Interpreting salinity science messages: A sociological perspective

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1 INTRODUCTION

This paper discusses multiple perspectives in interpreting scientific messages about salinity, and the need to think more critically about these messages. It is stimulated in response to conflicting perspectives among individuals about the 'big picture' as it pertains to managing salinity in Australia, although its relevance is universal. In salinity, as with any other issue confronting individuals, decisions and responses are made on a daily basis subject to individuals' perception of their big picture. The notion that there is only one big picture, whatever that may be, is counter to practice. This cannot help but have consequences for researchers, government, industry policy and individuals involved in managing salinity.

A sociological viewpoint dominates this paper, and even then it risks painting one sociologist's big picture. In pursuing this perspective, however, the paper provides examples of three different ways salinity messages may be interpreted, and suggests how a multi-perspective approach to analysing the meaning of messages might close the gap between data, information, knowledge and practice. An example of how this has been applied to key messages from Australia's National Dryland Salinity Program is provided.

2 THEORY

The way we see the world is captured by the term 'paradigm', a concept discussed at length by Thomas Kuhn and a long procession of philosophers of science who followed him. Patton (1975:15) describes paradigms thus: "A paradigm is a world view, a general perspective, a way of breaking down the complexity of the real world. Paradigms are deeply embedded in the socialization of adherents and practitioners telling them what is important, what is legitimate, what is reasonable . . . [and] what to do without the necessity of long existential or epistemological consideration." This paper could draw on any number of sociologically recognized paradigms, but limits itself to three: positivism, interpretivism and critical theory.

Positivism: This is the most predominant scientific paradigm from a western cultural perspective. Sometimes referred to as a "scientific image" (Bernstein 1976), positivism holds that there is a truth out there, and that the truth can be understood by applying logical techniques of analysis. It is not just a scientific phenomena or "scientific paradigm", for positivism is prolific. Economics and most of the social sciences, including some of the fields of sociology, also hold the view that if we do enough digging for data and analyse it the right way, we can understand and resolve even the most complex problems simply because underlying these are "indispensable cores" of truth.

Interpretivism: This perspective deals with reality as a social construction; hence interpretivism is also commonly known as constructivism. Here, truths exist only as individuals' interpretation of what they are dealing with, constructed within the context of a mental framework that makes sense to the individual. In this sense, the concepts of truth and

meaning become interchangeable. As Robottom and Hart (1993, p9) argue, the "reality of meanings (intent and purposes) is found in the interpretation which is influenced subjectively by the values and purposes of the interpreter." Whereas positivism attempts to overcome the limitations of subjectivity by using 'objective' methods of analysis, interpretivism holds that this is simply not possible. At the very least, argue interpretivists, there are very often alternative methods and instruments available to positivists, and the very choice about which to use is a value-laden choice. Those who operate within an interpretivist paradigm reject reductionist experimentation and abstraction, and eschew approximation-based modeling in favour of interactive, field-based methods that are embedded in practice and context. What an interpretivist does, in other words, is attempt to find meaning by interpreting the different perspectives of participating 'actors'.

Critical theory: Like interpretivists, critical theorists don't really accept that there is one truth out there. Where this perspective departs from interpretivism, however, is in its underlying belief that truth is a picture painted by the ideological strokes of the interpreter. In other words, it is more political in character, and hence critical theorists consider factors of power and relationships during their analyses of social, economic and environmental interplay. Moreover, they have a desire to not just understand interpretation of truth, but also to do something about it to improve the quality of human existence. Green (1990) expresses this as a desire to develop practical, action oriented knowledge that enlightens and, thereby, catalyses social and political change, while LeCompte (1990) says that "what counts is what changes, and truth is whatever leads to achievement of what is good, right, responsible and empowering" (quoted in Robottom and Hart 1993, p11).

3 DISCUSSION

In the following, an interpretation of these three perspectives is applied to show how salinity might be viewed very differently:

3.1 *A positivist view of salinity*

Salinity has come about because we didn't understand the relationships between rainfall, vegetation systems, geology and groundwater hydrology. Our agricultural practices were without doubt scientifically naive. If we get our scientific understanding right, then we should have the basis for fixing the problem. What we need to do is identify the right question (a good hypothesis always helps), choose the right methods and support our science system to gain full comprehension of the implications for one part of the system when we tweak another. Cause and effect relationships are difficult to come to grips with, but gaining an adequate understanding of them is not insurmountable. If we can't fully comprehend the system, we can at least model it to the best of our ability; potentially everything can be analysed down to one equation or another. The right set of algorithms should lead to the right understanding and the right advice.

There is certainly an important social element to salinity. We need to shape the development of knowledge, skills, attitudes and motivations so that actions align to the simple physical, chemical and biological truths about salinity. If we can get the right planning processes in place, the right values dominating thinking and the right relationships working between planners, funders and those responsible for implementation, then we should be able to influence individual behaviour so that it is in the best interests of both the individual and the wider community. Where change isn't taking place quick enough, its

often only a question of simple economics. Everyone has their price, and the right incentive or the right deterrent should find the point at which there will be behavioural change. There's always an optimal point or a threshold at play, and these things can also be modeled.

