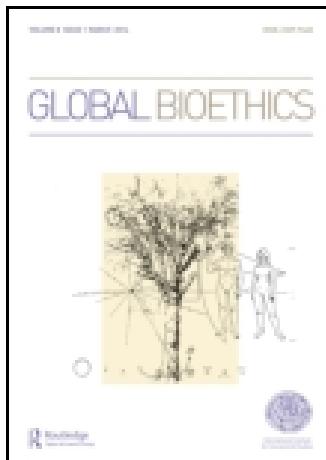


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RESEARCH ARTICLE

A “global garden” is possible: urban and rural life, and forestry

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“In the next 20 years, *Homo sapiens*, ‘the wise human’, will become *Homo sapiens urbanus* in virtually all regions of the planet.” UN-Habitat (2008)

“Nature is not merely ‘nice.’ It is not just a matter of improving one’s mood, rather it is a vital ingredient in healthy human functioning.” Kaplan (1992)

“The sustainability of the *Third Landscape*, of diversity, of biological future, is connected to human number, mainly to practices utilized by humans.” Clément (2006)

Not only is there empirical evidence of the nexus between forests and human life, but it is also the subject of multidisciplinary studies involving professionals from many different disciplines: foresters, architects, sociologists, urban planners, rural policymakers and even psychologists. If the human population continues to grow, the world’s forests will exist only in the framework of societal needs. The world’s forests play a multifaceted and fundamental role both in urban and rural areas, in productive and environmental realms. Thus, global attention is required for devising effective forestry policy, even if it appears utopian. Humans *can* cultivate the entire planet, but in the long term should support an intrinsic millennial perspective for nature and biology, in relation to both cultivated (urban and rural) and uncultivated lands. Ultimately, the globe is a small and fragile “garden” and sustainable development will be possible by embracing the “technocentric” vision of sustainability. The main forest product worldwide is still roundwood, which provides revenue for landowners and workers. However, the non-market benefits provided by forests are fundamental in both the country and the city, and could alleviate the dire environmental conditions in urban areas, where the majority of the world’s people are already living. A global governance of sustainability can support the world’s forests, and all natural resources, only by taking into account human numbers.

Keywords: sustainability; urban and rural life; forestry; overpopulation; technocentrism

1. Introduction

It may be argued that humans have always had an impact on the planet. Yet, in recent decades, concern about the state of the environment has been growing faster than in the past, and, in particular, concern about the state of the world’s forests (United Nations Conference on Environment and Development [UNCED], 1992). If the human population continues to grow, and forests continue to exist, the latter will only do so in the framework of societal needs. Yet the first basic need is a functioning ecosystem, which, when considered on a global level, largely depends on the forest covering of the world’s land surface. Hence the need for humans to maintain biodiversity

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and the resilience of ecosystems and, consequently, diversity in the overall biosphere and in forests.

Over time, forests have been affected by deforestation, exploitation, fragmentation and degradation, the introduction of exotic plants and animals, and domestication of productive species, all features which have caused heavy consequences in the evolutionary process and genetic diversity (Ledig, 1992).

Market and social globalizations, mediated by easy communications and the transportation of important commercial species, induced globalization even in forests, with the breaking of natural barriers and the big risk of homogenizing flora on a global scale (Winter et al., 2009). Geographic barriers have less importance than in the past and hybridization has become relatively easy, together with the spread of previously localized diseases to new areas. Also, reforestation has become the main cause of tree transportation, while half a century ago the movement of seed for reforestation was free, regardless of origin (Organisation for Economic Co-operation and Development [OECD], 2010; White, Adams, & Neale, 2007).

Another key issue relating to forest variation is environmental degradation. Global and regional environmental degradation is responsible for a decline in forests and the loss of biodiversity, but perennial plants may be able to resist degradation and positively face stresses (White et al., 2007). Nevertheless, humans should be duty bound to monitor any eventual changes and intervene as soon as possible.

