, egoism, consumerism and the economic orthodoxy that could hardly be stronger. In "Human Scale Development" power is understood as the capacity of control and manipulation exercised by the person (or group) that has the force, and is contrasted with authority, seen as the capacity of influence exercised by the person (or group) to whom legitimacy is granted because of recognized capacities and qualities. Max-Neef, moreover, considers insufficient the improvements in human well-being over time and questions whether the problem arises because the wrong groups have been in power or because there is something wrong with power itself.

In "Economics Unmasked" Smith and Max-Neef deeply criticize the currently predominant economic paradigm based on shaky (if not contradictory) theoretical foundations, neglect of negative policies outcomes, competition, overconsumption

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[3] https://transdisciplinarity.ch/en (accessed 16 May 2023).

and unlimited growth. The authors, then, propose and discuss five postulates for what they call "a humane economy of the twenty-first century": 1) the economy is to serve the people, not vice versa; 2) development is about people, not objects; 3) growth is not the same as development and development does not necessarily require growth; 4) no economy is possible without ecosystem services; 5) the economy is a sub-system of a larger and finite system, the biosphere, and hence permanent growth is impossible [cf. also Raworth, 2018]. A value principle is added: no economic interest, under any circumstances, can be above the reverence for life. Moreover, in "Human Scale Development" Max-Neef, while discussing micro-organizations, considers the role of non-conventional resources such as social awareness, organizational know-how and managerial ability, popular creativity, solidarity and ability to provide mutual aid, expertise and training provided by supporting agencies, dedication and commitment from internal and external agents. The author, also, stresses that while conventional resource are depleted when used, non-conventional ones are lost only to the extent to which they are not used. For instance, when power is relinquished it is lost, when money is given away we no longer have it, but when solidarity is shared with others it grows, and knowledge that is transmitted is knowledge that expands itself.

Smith and Max-Neef [2013] note that alternative paradigms for a more humane economy have, actually, been implemented. Beside mentioning the thousands of civil organizations listed by Paul Hawken and colleagues at the former Natural Capital Institute in California, they consider, among the others, the activities and role of the Peasant Development Association of Colombia (ADC, Asociación para el Desarollo Campesino)[4], of the eco-municipalities movement and of the Natural Step Framework[5]. Max-Neef, also, recalls the interest and enthusiasm that the Spanish version of the "Human Scale Development" generated among many peasants and Indian communities in South America, and in Sect. 3.2 mention was made to the significant amount of works focused on HSD.

The research on HSD does not appear to be associated with contemporary reflections on geoethics; Max-Neef, for instance, is not cited in the references of Peppoloni and Di Capua's book "Geoethics" and an internet search with the words "geoethics" and "Max-Neef" or "Human Scale Development" returns no relevant results. This is interpreted, here, as a demonstration that the issues at the centre of modern geoethics not only have historical and philosophical roots that can be traced back to the 19th century [Peppoloni and Di Capua, 2022], but are consistent with, and partly extend a theoretical, practical, ecological and holistic approach to human

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[4] https://adc.org.co (accessed 16 May 2023).
[5] https://thenaturalstep.org/ (accessed 17 May 2023).

development that was put forward more than forty years ago in response to a social, economic and political crisis. This reinforces the necessity and foundations of geoethics and enrich this latter with the theoretical and practical perspective of HSD.

A concluding note: the book on HSD in Spanish (1993) mentions "Falta de conciencia ecológica" (lack of ecological consciousness) as a violator of the needs of understanding and identity. In the English version this violator has been termed "Gaialessness", with a reference to Gaia, the Greek primordial goddess that personifies the Earth and is the mother of all life, and maybe to the well-known Gaia hypothesis by Lovelock and Margulis [Lovelock and Margulis, 1974; Lovelock, 2000]. Gaialessness is actually a neologism, or even a non-word, but it could perhaps be the best term for expressing the opposite of geoethics.

