



Analysis

Natural Capital as an Economic Concept, History and Contemporary Issues



Antoine Missemmer

CNRS, CIRED - Centre International de Recherche sur l'Environnement et le Développement, 45 bis Avenue de la Belle Gabrielle, 94736 Nogent-sur-Marne Cedex, France

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ABSTRACT

Natural capital is usually presented as a recent concept, used for the first time in the 1970s, adopted in an important contribution by David Pearce in 1988, and widely used by ecological economists in the early 1990s. First employed to incorporate natural constraints into the economic lexicon, and to oblige economists to take the environment into account, the concept has also been used to include the environment in narrow economic valuations. To take a global view of these controversial uses, this paper reconsiders the genesis of natural capital as an economic concept, not in its present-day form, but from its almost unknown, ancient origins in the 1900s–1910s, in the writing of Alvin S. Johnson. The article first sheds light on this historical and theoretical moment, and then shows how it can help interpret current controversies about natural capital.

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1. Introduction

In a classic article published in 2003, then republished in 2005, Maria Åkerman describes the origins of the natural capital concept, starting her story in the 1980s. As she explains, David W. Pearce was the first economist to use the expression “natural capital” to refer to natural resources and services, or, to use his own words, “the set of all environmental assets” (Pearce, 1988, p. 599).¹ A few years later, the nascent ecological economics movement (see Costanza, 1991, p. 8, 16–17, 329–330) adopted the concept to support the incorporation of environmental constraints into the economic lexicon, and therefore into economic analysis. *Ecological Economics* was the journal in which the natural capital concept developed, in many articles dealing with sustainability. For example, in 1992, Fikret Berkes and Carl Folke discussed the relationship between human-produced capital, cultural capital and natural capital, defining the last (p. 2) as the sum of (1) exhaustible resources, (2) renewable resources, and (3) what are called today regulating ecosystem services (climate, hydrological cycles, etc.). This triad became a classic definition of natural capital for many scholars, both inside and outside ecological economics. And, so far, it has achieved wide

success – *i.e.* the natural capital concept has spread throughout the economic literature.

This spread could have been seen as a victory for ecological economists. But, from the middle of the 1990s, some scholars involved in a radical criticism of mainstream economics (see Harribey, 1996; O'Connor and Martinez-Alier, 1998) warned their colleagues about the distortion of natural capital as an operational concept: instead of widening economic analysis to include environmental constraints, the concept was accused of encouraging a narrow vision of the environment, reduced to mere assets with an economic value. Maria Åkerman herself notes this development (Åkerman 2003 p. 437; 2005, p. 42).

This controversy actually opposes two different uses of the natural capital concept, which correspond to the strong and weak positions in the sustainability debate (see Neumayer, 1999). On the one hand, natural capital can be seen as a set of immutable natural items satisfying basic needs. It is then defined as critical – *i.e.* non-substitutable. As a result, since it is immeasurable using common methods, it cannot be compared in monetary terms with other types of capital, and thus cannot be used in cost-benefit analysis. This strong interpretation of the natural capital concept aims to incorporate natural constraints into economic analysis, through the use of the term “capital”, but endowing this capital with particular characteristics (non-substitutability, non-reproducibility, etc.). On the other hand, natural capital can be considered as a set of natural resources or services that need to be consciously managed,

E-mail address: missemmer@centre-cired.fr.

¹ As Nadal (2016, p. 65) states, the concept of natural capital already existed in the 1970s, for instance in Schumacher (1973), but with no clear definition.

but that can be used in standard cost-benefit calculations. In this framework, limited substitutability and reproducibility still exist. But this does not prevent monetary valuation and cost-benefit analysis, with theoretical tools coming from capital theory (amortisation, discount rates, etc.). This second approach has led to many monetary valuation studies of resources and ecosystem services, starting with Costanza et al.'s (1997) famous paper published in *Nature* in 1997. On the other hand, research into critical natural capital also developed, bringing together ecological economists attached to a strong interpretation of the natural capital concept (see for instance Ekins et al., 2003).

Such a controversy about the correct use of the natural capital concept, or rather about the consequences of its use by economists engaged in monetary valuation, needs to be enlightened by a new inquiry into the roots of the concept. In fact, contrary to Åkerman's observations, the notion of natural capital, in its modern meaning, appeared in economic literature long before the 1980s, being used for the first time in a textbook that is almost unknown today, written by Alvin S. Johnson in 1909. This historical moment, which is very little documented, is worth examining because it sheds light on the relationship between the concept of natural capital and economic theory, and it puts current controversies into perspective. The objective of this paper is thus twofold: (i) to complete Åkerman's work by paying tribute to Johnson for his neglected role in the history of environmental economics, and (ii) to build on that ancient historical moment to give a new interpretation of contemporary debates.

This article is organised as follows: Section 2 reports the historical inquiry into the natural capital concept. This inquiry produces interesting results with respect to Alvin S. Johnson's writings (Section 3). Section 4 gives some theoretical explanation for these results in relation to the Austrian and American discussions about capital theory. Section 5 shows how this narrative helps interpret current controversies, and makes some concluding remarks about this investigation.