The domestication of plants plays a significant role in producing new species by isolating populations and diverging selection with the aim of increasing the economic value of products. In this, however, it is not easy to predict the impact of new domesticated lines on native populations. Even though deforestation has had a large impact it may be argued that any eventual damage can be repaired over a given relatively long period: century or even millennia. Abandoned fields can be recolonized by the natural expansion of forests (Sereni, 1997) a fortiori if humans continue to concentrate themselves in cities, abandoning rural and isolated settlements (European Commission, 2007). Studies on past geologic and glacial eras have demonstrated the ability of forests to move forwards and backwards in vast areas (Huntley, 1998), creating opportunities for the invasion of new flora and hybridization between related species previously separated.

Not surprisingly, the effects of exploitation are less durable than those of deforestation, and, even though selective harvesting may be difficult, the few persisting wild trees can restore productive capacities in the long-term future. On the contrary, the fragmentation of forests poses the danger of possibly outbreeding forest species, with the risk of reducing reproductive capacity. In the case of the accidental loss of a separated stand of trees this could be permanent, as fragmentation will block migration corridors (Ledig, 1992).

If human life is strongly varied in accordance with the features of urban or country settlements, as far as the quality of either type of settlement is concerned, forests play a fundamental role, either by the presence or the absence of tree stands. Human beings can thrive in very different situations, with different climatic and environmental features; conditions will vary according to local amenities, weather, population density, cultural atmosphere, labor market accessibility, education and transport facilities, and so on. The perception of quality of life can be very different, and researchers are still challenged to find one definition that suits all. The assessment of the concept is a very complicated multidisciplinary matter (Bradley, 1995) that can be even evaluated by economic tools, considering wages and housing prices to compute implicit prices of the amenities (Blomquist, 2006), that are neither exhaustive nor always accepted by all scholars and disciplines (Seed & Lloyd, 1997; Wilson, 1973).

In this article we consider the relationship between forests and human life, not with the presumption of making an exhaustive discourse but by at least attempting to shed light on some of the

broader topics, and making some suggestions for improved global environmental/human relationships based on proposals by the landscape architect Gilles Clément.

2. Present concerns about the world's forests and their functions

The overall situation of the world's forests is of major concern to many local communities and international bodies. One such body, the Food and Agriculture Organization (FAO), in collaboration with member countries, has monitored the world's forests at 5- to 10-year intervals since 1946, producing comprehensive dedicated reports (FAO, 2010).

According to the latest report, the global forest area is over 4 billion hectares, with an average 0.6 hectares per capita, and five countries (the Russian Federation, Brazil, Canada, the United States of America and China) can boast more than half of the total forest area. At the opposite end of the scale, 10 countries or areas have no forest at all, and an additional 54 have either no forest or forests covering less than 10% of their total land area. Data on deforestation should still be considered urgent because even though several countries are showing decreasing patterns, others are facing high rates of deforestation. The main areas of deforestation are the Tropics, where forests are being converted all too quickly into agricultural land. Over the past 10 years, however, world forest coverage lost nearly 13 million hectares, compared with 19 million in the 1990s, because countries such as Brazil and Indonesia significantly reduced their forest-clearing activity.

At the global level, the reduction in the amount of forest lost can be attributed mainly to afforestation practices and, to a lesser degree, to the natural expansion of existing forests. Yet, despite this, South America and Africa continue to suffer big losses of forest, 4.0 and 3.4 million hectares per year, respectively, between 2000 and 2010. Oceania and Australia, the latter suffering from severe drought and fires, faced the same problem, while the forest areas in North and Central America were the same in 2010 as they were in 2000. On the other hand, the forest areas in Europe continue to expand, albeit at a decreasing rate. Asia ended its loss of forests and recently showed net gains of more than 2.2 million hectares per year during the period 2000–2010. The large scale afforestation program in China resulted in the Asiatic recovery of forest areas, notwithstanding huge losses in South and Southeast Asia.