3.3 HSD needs-satisfiers matrices and geoethics

Any satisfier of a basic human need that appears in a HSD matrix and is consistent with the tenets of geoethics can be considered as an operational materialization and bottom up implementation of geoethics itself, as well as a demonstration of the role played by geoethical instances in the fulfilment of fundamental needs; HSD and geoethics, then, can reinforce each other even through the practice of the HSD workshops. Furthermore, any economic good, policy or activity that empowers these satisfiers actually enacts geoethics, and actualising human needs certainly justifies the demand for that good, policy or activity.

Examples of needs-satisfiers matrices appear, e.g., in Max-Neef [1991], Smith and Max-Neef [2013], Jolibert et al. [2014] and Guillén-Royo [2016]. This latter, also, proposes a tentative matrix of synergic satisfiers that are (or should be) present in societies where human needs are actualised in harmony with the natural environment, and that have been implicitly or explicitly highlighted in articles, websites, reports, theses or books discussing sustainable communities [Guillén-Royo, 2016]. The HSD matrix of Table 2 lists – for illustrative purposes - a number of mostly synergic satisfiers, selected from the examples of matrices mentioned earlier, that appear to be more directly consistent with geoethics (explicitly or implicitly). Needless to say, the list is not meant to be complete or conclusive and the choice of satisfiers could have been different.

	Being	Having	Doing	Interacting
Subsistence	Engagement, honesty, equity, modesty, solidarity, physical, emotional and mental health	Participatory democracy, basic needs coverage, connectedness, food, shelter, work	Cooperating, protecting local agriculture, working, feeding	Low environmental impact (waste, emissions, pollution), living environment, social setting, care about human and natural resources
Protection	Hopeful, trustful, care, adaptability, autonomy	Sense of community, access to healthy food, conflict resolution, connectedness, guaranteed subsistence, understanding of the relationship with nature, real information, rights, work	Supporting, visioning, civic education, cooperate, plan, take care of	Low ecological footprint, low level of pollution, public or private spaces to grow food, civic-mindedness and civic education, time and space for quietness, living space, social environment
Affection	Tolerant, understanding, openness, proximity, solidarity, respect, tolerance, generosity	Conflict resolution mechanisms, work with one's inner self/spirituality, non-materialist values, relationship with nature	Bonding across generations, loving nature, volunteering, time to devote to others, share, take care of, criticize constructively	Time and space for relatedness
Understanding	Open, inclusive, perspective, transparency, objectivity, communication, critical capacity, harmony, dialogue, critical conscience	Awareness of one's place in the whole system, interaction with peers, systems to resolve conflicts, participatory decision making, real information, plural education, empathy, education and communication policies	Growing personally, living sustainably, promoting intuition, understanding ourselves and others, simplifying life, analyse, study, investigate	Experiencing nature, free spaces or opportunities to share ideas, subsistence society, schools, families, universities, communities, non-discriminatory communication
Participation	Willing to cooperate, inclusive, gratification, generosity, receptivity, initiative, humility	Sense of community, participatory decision making, conflict resolution, direct participation, education focused on promoting participation, responsibilities, rights	Cooperating, searching for sustainable solutions, education, promoting participation, supporting initiative, cooperate, propose, dissent, express opinions, dialogue	Opportunities to get involved in decisions, citizen-administration interaction, universities, place of work
Idleness	Simplicity, curiosity, understanding, tranquillity	Less distractions	Remember	Treating public spaces as private, landscapes

Creation	Empowered, acceptance, inclusion of different generations, cooperation, imagination, curiosity	Room for experimentation, basic needs guaranteed, non-materialist goals	Searching for sustainable solutions, recycling, work	Democratic community organization
Identity	Authentic, sustainable, respect, acceptance, tolerance, sense of belonging, authenticity	Sense of community, participatory decision making, culture, knowledge, education that explains diversity, tolerance, participatory society, values, work, historical memory	Cooperating, working for a more sustainable work, getting involved, respecting, committing oneself, take responsibilities	Communion with life, spaces for participation and collaboration, places one belongs to
Freedom	Satisfied, hopeful, tolerant, acceptance, honesty with oneself and others, open mindedness, respect	Culture of simplicity and frugality, few needs, safety, education, promoting tolerance and respect, equal rights, responsibility	Choosing to live in alternative lifestyles, knowing, trusting, understanding, respecting, dissent, develop awareness, take conscience	Spaces or opportunities to share ideas freely, spaces of respect