2. Searching for Natural Capital

Searching for a concept in the history of ideas may involve two processes: searching for the idea behind the words; or searching for the words themselves. Linguistically speaking, this equates to searching either for the signified, or the signifier. As far as natural capital is concerned, this inquiry sits at the meeting-point of these two perspectives. In other words, it seeks, in the history of economic ideas, the moment when the expression "natural capital" appeared simultaneously with its modern meaning.

As far as the signified is concerned, DesRoches (2015) produced a remarkable piece of work, describing the philosophical characteristics of the conception of nature which is conveyed by the natural capital concept, defined as a set of resources and autonomous productive services. DesRoches carried out his own historical inquiry, and he emphasises the role of classical economists, beginning with Adam Smith and David Ricardo, in changing economists' view of nature. His inquiry is worth reading, but it ignores the role of the word itself. DesRoches reports different authors who do not refer to natural capital as a signifier, but only as a signified. In order to construct a parallel between past and present conceptions of natural capital, it is necessary to go beyond DesRoches' analysis, and to search for the expression itself.

As regards the signifier, searching for the natural capital concept in 18th-, 19th- and 20th- century economic corporuses in various languages – English, German, French and Spanish² – gives contrasting results. As far as historical encyclopaedias and digitised books and articles may give accurate results for such an inquiry,³ the natural capital concept

did not appear in a significant manner before the middle of the 19th century.

In the English-language literature, one of the first occurrences of the term may be ascribed to Ebenezer Jones, a British publicist and lampoonist, who, in 1849, wrote an essay on the concentration of landed property and its consequences for social justice and economic efficiency. Jones was close to the socialist movement, and he developed his criticism to denounce the excessive concentration of wealth in the hands of a few people. The expression "natural capital" is used a few times, as a synonym for land (p. 6, 19, 21). In his rhetoric, this expression has the advantage of echoing other kinds of productive capital (machines, tools) owned by the same people. It reinforces the idea that capitalism leads to concentration of wealth in all its forms. Jones's intention and definition of natural capital – as land – remains different from modern meanings. Some years later, in 1864, reporting on the 5th International Statistical Congress held in Berlin the year before, Samuel Brown uses the term "natural capital" to refer to "land, etc." (p. 205), but places "water and steam power, [and] the principal metals" (p. 205) outside this category. He gives an approximate definition of the concept, simply listing it among many statistical categories requiring discussion. The same issue arises in a note from the Royal Statistical Society published in 1904, in which the author alerts readers to the degradation of "national resources" (p. 688), including men and "natural capital" (land and mines). Mining comes into consideration, but once again without extensive theorisation legitimising the analogy between natural resources and capital.

In the German-language literature, the expression "*Naturkapital*" is just as scarce. Albert Schäffle, one of the main pioneering thinkers in the Austrian tradition, before Carl Menger and Eugen Böhm-Bawerk, employs it on several occasions in his *Die Nationalökonomie* (1861), and he does give it some theoretical basis. In his view, "*Naturkapital*" refers to all natural resources and forces, such as water, light and air, which furnish productive services (p. 43). Here the modern meaning of natural capital comes closer. But Schäffle lacks precision about which resources he places in his "*Naturkapital*" category. Collective natural goods are included (p. 47), but nothing is stated about a potential link between resource management and asset management. Although Schäffle is cited by Menger (1871, p. 54n, 277n, 288, 290, 293–294, 300–301, 307, 312) and Böhm-Bawerk (1889a, p. 54n, 93n, 292n, 347), his use of the natural capital concept has not been followed up in the Austrian tradition.

During the 19th century, it was probably the French-language literature that made the most use of the natural capital concept. Bastiat (1854, p. 256–257), a leading liberal figure, indicates that the socialist Victor P. Considérant regularly makes use of the expression "*capital naturel*". In his *Théorie du droit de propriété et du droit au travail* (1848), Considérant indeed defines "*capital naturel*" as a synonym of primitive capital ("*capital primitif*") to refer to the value of land (p. 20–21). This looks like Ebenezer Jones' narrow definition of natural capital – not enough to draw parallels between past and present. For their part, Jean-Baptiste Say and Antoine Augustin Cournot, both eminent 19th century French economists, do not use the natural capital concept.⁴ In the French-language literature, the most significant uses of the natural capital concept are to be found in the writings of Auguste and Léon Walras. In the 8th lesson of his Evreux course, given in 1832–1833, Auguste Walras, besides his criticism of classical political economy, introduces the notion of "*capital naturel*" for the first time, referring to original productive forces: land and labour (A. Walras, 1833, p. 170). The "natural" epithet here is a synonym of "raw" or "crude", when human beings have not yet transformed their innate capacities and available materials into useful goods. Auguste Walras uses this

² These languages are the most relevant, since most Scandinavian and Russian authors wrote in German until English took the lead in economic literature after World War II. The Italian "capitale naturale" gives no result.

³ Searches were made on dictionaries and document databases including JSTOR, BSC, Google Books, the *New Palgrave* and the *Dictionnaire de l'économie politique* by Charles Coquery and Gilbert Guillaumin. This investigation was not designed to be totally comprehensive, but to obtain relevant results about old usage of the concept.

⁴ It may be noted that Say's definition of the "productive service" provided by "natural agents" (Say, 1814, p.28) can be related to modern conceptions of nature (see Boisvert, 2015), and Cournot sometimes alludes to potential connections between capital and natural items (Cournot, 1863, p. 83).

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