THE NEED OF AN ECOLOGICAL QUALITY-CONCEPT*

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(Received November 1, 1982)

1. Indicators for Quality?

An indicator is something which makes visible, audible or perceptible which in itself is not visible, audible or perceptible. Many times indicators concern rather concrete matters, that might be experienced also in a more direct way. Acidity can be tasted, but a pH-meter is a better instrument. If such an instrument is not available the presence of *Sphagnum cuspidatum* tells, that the pH cannot be higher than 6.5. And when the accumulation of mercury in special tissues of fish constitutes a good reflexion of mercury content of water, the observation will be far easier.

But speaking of indicators we mostly have other things in mind. In assessing the influence of the sea on inland waters chlorine concentrations can be measured by means of simple titrations. Nevertheless an impressive typology of brackish water exists, in which organisms function as an indicator for the 'degree of brackishness'. Many times we even experience that the assessment with the help of these organisms does not agree with that of our titrations (den Hartog, 1963). In such cases we tend to believe more in the values indicated by our organisms, rather than in the actual chlorine contents. We are not interested in chlorine as such, but in the response of the structure of the ecosystem as a whole, a response to the dynamics characteristic for a water which in some way is influenced by the sea. Brackish water shows its own character, and hence we attribute to it of its own quality.

With this description the concept of 'quality' is introduced. Quality is something which is not visible, audible or perceptible, but which can be made it by our indicators. We experience how behind the perceived reality another reality is hidden, an abstract reality, not of matters but of principles. Is 'quality' such a principle? Are we able, by looking to the things around us – plants, animals, communities, tissues, oxygen concentrations – to tell something about this difficult phenomenon 'quality'?

2. Quality, a Source of Concern. An Example

Recently the hydrobiologists of the Provincial Department for the maintenance of dikes, roads, bridges and the navigability of canals of Utrecht found a series of interesting diatoms in a ditch near the city of Utrecht. These diatom species belong to a community, normally found in a special type of shallow waters on pleistocene soils, called 'fens'. This

watertype had formerly a modest distribution in the eastern part of the Netherlands but it has disappeared almost entirely by eutrophication. If the find had taken place in the eastern provinces, and in regions under the management of the State Forest Service, it would have been an argument to design the ditch as a nature reserve. But this was not the case. Moreover, the ditch was situated along a highway, in a region where activities, took place for the construction of a traffic junction. As a consequence of these activities, an old woodland area had been damaged seriously - a source of great concern during more than ten years for local environmental action groups (v.d. Pijl and Grimbergen, 1983). The construction of these traffic works has given rise to the occurrence of the very rare diatom species, to which justifiably is attached much value. The same activities, however, damaged a centuries old woodland. Is a highway under construction to be seen as a source of enrichment or impoverishment of the Dutch nature?

The problem is still more complicated. No fish was detected in the ditch. This might be natural, since the 'fens' in our eastern provinces are also mostly without fish. On the other hand, since water bodies along highways in general contain large amounts of lead, the water might be too poisonous for fish. In terms of environmental quality such ditches form an issue open for discussion. Nevertheless, the rare diatom species grow well, whether or not in reality lead loading is considerable. Heavy metals are not necessarily an impediment for natural diversity, certainly not in small organisms at a low organization level. Several researchers showed the existence of physiological races for temperature, pesticides, heavy metals and other phenomena. These races may behave differently under specific circumstances or replace each other. Especially in microorganisms such replacements may take place very quickly (Johnson, 1952; Moraitou-Apostoloupoulou and Verripoulos, 1978).

What is the quality of this ditch? 'Abominable' some experts argue. 'The water is full of lead, and nothing can be done with it'. 'But the absence of fish may be caused by other factors', other experts will assert. 'Possibly the relative paucity of nutrients causes the lack of fish. Besides, these ditches are not meant as a source for drinking water; many other things can be done with them'. The people who use mapping as a tool for assessing the environmental quality have another approach in their mind. Their main interest is the lock, stock and barrel of a piece of nature, for which lead is only one of the threats. In the present case nature is apparently able to face it. According to their standards the ditch has a good quality, since it contains a particular community. The members of the action group for saving the woodlands, however, do not have a single word of appreciation. Very few people are interested in diatoms, but the deterioration of the woodlands, closely connected with the existence of the ditch, concerns thousands of people. According to their ideas the ditch should never have been dug.

So many men, so many minds. They are all ecologists, speaking about the same matter. But their views differ from one to another. Discussing the notion of quality means ending up in a tangle of conceptions, misunderstanding, contradictions and prejudgements. Taking up the challenge is stirring up a hornet's nest.