Table 2. *An example list of (geo)ethically consistent satisfiers.*

The satisfiers listed in Table 2 refer, first of all, to a mode of being which entails awareness and responsibility as well as peaceful, respectful, and participatory relations with fellow human beings and the Earth system. They also involve the right to knowledge and self-cultivation, and a communion with nature (including the sense of place) which precedes and underpins the practice of sustainable development. These satisfiers, then, are consistent with the ecological humanism invoked by geoethics, and it is of utmost importance to note that they do not derive from a top-down application of geoethics itself, but from a bottom-up reflection about the fulfilment of human needs; this, again, substantiates the link between the implementation of geoethics and the realization of these needs. Moreover, the satisfiers in Table 2 can be compared with the negative ones mentioned in Max-Neef [1991], that can be considered inconsistent with geoethics. These include:

- exploitation of natural resources, obsessive productivity with a bias to efficiency and aggregate economic indicators, which are pseudo satisfiers of the needs for subsistence (the first two) and understanding (the latter);
- obsessive economic competition which, in Max-Neef's view, is an inhibiting satisfier that seems to actualise the need for freedom, but actually impairs

> the fulfilment of the needs for subsistence, protection, affection and participation;
- disharmony with nature, degradation, exploitation or destruction of the environment, distance from natural areas, prejudice, overestimated technocratic thinking and authoritarianism, which are examples of violators that appear in negative synthesis matrices produced in Great Britain, Sweden, Bolivia and Argentina.

It should be noted, however, that the HSD approach allows complete freedom in the choice of satisfiers. As a result, HSD alone does not guarantee unproblematic relationships among individuals, groups and communities, with future generations or with nature itself, and trade-offs may be unavoidable. This is true, though, for any approach to human development if, first of all, appropriate conceptual and ethical "boundary conditions" are not in place. Consistently with other scholars, Guillén-Royo [2016] even criticizes the much-cherished concept of "green economy" when it does not call into question the notion of unlimited growth, and notes that improving the efficiency in the production of goods [e.g. reducing the consumed energy per production unit) may actually lead to an increased consumption and thus, ultimately, to an increased overall impact on the environment. Let us expand some more on these topics.

Environmental sustainability is entailed by geoethics and underpins Max-Neef's thought, but it may not automatically follow from the choice of satisfiers made during HSD workshops. These latter can be explicitly geared toward sustainability by introducing this issue from the start or by reassessing the initial choice of the satisfiers [e.g. Aponte, 2015, in Guillén-Royo, 2016, personal communication; Mitchell, 2001 and Jolibert et al., 2014]. However, Guillén-Royo [2016] observes that the presence of synergic satisfiers in an HSD matrix is unlikely to result in unsustainable practices, since damaging the environment generally compromises – at least in the medium/long period - the simultaneous fulfilment of different human needs. Sustainability, then, is favoured by honest and coherent institutions that engage the population in the co-generation of synergic satisfiers [Guillén-Royo, 2016]. The choice of satisfiers, also, may always be revised after examining their effect on the actualisation of needs.

During an HSD workshop, moreover, different subjects may choose satisfiers that conflict with one another. Jolibert et al. [2014], in the context of regional scenario building and stakeholder conflict resolution, address this problem by allowing participants (the stakeholders) to first identify their own satisfiers, and then to share

and discuss them so as to improve the consensus on the satisfiers to be included in the final matrix.

