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Thriving Together: Enhancing Quality of Life through Biodiversity Conservation

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Abstract. The article deals with biodiversity by showing the origin of the concept and the impact it had in international policies and public debate. In the second part, it investigates the concept of quality of life by reconstructing the philosophical debate that gave rise to the subjective, objective and hybrid theories that seek a synthesis between the previous two. The article concludes by describing the University of Florence's "Percepisco" project coordinated by Andrea Coppi and Matteo Galletti that shows a concrete case of excellent synergy between quality of life and biodiversity protection.

Keywords. Biodiversity, well-being, quality of life, ecology.

1. *Biodiversity*

Since its appearance, the term biodiversity has rapidly imposed itself within the ecological reflections committed to acknowledging and fighting against the environmental catastrophe affecting the entire planet. In recent years, the word biodiversity has finally reached the general public, becoming familiar to public debate. As Marcello Buiatti pointed out back in 2007: «the

term 'biodiversity' has become familiar to many, you hear it often on television, you read about it in newspapers and magazines, you talk about it in the most diverse circles» (Buiatti [2007]: 6).

Until a few decades ago, however, the name biodiversity did not exist at all. As Sahotra Sarkar recalls (Sarkar [2002]: 131-155), the first to use the term was Walter G. Rosen during the National Forum held in Washington between September 21 and 24, 1986, under the auspices of the National Academy of Sciences and the Smithsonian Institution. At the Forum, which «featured more than 60 leading biologists, economists, agricultural experts, philosophers, representatives of assistance and lending agencies, and other professionals» (Wilson [1988]: V), the expression "biodiversity" was used by Rosen as nothing more than a shorthand for "biological diversity". Before long, however, the term took hold and became the title of the forum's proceedings edited by Edward Osborne Wilson in 1988 (Wilson [1988]).

This is the reason why Wilson is usually considered the father of biodiversity, although the interdisciplinary nature of the concept has many sources and has been defined in different ways (for instance Reid, Miller [1989][1]; Fiedler, Jain [1992][2]; Wilson [2001][3]). Still, they all agree that biodiversity is the exuberance and richness with which life propagates itself in harmony with the Earth; which means, to phrase it more rigorously, that biodiversity is not only the variability of the living organisms present in the ecosystems that contain them, but it also implies the delicate balance with ecosystems. Biodiversity is, in fact, the resulting balance of three levels of difference: biological diversity within a species, among different species, and across ecosystems.

Beyond the discrepancies between definitions that followed the appearance of the concept, what is crucial to emphasize is that, along with the foundation of the U.S. Society for Conservation Biology in 1985, which «marked the formation of a new interdisciplinary field dedicated to the conservation of biological diversity» (Sarkar [2002]: 131) and the publication of Michael E. Soulé's "manifesto" for the new discipline titled *What Is Conservation Biology?* in one of the US widest biological readership journals in the 1980's "Bioscience" (Soulé [1985]: 727-734), the forum created a positive synergy that renewed the landscape of environmental studies. As Sarkar pointed out, «a sociologically synergistic interaction between the use of "biodiversity" and the growth of conservation biology as a discipline occurred and it led to the re-configuration of environmental studies that we see today: biodiversity conservation has emerged as the central focus of environmental concern» (Sarkar [2002]: 131).

If «in 1988, *biodiversity* did not appear as a keyword in *Biological Abstracts*, and *biological diversity* appeared once, in 1993, *biodiversity* appeared 72 times, and *biological diversity* 19 times» (Takacs [1996]: 39). Within a few years, four journals with the word biodiversity in the title came up: «*Canadian Biodiversity*,

appeared in 1991; a second, *Tropical Biodiversity*, appeared in 1992; *Biodiversity Letters* and *Global Biodiversity* followed in 1993 (Sarkar [2002]: 132). All of this demonstrates an immediate interest in the topic which crossed the boundaries of academic debate. Indeed, during the *United Nations Conference on Environment and Development* (UNCED) of 1992 the first *Convention on Biological Diversity* (CBD) was signed. With the Convention, the signatory countries committed themselves to pursuing three common goals: «the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding» (CBD, article 1: objectives) namely a fair use of the planet's natural and genetic resources useful to protect biodiversity and promote sustainable development.

Attended by 172 governments, 108 heads of state and 2,400 representatives of nongovernmental organizations, the UNCED (also known as *Rio de Janeiro Conference*) was an unprecedented event in terms of media impact and relative policy-making choices. In addition to the *Convention on Biological Diversity*, the UNCED drafted important documents such as the "*Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests*" and the "*United Nations Framework Convention on Climate Change*", which pioneered the Kyoto Protocol namely the first international treaty committing industrialized countries to reduce emissions of greenhouse gases responsible for global warming. 191 countries have ratified the Protocol with the significant and paradigmatic absence of the United States, which also did not ratify the *Convention on Biological Diversity*. Along with the Vatican City, the United States is *de facto* the only country that makes it impossible to consider the convention a global agreement.