All in all, areas of planted forest are increasing and now account for approximately 7% of the total forest area, while primary forests – that is, forests of native species and with no significant human intervention – still make up 36% of global forest area. As a result of social environmental concerns, the conservation of biodiversity has been designated as the primary objective in 12% of global forest area. This area is nowadays equal to nearly 460 million hectares. In addition, roughly 10% of forests, equating to an estimated 13% of the world's forest, have been legally established as protected areas.

For decades, scholars have clearly enumerated the functions of forests, stressing their multiple functions in socio-economic and environmental realms (Bowes & Krutilla, 1989; Hyde, 2012). Yet today forests can only deliver these expected functions if they are managed in a sustainable manner and their vitality and health is fundamental in order to deliver productive and environmental functions (FAO, 2012).

Besides the production of timber – still the most evident and easily estimated function – the forest provides the following major environmental and protective functions:

- Protection of water resources;
- Soil protection;
- Influence on local climate and reduction in the impact of gas emissions;
- Conservation of the natural habitat and biological diversity;

- Recreational and social functions;
- Protection of cultural dimensions.

Together with the oceans, the world's forests provide huge sinks for carbon, and the erosion of these repositories can cause an increase in the global carbon footprint (Corinto, 2007). Thus, any action capable of preventing deforestation is crucial in the mitigation of climate change and should be considered a global goal (FAO, 2012; Millennium Ecosystem Assessment [MEA], 2005). Yet forests are not only carbon repositories, since they play an essential role in the lives of millions of poor people who benefit both directly – for food, fuel and income – and indirectly – through the timber industries and related activities, and environmental services.

It is a real paradox that developed countries and rich populations benefit by the expansion of forest areas and simultaneously pay increasing attention to urban forests, while poor countries and low income populations face continuing deforestation of large areas and radical and unplanned urbanization with no attention to the “greening” of enlarging cities (Hough, 2004). Unfortunately, “green” concerns regarding forests are geographically divided. On this topic, we can consider data from FAO (2010) on the geographical distribution of public expenditure and revenue collection from forests. Notwithstanding some difficulties, due to a lack of information from singular countries and macro-areas of the world, it is possible to observe that “There is great variation in revenue collection and public expenditure on forestry and this variation is even greater when the two datasets are combined (because some countries collect a lot of revenue and spend very little while others do the opposite)” (FAO, 2010, p. 133).

In fact, of the countries surveyed by FAO, 103 in total, 24 spend less on forestry than they collect, among them Sweden, Malaysia and Brazil; whereas 54 countries spend more on forestry than they collect in revenues, including Italy, China and the USA. The variations among countries are actually huge, giving rise to cautious general reflections which should be considered in the following way.

The majority of countries spend more public funds on forestry than the revenue collected from this sector, even though the sums are modest. Therefore, it can be said that the majority of investment in forestry comes from private initiatives (funding from individuals and local communities for the fuel and timber industries) targeted at gains from productive uses of forest resources. With regard to the aforementioned differences in investment and return, comparing the year 2000 with 2005, FAO reported that both revenue collection and public expenditure increased in real terms, and governments are more involved in the sector (FAO, 2010, p. 136). However, notwithstanding that the non-marketable benefits of forests are amply discussed in scholars' studies and forest policy debates, no real forestry administration seems to be able to generate sufficient funds to invest in the sector. This may be because the various forestry administrations are not effective in communicating the importance of forest welfare for human populations or because the benefits from forests are perceived to be less important than other public services.

One global region, Africa, particularly stands out, at a regional and national level, for different levels of revenue collection and public expenditure, showing weaknesses in forestry policy and practices, reflecting the general constraints in development.

The main output, in terms of monetary value, of the world's forests is still industrial roundwood, even at regional levels and taking into account variations over time. The only regions to see a real increase in value (total and unit value) are North and Central America, and Oceania. In all other regions the rate of increased value is less than the rate of inflation, or in some cases has even declined. Nevertheless, wood supply from planted forests is globally on the increase, and the rate of increase in revenue is generally stagnating. The major implication of this will be difficulty in financing and implementing sustainable forest management, even though this sector is still very important for the national economies

of poor countries because they gain significant value from wood and non-wood forest product removals (FAO, 2010).