Furthermore, Jolibert et al. [2011] demonstrate how the HSD approach may be broadened to cover environmental conflicts, including the needs of non-humans, in the Natural Reserve of the Sado river estuary (Portugal). The actors are fish farmers, managers of the reserve and otters, that play a key role in the estuary ecosystem and also predate farmed fishes, so that multiple conflicts arise between fisheries and the reserve administration. Otters, rather than being a mere object of contention between fish farmers and reserve managers, are considered as animal-subjects with needs and satisfiers, identified by biologists with a thorough knowledge of otters' predation and behaviour, who represent the otters in the participatory process [Jolibert et al., 2011]. Moreover, reserve managers' satisfiers are allowed to refer to the managers' role as nature protectors. In this analysis, for instance, clear water for fishing and reproduction is a satisfier of otters' need for subsistence, while mitigation measures against otter predation, including illegal killing, is a satisfier of the farmers' need for protection, which is divergent (or conflicting) in the sense considered in Sect. 2.2, since it fulfils a farmers need but compromises the actualisation of the otter's need for subsistence. The authors argue that the identification of needs and satisfiers provides a shared framework for understanding and analysing resource-related conflicts in terms of unmet needs and divergent satisfiers of, in this case, humans and otters as well. The well-being of each party, then, depends on the achieved level of convergence and dependency between the satisfiers [Jolibert et al., 2011].

Geoethics may greatly contribute to HSD applications by providing conceptual and ethical boundary conditions (see above) that help in selecting more Earth-oriented and convergent satisfiers, thereby promoting the resolution of conflicts. Furthermore, geoethics also deals with issues concerning non-living things, contrary, of course, to HSD.

4. Conclusions

Human Scale Development is a theoretical and a practical toolkit for supporting societal transitions [cf. Gasper, 2022], but as argued in this paper it can also be considered a geoethics toolkit. HSD implements and reinforces geoethics through the identification of (geo)ethically consistent satisfiers of basic needs, and enacts it whenever appropriate actions are taken in order to empower these satisfiers. At the

same time geoethics provides a broad conceptual home for HSD and, as noted above, may help selecting more Earth-oriented and less conflicting satisfiers. As written in the introduction, the research on HSD doesn't seem to be linked to that on geoethics and this paper, hopefully, will contribute to establish this link for the reciprocal enrichment of both approaches.

The HSD terminology may, at first, appear complex, unfamiliar or even vague especially for geoscientists trained to deal with the physical world. Also, it can be questioned whether the HSD framework is helpful for solving ethical dilemmas [Marone and Peppoloni 2017; Canseco and Bellaubi, 2022] and for personal reflection, growth, and practical decision-making by geoscientists or others concerned with human interactions with the natural world. However, disciplines like geoethics or, for instance, socio-hydrology [e.g. Baldassarre et al., 2019] were developed to help addressing problems that cannot be appropriately dealt with by physical sciences only, and urge geoscientists to familiarize themselves with concepts, methods and terms well outside those employed in their fields. Also, the need-satisfier framework and the distinction between different kinds of satisfiers become clearer after some experience; HSD, besides, was designed to be accessible to people regardless of their degree of formal education and has been applied also in grassroot projects involving individuals with limited schooling. It is not proposed here, of course, that geoscientists should become HSD experts too, but just that it may be useful to establish a dialogue between geoethics and HSD practitioners and scholars. The HSD approach, moreover, was designed for framing and tackling societal development problems from the bottom up, but thinking in terms of needs and satisfiers may also enrich individual views and provide an additional input for decision-making. Needless to say, finally, HSD is a tool among others (to be elaborated and improved on when necessary) for dealing with some of the complex questions inherent to the human – Earth nexus.

Let us conclude with a personal consideration from Max-Neef's 1991 book, that could also be inspired by geoethics: "At this stage of my life, I have reached the conclusion that I lack the power to change the world or any significant part of it. I only have the power to change myself. And the fascinating thing is that if I decide to change myself, there is no police force in the world that can prevent me from doing so. It is just my decision and if I want to do it, I can do it. Now, the point is that if I change myself, something may happen as a consequence that may lead to a change in the world".