Scale is an important issue, and not just in the scientific sense. Salinity works at local, sub-catchment, catchment, regional and national scales, each cascading and interacting with the next. As such it aligns with many political systems. If we can set appropriate cascading forms of governance in place from national down to the local levels, we'll be able to make great progress. If the frameworks are right at each scale, then everyone will know what to do, have a sense of purpose and direction and see how they fit within a bigger-picture.

3.2 *An interpretivist view of salinity*

Salinity is only a problem if we perceive it as a problem. After all, the natural environment itself is a human construct; that is, landscapes are constructed by cultural groups as reflections of themselves. We need to take into account that changes in the natural environment take on different meanings depending on the social and cultural symbols affiliated with it. One group may look at a salt scald and see a degraded wasteland; another may look at it and see a form of artistic inspiration; and yet another may see a resource for saltland production. Moreover, as a group's definition of itself is renegotiated, so too is the definition and the conception of the environment around it. In other words, how we see salinity tomorrow may well be very different to how we see it now.

Learning about the management of salinity is something that we need to do through experience, and within our own context. Traditional science and economics may have its place but is limited by methodologies that are not suitable to dealing with complex, non-linear systems that are in many cases more about interactions with and between people than interactions between organic and inorganic matter. Learning through experience is often slow, and does not occur at the same pace between individuals. This is not always recognized by institutionalized frameworks. But learning through experience will reflect individuals' own interpretation of the salinity issue and so provide a sound basis for commitment to appropriate courses of action.

Does this mean individuals will only do what they want to do and not take into account others' interests? That is certainly not the case, for when people learn, they do not restrict their learning to generalisable and systematic knowledge about the environment, but also take into account others' perceptions of it. This makes people more prepared to act morally.

3.3 *A critical theorists view of salinity*

It is simplistic to say that salinity is caused by inappropriate landuse, the result of which is an imbalance between rainfall, vegetation systems, geology and groundwater hydrology. Scientists tell us that because they want to corner salinity money all for themselves! The problem is not so much inappropriate landuse, but the factors that lead us to the act of inappropriate landuse. These factors have been encouraged by increased consumption, extractive resource use and the accedence of efficiency over sustainability. The ideology of productivism is the root cause of salinity – we need to produce, we need to grow, we need to support natural resource management only in the context of supporting agriculture. And so how do we deal with issues of salinity if we do not deal with issues of ideology?

What we need to do is gain a commitment to work cooperatively towards agreed ends in a way that is open and honest. As true partners, we must make our agendas and values explicit, and only then, like the interpretivists, start to unfold the issue of salinity so that we

may deal with it in a way that not only overcomes the problem of salinity, but makes us stronger as a society.

3.4 *Reflecting on NDSP messages*

Australia's National Dryland Salinity Program supported salinity management research between 1993 and 2003. In 2004, the program synthesised the results of over 100 scientific and economic studies into six key messages: i. Salinity costs are significant and rising, hence responses must be strategic; ii. Profitable options for reversing the trend are lacking (but are under development); iii. There is no one salinity problem: It challenges us to look beyond traditional policy instruments; iv. Integrated catchment management must be seen as only one approach to deal with dryland salinity; v.Vegetation management remains the key to managing water resources, although the benefit-cost of revegetating catchments requires careful analysis; and vi. Lack of capacity is an important, but a secondary constraint, to managing salinity (NDSP 2004).

Price (2003) analyses each of these messages from the perspectives of positivism, interpretivism and critical theory. The analysis shows us that the key lessons from the NDSP have been derived largely through traditional positivist methods. This, however, does not mean that they cannot be analysed in light of their meaning according to other ways of perceiving. For some, it is possible to view the key messages as the 'big picture' for dealing with salinity in Australia in the future, but the analysis questions the very notion of a 'big picture'. The analysis also challenges the reader to interpret any one message through any number of contexts. That is, while the messages of the NDSP may have been derived through positivist scientific and economic analysis, their interpretation need not be limited to this perspective.

4 CONCLUSIONS

This paper does not advocate any particular means of analysing salinity (or any other) issue, but does suggest that in addition to there being different perspectives about what salinity is and means to people, there are also different perspectives of how to derive such understanding. In one sense the paper follows the path suggested by the interpretivist view. Each of the perspectives presented has its own strengths and weaknesses, which become apparent when they are put into practice. The interpretivist and critical theory perspectives, for example, can be time-consuming and difficult or impractical to implement; yet interestingly, many current approaches to salinity management dip their toes into these waters. Where these attempts have failed, or where insufficient patience has been exercised, there has been an inevitable retreat to safer, more positivist harbours.

5 REFERENCES

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