The estimates given on the drastic reduction in biodiversity are, however, staggering. According to the *International Union for Conservation of Nature* (IUCN) *Red List*, more than 46 thousand species are threatened with extinction (that is still 28% of all assessed species).[4] The most alarming fact, in any case, is not just the number of animal and plant species facing extinction but the drastically increasing trend of this lost: «recent extinction rates are up to two orders of magnitude higher than the background extinction rate and future extinction rates are projected to be at least as high as current rates and likely one or two orders of magnitude higher» (Proença, Pereira [2013]: 173). This trend led many scholars to argue that we are experiencing the sixth "mass extinction"[5]. Ceballos and his research team, for instance, which purposely adopted «extremely conservative assumptions whether human activities are causing a mass extinction» to «minimize the evidence of an incipient mass extinction», showed that «the average

rate of vertebrate species loss over the last century is up to 100 times higher than the background rate» (Ceballos et al. [2015]). According to Ceballos' assessments «the number of species that have gone extinct in the last century would have taken, depending on the vertebrate taxon, between 800 and 10,000 years to disappear. These estimates reveal an exceptionally rapid loss of biodiversity over the last few centuries, indicating that a sixth mass extinction is already under way» (Ceballos et al. [2015]).

Given that there are essentially four causes of the drastic reduction in biodiversity – namely land consumption and habitat fragmentation, pollution of air, water and soil, exponential consumption of natural resources, and the arrival of invasive exotic species – and that all four causes can be traced back to the activities of human beings, it is evident that it is precisely its neo-capitalist economic model that is destroying the planet. It is no coincidence that Jeff Tollefson begins his important article published in *Nature* in 2019 by stating that "up to one million plant and animal species face extinction, many within decades, *due to human activities*" (Tollefson [2019] *italics mine*). These data are not fanciful but come from a United Nations-backed panel called the *Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services* (IPBES) whose «analysis distils findings from nearly 15,000 studies and government reports, integrating information from the natural and social sciences, indigenous peoples and traditional farming communities» (Tollefson [2019]). We are talking about the major international appraisal of biodiversity in recent years, attended, in fact, by the representatives of 132 governments.

As Tollefson reports, the results are anything but encouraging: about 75% of land and 66% of ocean areas have been «significantly altered» by people while the exploitation of plants and animals through harvesting, logging, hunting, and fishing and pollution threatens the balance on which biodiversity stands. This is the reason why, according to the IPBES experts «without "transformative changes" to the world's economic, social and political systems to address this crisis» (Tollefson [2019]) there is no future for the planet. Biodiversity will continue to decrease, making planet Earth increasingly «scorched», to use Jonathan Crary's accurate definition (Crary [2022]).

The neoliberal confidence in progress devoted to perpetual and blind expansion is coming to terms with a scorched planet that reveals how the economic model on which capitalism has built its foundations is no longer sustainable. As IPBES chair Robert Watson states, «we are eroding the very foundations of our economies, livelihoods, food security, health and quality of life worldwide» (Tollefson [2019]). What is being destroyed in fact is not only the environment that feeds and harbors us but the quality of people's lives. In this sense, it becomes essential to reflect on what we mean by "quality of life" to understand the vital and essential bond we have with nature in general and biodiversity in particular.

2. *Quality of life*

Quality of life is a complex and multifaceted concept that encompasses the overall "well-being" of individuals, communities, environments, and societies at large. It extends beyond merely favorable living conditions to include the quality of habitats, work environments, and social settings. This holistic view makes quality of life a cross-cutting and multidisciplinary topic, drawing significant interest from a wide range of fields including philosophy, economics, political science, urban planning, sociology, biology, and medicine (Diener et al., [1999]; Cummins, [2000]). Each discipline offers insights that contribute to a more comprehensive understanding of how quality of life can be measured and enhanced. For instance, economists may investigate how factors like income and employment rates shape overall well-being (Sen [2001]). Political scientists explore the effects of governance, policy decisions, and civic engagement on life quality (Putnam [2000]). Urban planners assess how city design, accessibility, and infrastructure enhance livability (Gehl [2010]). Sociologists focus on the social dynamics that foster or hinder community well-being, addressing issues such as inequality and social cohesion (Wilkinson, Pickett [2009]). Meanwhile, researchers in psycho-biology and medicine delve into the health-related determinants of quality of life, highlighting the significance of physical health, mental wellness, and access to healthcare services (Ruggeri [2013]).