3. Forests and features of urban and rural life

Not only is there empirical evidence of the nexus between forests and human life, but it is also the subject of multidisciplinary studies involving professionals from many different disciplines: foresters, architects, sociologists, urban planners, rural policymakers and even psychologists (Kaplan, 1992).

During the second half of the twentieth century, the world's population demonstrated a strong preference for life in cities, with a third of the global population living in urban areas. At that time, demographic expansion was at its fastest in cities all over the world, while in more recent times a slow but steady process of deceleration has taken over. Nowadays, half of the world's population live in urban areas and it is thought that in the middle of the current century all human settlements will be almost urban, with the peak in Eastern Africa just after 2050. Large-scale studies (UN-Habitat, 2008) confirm that according to current projections, the whole of the world's population growth over the next 30 years will be concentrated in cities, or in more or less urbanized areas and regions.

Scholars have long described and compared the general features of urban and rural life and the potential motivators behind the movement of people. Life in cities is reputed to be better than in rural areas (Lean, 2010) for the potential opportunity to share common spaces, the ability to freely participate in public and private social rites and leisure events, and to access culture and knowledge, and exercise duties and rights, together with the increased possibility of employment. Living in crowded areas facilitates the production of goods and trade, access to resources and knowledge at lower costs, enabling higher rates of well-being. Geographical proximity can produce sociocultural proximity, based on shared behavioral models, participation, diffused trust, common languages, shared cognitive and moral codes. The geographical and the sociocultural proximity also provides an important economic aspect since it determines fluid interactions among social actors, who can rely on informal agreements, labor division and cooperation, as well as punishment and the subsequent expulsion of opportunistic behaviors (Camagni, 1991). Moreover, people are driven to cities by the lack of opportunities in the country, in the hope that many things may be better. By and large, it is the differences in quality of life which determine migration to urban areas (Marans & Stimson, 2011). Even a hard life in the slums is considered better than a harsh one in the villages because "Life in the Third World countryside is non rustic idyllic" (Lean, 2010, p. 293).

Discussions regarding "urban forests" require clarification as to the meaning of *urban* (as opposed to *rural*) and *forest*, both as separate terms and as a whole expression. The terms "urban" and "rural" are applied according to the space density of inhabitants, even though they are multifaceted, and the term "*rurality*", for example, is not easily defined (OECD, 1994). In a broader sense, urban environments are considered to be characterized by the predominance of economic sectors, secondary and tertiary education to higher levels, increased access to services and information, an attenuated sense of community, the greater spread of liberal and progressive ideas, lower fertility of the population, shorter average lives and higher proportions of immigrants. Alternatively, rural settings are considered to be more devoted to primary activities, to agriculture and forests, inhabited by a population with a lower level of education, with less access to services and information, a greater sense of community, increased fertility, longer average lives, densification of traditional ideas and resistance to innovation, depopulation, and high rates of migration to developing countries (Lall, Selod, & Harris, 2006). In developed countries the trend is the opposite, with a diffused phenomenon of counter-urbanization (Scott, Gilbert, & Gelan, 2007).

Essentially, the expression “urban forest” is an oxymoron because the Latin term *forestis silva* indicates the woods outside the city doors, whereas “urban forestry” encompasses all green urban spaces, comprising woods and trees inside the “city doors”. First mentioned in the United States in 1894, the concept indicates a comprehensive and interdisciplinary approach to the specific matter of growing trees in urban environments (Konijnendijk, Ricard, Kenney, & Randrup, 2006). Discussions about the use of the expression “urban forestry” should not be regarded as an idle pastime because in many European languages a direct translation from American English relates more to forest ecosystems than to street and park trees (Konijnendijk et al., 2006). Yet the expression “urban planning” is to be understood in its broadest sense – that is, the planning of man-made environments, indicating that there is still a degree of separation between urban and non-urban, which could be defined as the “urban–rural divide” (Scott et al., 2007). Faced with the persistence of the “urban–rural divide”, the concept of rurality in Europe has become more complex because of the many tasks assigned to agriculture (including forestry) by recent common policy (Van Huylenbroeck, Vandermeulen, Mettepenninghen, & Verspecht, 2007) and the actual European “mixture” between urban and rural ways of life. Many activities that were specific to the city are today related also to rural areas, due to better transportation facilities and the possibility of low-cost commuting. In many regions we can witness the counter-urbanization of big cities in favor of smaller urban agglomerations, spreading from an original city center to new outdoor areas, with non-marginal settlers and encompassing real urban functions (Baldacci, 2005; European Commission, 2007).