References

Baldassarre, G., Sivapalan, M., Rusca, M., Cunnedec, C., Garcia, M., Kreibich, H., Konar, M., Mondino, E., Mård, J., Pande, S., Sanderson M.R., Tian, F., Viglione, A., Wei, J., Wei, Y., Yu, D.J., Srinivasan, V., Blöschl, G. (2019). Sociohydrology: Scientific Challenges in Addressing the Sustainable Development Goals. Water Resources Research, 55(8). https://doi.org/10.1029/2018WR023901

Canseco, R., and Bellaubi, F. (2022). Application of geoethics to university education based on a mining geoethical dilemma case study in the Catalonian Potassic Basin (Spain). Journal of Geoethics and Social Geosciences, 1(1), 1-37. https://doi.org/10.13127/jgsg-24

Chakrabarty, D. (2018). Humans are a geological force. The UNESCO Courier 2018-2. https://en.unesco.org/courier/2018-2/humans-are-geological-force (accessed 17 May 2023).

Cruz, I., Stahel, A., Max-Neef, M. (2009) Towards a systemic development approach: Building on the Human-Scale Development Paradigm. Ecological Economics, 68(7). https://doi.org/10.1016/j.ecolecon.2009.02.004

Di Capua, G. and Peppoloni, S. (2023). An expanded definition of geoethics. EGU General Assembly 2023, Vienna, Austria, 24–28 April 2023, EGU23-1385. https://doi.org/10.5194/egusphere-egu23-1385

Doyal, L., Gough, I. (1991) A theory of human need. The Macmillan Press Ltd, London, 312 p., ISBN 978-0333383254.

Gasper, D. (2022). Manfred Max-Neef's model of human needs understood as a practical toolkit for supporting societal transitions. International Institute of Social Studies, Working Paper n. 704, https://pure.eur.nl/ws/portalfiles/portal/57726057/wp704.pdf (accessed 18 February 2023).

Guillén-Royo, M. (2010). Realising the "wellbeing dividend": An exploratory study using the Human Scale Development approach. Ecological Economics, 70(2). https://doi.org/10.1016/j.ecolecon.2010.09.010

Guillén-Royo, M. (2016). Sustainability and Wellbeing: Human-Scale Development in Practice. Routledge, London, 188 p., ISBN 978-1317647263.

Guillén-Royo, M. (2020). Applying the fundamental human needs approach to sustainable consumption corridors: participatory workshops involving information and communication technologies. Sustainability: Science, Practice and Policy, 16(1). https://doi.org/10.1080/15487733.2020.1787311

Herr, K. and Anderson, G.L., eds. (2005). The action research dissertation: A guide for students and faculty. Sage, London, 176 p., ISBN 978-0761929918.

Jensenius, A.R. (2012). Disciplinarities: intra, cross, multi, inter, trans. http://www.arj.no/2012/03/12/disciplinarities-2/ (accessed 17 May 2023).

Jolibert, C., Max-Neef, M., Rauschmayer, F. and Paavola, J. (2011). Should We Care About the Needs of Non-humans? Needs Assessment: A Tool for Environmental Conflict Resolution and Sustainable Organization of Living Beings. Environmental Policy and Governance, 21(4). https://doi.org/10.1002/eet.578

Jolibert, C., Paavola, J., and Rauschmayer, F. (2014) Addressing Needs in the Search for Sustainable Development: A Proposal for Needs-Based Scenario Building. Environmental Values 23(1), 29-50. https://doi.org/10.3197/096327114X13851122269007

Lovelock, J.E. and Margulis, L. (1974). Atmospheric homeostasis by and for the biosphere: the gaia hypothesis. Tellus, 26(1-2), 2-10. https://doi.org/10.1111/j.2153-3490.1974.tb01946.x

Lovelock, J. (2000). Gaia: A new look at life on Earth. Oxford University Press, New York, 148 p., ISBN 0-192862189.

Malmann, C. (1980). Society, Needs and Rights: A Systemic Approach. In: Lederer, K. Human needs: A contribution to the current debate. Oelgeschlager, Gunn & Hain, Cambridge, USA, 361 p., ISBN 978-3445019721.