Within the philosophical debate, two opposite macro-perspectives can be acknowledged: the objective theories and the subjective theories of quality of life (Parfit [1984]). According to the first one, quality of life can be measured by certain universal criteria, indicators or goods that exist independently of individual opinions or feelings. These criteria often include tangible factors such as income, education, health status, and access to basic needs like food and shelter. Proponents of this view argue that there are objective standards for evaluating well-being across different societies and cultures. An example of objective theory can be John Rawls' «primary social goods» as it appears in the first edition of *A Theory of Justice* (Rawls [1971]: 90-95). Other perspectives appear decisively more nuanced such as Amartya Sen's capabilities approach, which emphasizes measurable factors like education and health as essential components of well-being, but refuses to give «one pre-determined canonical list of capabilities chosen by theorists without any general social discussion or public reasoning» (Sen [2005]: 158). According to Sen «to have such a fixed list, emanating entirely from pure theory, is to deny the possibility of fruitful public participation on what should be included and why» (Sen [2005]: 158). This does not prevent Sen from thinking of certain capabilities[6] but it does not lead him to hypostatize and universalize a certain number of them.[7] Unlike Sen,[8] who gave «a lot of examples but never made a list of central capabilities» (Nussbaum [2000]: 5), Nussbaum outlined a

list of ten central human capabilities[9] that, according to her, should be universally valued since they are the «bare minimum of what respect for human dignity requires» (Nussbaum [2000]: 5).[10]

In contrast with universal claims on what is, or is supposed to be good, or at least create the condition for something good to happen, subjective theories emphasize the importance of individual perspectives as primary in assessing quality of life. With different nuances, these perspectives suggest that quality of life is closely tied to personal preferences, desires, and emotional well-being. Instead of relying on external standards or universal criteria, they focus on individual experiences and self-reported assessments of well-being. This approach often acknowledges the historical and geographical stimuli affirming that quality of life can vary greatly from person to person, influenced by circumstances, cultural backgrounds, and personal values. However, at the heart of subjective theories is the idea that what matters is irreducible to universal standards and, therefore, the quality of life should be based on how individuals perceive and evaluate their lives.

Following Parfit's distinctions it is common to ascribe not only hedonism to subjective theories but also «desire-fulfillment theories, [which] developed to address the theoretical problems of hedonism» (Schramme [2017]: 161) to the same category.[11] However, some believe that this is not a correct demarcation since hedonism «has both subjective and objective version» (Bognar [2005]: 569). In this sense, some authors feel the necessity to further problematize the issue by adding further demarcations (Schramme [2017]). Without going into detail, which would take us away from our purposes, what is interesting to point out is that even within subjective theories there is a debate that makes some perspectives appear more nuanced than others. This, combined with the fact that it is difficult to argue for a theory that is completely subjective or objective without being exposed to easy criticism has led to the development of so-called hybrid theories.

Acknowledging that «well-being is in part a matter of the objective value of elements of the subject's life, but also in part a matter of her subjective evaluation of those elements» (Woodard [2016]: 161) hybrid theories establish a theoretical holistic landscape that allows for more fluid and less hypostatized movement within two rigidly distinct dimensions. Moreover, recognizing the importance of subjective perception without abandoning the possibility of working out a shared context of objective livability and well-being, hybrid theories enable important ethical reflections on the ecosystem and the need to protect the delicate balance that, as we have seen, is essential to maintaining biodiversity, and consequently, to the well-being of all.

In this sense, it is interesting that the framework developed by the *Quality of Life Expert Group of the European Commission* (Eurostat [2017]) adopted a hybrid system to assess quality of life affirming that «quality of life is a broader

concept than economic production and living standards. It includes the full range of factors that influences what we value in living, reaching beyond its material side» (Eurostat [2017]: 8). Although material conditions are fundamental to an individual's well-being they are inadequate to assess the quality of life in its complexity. «Life satisfaction, affects, meaning, and purpose of life», are indeed key dimensions to evaluate the «overall experience of life» (Eurostat [2017]: 19). The institutional relevance and authoritativeness of the European Commission report marks an important step forward in the collaboration between experts and policymakers useful for the development of living conditions that are sustainable and increase the quality of life in a broader sense.

3. *Percepisco*

The University of Florence's "Percepisco" project coordinated by Andrea Coppi and Matteo Galletti embraced a hybrid conceptualization of quality of life and used the report developed by the *Quality of Life Expert Group of the European Commission* (Eurostat [2017]) as a framework to think about the relation between biodiversity and quality of life. The project aimed to evaluate from an empirical point of view the effect that urban green spaces characterized by a different level of plant diversity may have on the well-being and health of the users. If in fact it has been already widely documented how urban green spaces play an important role in increasing wellbeing from an objective and subjective point of view, there are not many studies that pose a specific interest between biodiversity and the quality of life. To show this correlation, the research unit adopted an interdisciplinary approach that combined philosophical investigation on well-being and quality of life with computer science and botanical/environmental research.