It is clear that the multifunctionality of agriculture and forestry are entering more and more frequently into the urban, providing production services, environmental and cultural features, health and beauty, and a revival of interest in the social aspects of urban vegetable gardens and the “greening” of urban environments by increasing sustainability and livability.

If planners increasingly perceive the need to include functional farmland and forests in the fabric of the city (Boeri, 2011), the quality of the design of green spaces and their management and maintenance are essential to the improvement of urban living. Farming and forestry become reliable components of physical housing spaces, supporting food and fibers production, leisure facilities, and commercial activities beyond environmental services. Their features help to design and manage the identity of the city, due to the presence of qualifying projects that can increase the attractiveness of residences, employment, investment and tourism, contributing to economic competitiveness (Haughton & Hunter, 2003) and urban sustainability (Lovell, 2010).

A city with well-managed and maintained green spaces within its “doors” can benefit from the many different advantages related to the use of soil; increased production opportunities; sports activities and healthy lifestyles; safe spaces; increased cultural pursuits – local festivals, civic celebrations, theatrical performances; and improved physical, psychological and social development in young people and the opportunity to educate the younger generations on the environment and nature.

From the point of view of planning and design, a network of high-quality green spaces – connected to residential, manufacturing, commercial and leisure areas – allows increased accessibility to local facilities and places of work. If well designed, the “green” network encourages people to get around on foot or by bicycle, both for recreational and social exchanges, also providing a barrier to noise and a visual screen.

From an economic point of view, a green space is able to provide products such as wood, fruit, compost and biomass for energy production – even in the city. Furthermore, the presence of urban green spaces can boost property values and demand for jobs, whereas from an ecological point of view the urban green spaces mitigate the impact of human activities, absorbing pollutants and releasing oxygen, contributing to the maintenance of health by improving the quality of air, water, soil and climate, and hosting plant and animal biodiversity.

4. The global garden: a holistic point of view

As we have seen, the world's forests play a multifaceted and fundamental role both in urban and rural areas in productive and environmental realms. Thus, careful global attention is required for devising sustainable forestry policy and the need for several international bodies to focus on this topic is evident (International Institute for Sustainable Development [IISD], 2013).

At present, notwithstanding the force of globalization, rural and urban areas have very different features in developed and less developed countries. Furthermore, humans are faced with a widening gap between "poverty/wealth" and a "rural/urban" divide. This complicated mix of inequalities is not easily managed by policymakers, who continually strive to alleviate the differences via sectoral policy interventions. Global environmental governance and management still seems like a distant Utopia rather than a feasible and current practice. Even though many global institutions and governing bodies issue declarations of good intent (Pelayo, 2008) the road to be traveled is still very long and even involves a serious and pressing discourse about democracy (Bosselmann et al., 2008) – a very intriguing topic, but it is not my intention to include it here.

However, I would like to report some global design ideas that could also be considered utopian, while responding to practical and operative requirements. I refer to the work of the French landscape architect Gilles Clément and to his philosophical vision of the relationship between human beings and nature that demonstrates his ability as a landscape planner. His vision was encapsulated in the expression "the world is a garden" (Clément, 2006).

