

Aquaculture and ethics: the need for value debate

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Aquaculture relates to the fishing industry roughly the same way as agriculture relates to hunting. Surely this is a positive feature of aquaculture. Furthermore, it is beyond doubt that aquaculture production is in principle better adapted to the demands of modern markets than the traditional fishing industry. It provides for a much more stable and targeted delivery of food products. Yet, looking on the downside, while agriculture has slowly developed over the last millennia, aquaculture has developed very rapidly in the last decades. While its earliest forms date back some 3000 years, it is clear that the great boost in aquaculture happened during the last 5 or 6 decades. Thus, while agriculture had history on its side to develop at least some forms of rudimentary ethical standards for animal husbandry, aquaculture is still in its infancy.

Aquaculture is currently the fastest growing food sector world wide, with the main growth happening in Asia, especially China. Here in European countries, and in some other highly industrialised countries, aquaculture is struggling with a negative image that has its grip on consumers and the media. Personally I am convinced that only parts of this negative image can be substantiated with weighty arguments. I am also convinced that aquaculture has, in principle, an impressive but yet unused potential of a sustainable food production industry. But be that as it may, I also believe that the aquaculture industry has not yet learned actively to relate to consumers' worries in a transparent and trust-eliciting manner. Strategies to simply play down all criticisms and one-sidedly communicate the benefits tend not to work any longer in our societies. Aquaculturists need to engage with *everyone* (not only with the consumers) in new ways and create new platforms for dialogue.

One of the main reasons for this, is that I believe that many, if not most, of the debated issues relate to deep-seated value questions. Thus, so-called "scientific facts" can only do a limited job. They clarify certain aspects of risk, but they seldom clarify whether a risk is worthwhile taking or how it relates to risks of alternative options or whether aquaculture, all things considered, is a step in the right direction towards a sustainable future. Discussing these things means to focus on values, and on what is (more or less, all in all) right or wrong. This is the domain of ethics.

So what is so ethically critical in aquaculture? First, there is obviously the issue of food safety and other consumer worries. Residues of persistent organic pollutants and microbial risks are worrying. Surely, if a serious health risk can be eliminated at a reasonable cost, we should do so. But there is more behind this issue. In short, whose experts should we trust? Can there be truly "objective" and "independent" assessments of the health risks? In science in general there is always dispute and often there are also some outliers of opinion. We need to acknowledge and communicate this spectrum of opinion, clarify what is considered accepted knowledge and why, and to enable people to form their own judgements. This issue touches upon the ethical basis of our risk communication and how we view expertise in respectful dialogue.

Obviously there are also other issues that are related to consumer worries and how they are met by industry, such as e.g. traceability, labelling and certification practices. I shall not here discuss these issues, but rather mention a second major ethical issue in aquaculture. This is what could be called the sustainability issues of aquaculture. There are a number of worries under this heading, e.g. the pollution from open pens and other aquaculture sites, the threats to biodiversity by escaped fish from the fish farms, the utilisation of fish meal and fish oil as fish feed, the choice of farmed species, clashing interests over the best use of sites, and the total energy consumption of globalized productions and markets. To illustrate the complexity of these problems, just take a quick look at the last one I mentioned. What are we to think about production fish being caught along the shores of, say, Chile, being processed somewhere in Europe, say Finland, then being fed to aquaculture salmon in, say, Norway, for this fish then being finally flown to, say, Japan where consumers can enjoy high quality and high price products? Can the energy use along the way be considered to be sustainable in the long run? And what are our alternatives? Is this the unavoidable prize of globalization, a prize that all food production has to pay? I surmise that this then is at least a type of logic that very few ordinary people find easy to reconcile with their values (when they at the same time are expected to reduce consumption and save energy etc). And who is responsible? From an ethical point of view, if the "system" is wrong, then all those who "follow" the system take on co-responsibility.

Aquaculture sometimes makes the claim that fishing down and farming up the food chain must be the only sustainable and reasonable way to go. Among others they cite arguments that the feed conversion rate in salmon is so much better than in other animals. Furthermore, we get much more edible energy out of 10 kg of capelin if used as feed for farmed

salmon (~28 MJ), than if eaten by cod that then is caught by fishing boats and sold on the markets (~3 MJ). Marine biologists and ecologists typically oppose this line of argument. They point to scientific uncertainties and the risk of unsettling complex eco-systems. They also point out that aquaculture already today is a major contributing factor in the over-exploitation of our ocean resources. There are several value issues involved here (e.g. again the issue of expertise). One such issue is the so-called framing problem: who can define for us what is at stake here? Is it an issue of salmon or cod or pork on our dishes? Or is it an issue of the management of natural resources? Or even wider issues, such as the growing world population or finding adaptive technologies?

There are even more ethical issues in aquaculture. I will just mention modern biotechnology (transgenic animals, DNA vaccines) and animal welfare (density and stress in fish pens, swimming behaviour). Here I cannot explore any of these issues. The whole point of my communication is to show how ethical issues are at the basis of many of our current food debates, and how aquaculture in particular is in need of opening up to a broad public debate; and to be honest and self-reflexive: in this respect not only our aquaculturists and scientists need to engage much more, but my fellow social scientists and philosophers need to realize that they, too, have a job to do.