Through the sentiment analysis of online reviews left by users on Florentine city parks characterized by different levels of biodiversity, the project aimed to assess the degree of affection of park users. The data analysis showed that the user's perception of the specific biodiversity was absent or in any case not detected in a sufficient range of linguistic descriptors and/or explicit references. Nevertheless, the relation between well-being and pleasure arising from the surrounding beauty emerged clearly. The research unit decided then to specify the aesthetical category of beauty.[12] Indeed, it has been noticed that pleasure-related-to-beauty can lead to two different kinds of psychological reactions which enriched/complicated a pure aesthetic contemplation. Through a sufficient number of linguistic descriptors, it was possible to show that beauty generates not only a contemplative pleasure but also an "activating" and a "relaxing" pleasure. While the former enacts the subject's will to actively interact with the surround-

ing space in the form of walking, exploring, jogging, running and playing sport in general, the latter places the subject in a situation of calm reception of the surrounding atmosphere. Besides the general contemplation of beauty and its capacity to produce pleasure and then well-being, it has been possible to acknowledge that the subject reaction to pleasure-related-to-beauty is often linked with a subject's drive to actively interact with the environment or to let itself passively immersed in it.

In this way, "Percepisco" project showed a significant relation between different level of plant diversity and "activating/relaxing" pleasure by providing a solid empirical basis useful for policymakers engaged in the promotion and development of urban green areas that increase the quality of life in accordance with the protection of biodiversity.

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Notes

1 «Biodiversity is the variety of the world's organisms, including their genetic diversity and the assemblages they form. It is the blanket term for the natural biological wealth that undergirds human life and well-being. The breadth of the concept reflects the interrelatedness of genes, species and ecosystems» (Reid, Miller [1989]: 3).

2 «Full range of variety and variability within and among living organisms, their associations, and habitat-oriented ecological complexes. Term encompasses ecosystem, species, and landscape as well as intraspecific (genetic) levels of diversity» (Fiedler, Jain [1992]: 484)

3 «The variety of organisms considered at all levels, from genetic variants belonging to the same species through arrays of species to arrays of genera, families, and still higher taxonomic levels; includes the variety of ecosystems, which comprise both the communities of organisms within particular habitats and the physical conditions under which they live» (Wilson [2001]: 682).

4 For the source: https://www.iucnredlist.org (2024, December 4).

5 Also called "Anthropocene extinction". Since its appearance, the term Anthropocene has undergone major developments, criticisms, and insights that have altered its temporal extension by pointing out different aspects of human's impact on nature. In this sense, terms have been coined such as "Capitalocene," which emphasizes the influence of capitalism on the ecological crisis (Moore [2016]), "Plantationocene," which highlights the historical legacy of slavery and colonial plantations (Haraway, Tsing [2019]), and "Chthulucene," which focuses on the coexistence of humans and nonhumans (Haraway [2016]).

6 «I have, of course, discussed various lists of capabilities that would seem to demand attention in theories of justice and more generally in social assessment, such as the freedom to be well nourished, to live disease-free lives, to be able to move around, to be educated, to participate in public life, and so on» (Sen [2005]: 158). By the same token, Sen argues that «poverty must be seen as the deprivation of basic capabilities rather than merely as lowness of incomes» (Sen [2001]: 87).

7 «My scepticism is about fixing a cemented list of capabilities that is seen as being absolutely complete (nothing could be added to it) and totally fixed (it could not respond to public reasoning and to the formation of social values). I am a great believer in theory, and certainly accept that a good theory of evaluation and assessment has to bring out the relevance of what we are free to do and free to be (the capabilities in general), as opposed to the material goods we have and the commodities we can command. But I must also argue that pure theory cannot 'freeze' a list of capabilities for all societies for all time to come, irrespective of what the citizens come to understand and value. That would be not only a denial of the reach of democracy, but also a misunderstanding of what pure theory can do, completely divorced from the particular social reality that any particular society faces» (Sen [2001]: 87).

8 For a discussion of differences between Sen and Nussbaum's approach, see Crocker (1992a).

9 (Nussbaum [2000]: 78-80). The list appears, with some minor modifications, also in Nussbaum (2011: 33-34).

10 For an accurate reconstruction of Nussbaum's ethical thought, see Abbate (2024).

11 For a more detailed discussion along these lines, see Heathwood (2014), Heathwood (2016).

12 For an in-depth discussion of the relationship between aesthetics and environment, see Portera (2018).