For decades, Clément argued that between the landscape produced by humans and the natural one, there is a *Third Landscape* that does not pertain to the more familiar categories of cultivated or natural landscapes. The *Third Landscape* is the sum of the space left over by humankind to natural landscape evolution,

including left behind (*délaissé*) urban or rural sites, transitional spaces, neglected land (*friches*), swamps, moors, peat bogs, but also roadsides, shores, railroad embankments, etc. To these unattended areas can be added space set aside, reserves in themselves: inaccessible places, mountain summits, non-cultivable areas, deserts; institutional reserves: national parks, regional parks, nature reserves. (Clément, 2003)

Thus: "The Third Landscape is of interest to the planning professionals, the designer, led to include in his project an unorganized space or to designate as public amenity unattended areas created, voluntarily or not, by all land use" (Clément, 2003).

Moreover, starting from these ideas about relict lands, Clément produced a wider vision, seeing the entire planet as a "global garden" (Clément, 2006), the human being actually being a *gardener* interested in planning and cultivating the overall biosphere (Clément, 2004) – but a "special" gardener who is capable of collaborating with nature, rather than acting against it, so that the garden could be a *friche aprivoisée* ("a cultivated fallow"), not by using the laissez-faire principle, but, on the contrary, using a soft and slow domestication of the environment.

"A cultivated fallow" is the second oxymoron I use in this article and it must be explained. A *fallow* excludes human intervention, whereas *cultivation* is a strictly technical human function. Clément's idea regarding this was that in the long term, humans can cultivate the planet only by supporting an intrinsic millennial perspective of nature and biology, considering both the cultivated (urban and rural) and the uncultivated (left behind) lands. The planet "has limits", and within these limits human beings can perceive that the public "global garden", as well as the "private household garden", has a factual ecological finiteness. Ultimately, the globe is a small and fragile garden, and with this idea Clément actually realizes that sustainable development will be possible even by embracing the "technocentric" vision of sustainability (O'Riordan,

1981). In this direction, the landscape designer proudly maintains the pole and strategic position in formulating the land use policy. The world can be adapted to fit with human necessities, but the project has to be useful to ensure a sustainable use of resources in order to gain durability and esthetic features. Moreover, if the world is a “garden”, any distinction between urban and rural realms could only be a constraint rather than a functional division.

All in all, humans have to consider well their number, because even a huge garden can only host a finite number of people: “The sustainability of the Third Landscape, of diversity, of biological future, is connected to human number, mainly to practices utilized by humans” (Clément, 2005, p. 31).

5. Final considerations

For decades, many international institutions have considered managing global resources in a holistic manner, unfortunately without finding a common and global environmental policy. Any proposed intervention appears either partial or even utopian, due to the enormous disparities between poor and rich countries, motivated by very different needs. Developed countries seek the protection and conservation of natural resources, while developing countries strive to utilize natural resources to generate revenues. On a more distant horizon the management of natural resources – water, energy, food, biodiversity – could become an international problem, giving rise to harsh regional and global confrontations.

Scholars argue that a *third way* of managing the planet is possible, though not by avoiding a “technocentric” vision in planning the use of natural resources but by proposing to use technology in a soft and durable coordinated manner. In this, the ideas of Gilles Clément on the *global garden* should be considered as a serious and feasible approach to managing the entire world’s resources, by blending and alternating natural landscapes in response to the local needs of each particular country, while coordinating designs and strategies on a global level to protect the whole. Human beings *can* manage the planet with care, adopting a long-term vision, a new philosophy supporting a millennial view of nature and biology, but they are overcrowding the planet, abandoning rural settings and increasingly living in cities, without curbing their overuse of the renewable and non-renewable energy resources located beyond the city doors.

The world’s forests situation is a paradigm for explaining the overall environmental framework. Throughout the world, the main forest product is roundwood – that is, a tangible and marketable product – that provides revenue to landowners and workers. In wealthy countries, local communities understand the importance of non-market goods – that is, intangible products that are generally unmarketable – produced by forests and the importance of managing the forest areas in rural and urban areas, where the intangible products are more evident. The non-market benefits produced by forests are fundamental in both the country and the city and can alleviate the poor environmental conditions of urban life, particularly when considering that the majority of people are already living in urbanized areas, especially in the Third World.

A global governance of sustainability can support the world’s forests, as well all the natural resources, yet only by considering the sustainability of human numbers.

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