Mcleod, S. (2022). Maslow's Hierarchy of Needs. https://www.simplypsychology.org/maslow.html (accessed 18 February 2023).

Marone, E., and Peppoloni, S. (2017). Ethical dilemmas in geosciences. We can ask, but, can we answer? Annals of Geophysics, 60, Fast Track 7: Geoethics at the heart of all geoscience. https://doi.org/10.4401/ag-7445

Maslow, A.H. (1943). A theory of human motivation. Psychological Review, 50(4), 370-396. https://doi.org/10.1037/h0054346

Max-Neef, M. (1991). Human Scale Development: Conception, Application and Further Reflections. Apex Press, New York, 114 p., ISBN 0-94525735X.

Max-Neef, M. (1992). From the Outside Looking In: Experiences in Barefoot Economics. Zed Books Ltd, London, 208 p., ISBN 1-856491889.

Max-Neef, M. (2005). Foundations of transdisciplinarity. Ecological Economics 53(1), 5-16. https://doi.org/10.1016/j.ecolecon.2005.01.014

Mitchell, J.A. (2001). Propuesta metodológica en el diseño de un asentamiento humano en una zona rural del centro-oeste de la República Argentina. In: Tijerina A.B.N. (Ed.), La casa de América. Universidad Autónoma de Nuevo León, México, 239 p., ISBN 970-6940634.

Nussbaum, M. (2000). Women and Human Development: The Capabilities Approach. Cambdridge University Press, New York, 312 p., ISBN 978-0521660860.

Osmani, S.R. (2016) The Capability Approach and Human Development: Some Reflections. UNDP Human Development Report Office, New York, 23 p., https://hdr.undp.org/content/capability-approach-and-human-development-some-reflections (accessed 17 May 2023).

Peppoloni, S., and Di Capua, G. (2021). Geoethics to start up a pedagogical and political path towards future sustainable societies. Sustainability, 13(18), 10024. https://doi.org/10.3390/su131810024

Peppoloni, S. and Di Capua, G. (2022). Geoethics: Manifesto for and Ethics of Responsibility Towards the Earth. Springer Nature Switzerland, Cham. https://doi.org/10.1007/978-3-030-98044-3

Piaget, J. (1972). L'épistémologie des relations interdisciplinaires. In: L'interdisciplinarité: problèmes d'enseignement et de recherche dans les universités. Séminaire sur l'Interdisciplinarité dans l'Université organisé par le CERI avec la collaboration du Ministère Français de l'Education national à l'Université de Nice (France) du 7 au 12 septembre 1970. OCDE, Paris, 334 p.

Rigolot, C. (2020). Transdisciplinarity as a discipline and a way of being: complementarities and creative tensions. Humanities and Social Sciences Communications, 7(1), 1-5. https://doi.org/10.1057/s41599-020-00598-5

Raworth, K. (2018). Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist. Random House Business Books, London, 384 p., ISBN 978-1847941398.

Sen, A. (1989). Development as capability expansion. Journal of Development Planning, 19 (1), 41-58.

Sen, A. (1993). Capability and well-being. In Nussbaum, M. and Sen, A. (eds.) The quality of life. Oxford University Press, 453 p., ISBN 978-0198287971.

Smith, P.B. and Max-Neef, M. (2013). Economics Unmasked: From Power and Greed to Compassion and the Common Good. Green Books Ltd., Cambridge (UK), 207 p., ISBN 978-1900322706.

Stanton, E.A. (2007) The Human Development Index: A History. Political Economy Research Institute, University of Massachusetts Amherst, 36 p., https://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1101&context=peri_workingpapers (accessed 17 May 2023).

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Spiering, S. and Del Valle Barrera, M. (2021). Testing the quality of transformative science methods: the example of the Human Scale Development approach. Sustainability Science, 16, 1439-1457. https://doi.org/10.1007/s11625-021-00966-3

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