resentment toward international visitors. New Zealand has already discovered in Queenstown how easy it is to make a destination so up-market that it becomes a foreign enclave.

The *Report* also identifies several important policy problem areas. It notes the lack of incentives for developers to consider the environment, and the tendency to evaluate social and environmental issues using too narrow criteria. It also recognises how federalism blurs the assignment of clear responsibility for various tourism components and how it complicates policy review processes. For example, the *Integrated Report Development Act 1987* took approval of developments out of the direct control of local governments. Increasing foreign control of tourism shopping facilities also may increase political controversy. Finally, in the sections of the *Report* dealing with the hospitality and labour sectors, there are clear indications of localised tensions between tourism entrepreneurs and residents over infrastructure costs, bed taxes, road and sewage costs, training and labour shortage issues.

The *Report's* strength lies in the breadth and sophistication of its inquiry. It explores the right issues and maintains a sensible distance from the tourism 'boosters' and the 'critics'. As the *Report* itself states, "The development of tourism is important. But it cannot be paramount . . . Put simply, tourism has to be considered within a wide economic and social context." This it does well. One can only hope those at all levels who implement tourism policies take as much care over on-going evaluation.

Linda K. Richter
Kansas State University

Science and Social Knowledge: Values and Objectivity in Scientific Inquiry *by Helen E. Longino*
(Princeton University Press, Princeton, New Jersey, 1990), pp. ix + 262, $US13.95, ISBN 0 86287 836 4 (pbk.).

Science has traditionally seen itself as emancipatory. Ironically there is now a widespread movement to liberate humanity from the 'dead hand' of science. Science offers liberation from myth and mystery in religious dogmatism, against which it mounted an impressive campaign in 17th century Europe. It may be that science should recognise that the nature of emancipatory action has changed during the past 400 years — largely due to the enormous success of science. Perhaps science now needs to emancipate itself. This is what Helen Longino's book helps us begin to envisage.

Current views about the relations between social values and science fall into two camps. One sees value-laden science as methodological inadequacy, bad science. The other admits all values in science by denying that there is any such thing as scientific methodology. Both these stances are unsatisfactory from the point of view of those involved in social movements, for they both leave science itself quite untouched. In the first instance activists in social movements are obliged to join with scientists in an effort to 'clean science up' — make it more objective, more rational and more remote from values. The second involves a relativism which is entirely unacceptable to social activists, but more importantly,

the view that in science 'anything goes', has the corollary that 'everything stays' — critique loses its reforming impact.

A useable account of the relations between science and social values needs to tread the difficult path between expecting science to give nothing away, and expecting it to give everything away. And just as important as showing how social values influence science, is the need to provide an account of how science is making us and the social values we hold. Helen Longino's book which grows out of the feminist critique of science, is a general consideration of how we might usefully construe social values and science relating. For my tastes Helen Longino expects too little of science, in terms of what in science should be re-examined and reformed; however she does provide useful insights into the ways science makes us. Her analysis is a good beginning point for the many practising scientists who feel a contradiction between their science and their social values.

The book shows values as constitutive of doing science, arguing over where and how values get incorporated into scientific knowledge, and how this incorporation might be better ordered. The case study which carries much of the argument concerns research on the biological base of human sex differences. Here we see that both reasoning and observation are affected by background assumptions. The book lays out the two quite different pictures of human nature which emerge from the two biological approaches favoured in this research. "In the first approach fundamental aspects of the self are the expression of patterns inscribed in the fetal brain. In the second the self is potentially more dynamic and active in its own construction" (p.217).

Longino's approach enables the research programmes to be 'pulled apart' to show how the assumptive base permeates the work of a research program in its entirety. The first approach not only reflects the values of sexual essentialism and physiological prescription, expressed as sexism and androcentrism in the research; it is also a very powerful influence in strengthening these values, both among the scientists involved and in the general community.

For Helen Longino the cognitive processes of science — reasoning and observation — are inevitably value saturated. As ideals they appear to be free of such pollution, in practice they never are. These "basic components of methodologies [are] not sufficient to exclude values from proper enquiry" (p.216), and "[w]hen purged of assumptions carrying social and cultural values they are too impoverished to produce scientific theories of the beauty and power that characterise even the theories that we do have" (p.219). It follows that we should strive for science carried out with integrity, where criticism is systemically incorporated to counter the influence of the values implicit in the social context in which the science is carried out.

Helen Longino concludes that the feminist scientist, the radical scientist, ought to do more than try to be sensitive to the politically noxious values embedded in some research programs, or try to avoid ideology by sticking to the data which serves only as a strategy for replicating the mainstream values which they would reject. Much more radical 'reconstructive surgery' is required. Science itself must be reformed to incorporate a greater recognition for evaluative criticism.

> The integrity of the scientist is honoured when she permits her values to play a role in her scientific work. This role is not to overwhelm the observational and experimental data but to guide interpretations and suggest models within which the data can be ordered and organised. A greater recognition of the role of social processes (for example criticism) in knowledge production as well as the role of background assumptions in mainstream science might encourage the individual researcher to take more risks in her interpretations. This of course requires a community wide

> acknowledgement of these aspects of knowledge construction with a consequent loosening of the pressure for individual conformity (p.219).

I turn now to the argument Helen Longino constructs to support this proposal for reformation of science. In common with other attempts to mediate science and social values, the argument centres around methodology in science. This book is an advance on many other feminist critiques of science because it takes a more sophisticated view of methodology. Helen Longino renders methodology in a way which avoids metaphysics (any notions of ultimate meanings). She restricts herself to epistemological concerns. Methodology thus becomes the communal cognitive practices of science, in particular the practices of reasoning which connect data and hypothesis.

Helen Longino argues that the social context of science is value and ideology saturated. Some of these values are constitutive of science in that they "are generated from understanding of what counts as a good explanation — the satisfaction of such criteria as truth, accuracy, simplicity, predictability and breadth" (p.4). However what we generally have in mind when we talk of the clash between values and science is a different set of values, Helen Longino calls these contextual values, those that derive from persona, social and cultural mores — group or individual subjective preferences regarding what ought to be and what is best.

The question of whether these sets of values are distinct and independent has us asking if the context and practice of the sciences are autonomous and separate from personal, cultural, and social preferences. Helen Longino argues that scientific practices and content on the one hand, and social needs and values on the other are in dynamic interacion, and that the logical and cognitive structures of scientific inquiry require such interaction. This implies that background assumptions are essential to the practice of reasoning. But it does not follow that the sciences are determined by contextual values. Constitutive values check the effects of contextual values through critical evaluation of assumptions.

Thus contextual values are on the one hand normalised in the doing of science by, among other influences, the convention of objectivity, through the workings of logic and observation. Logic and observation then form the basis of what constitutes science cognitively, and at the same time they also constitute evidential and conceptual criticism of their own working in context, and help to constitute the social account of objectivity. Thus logic and observation are both basic method in science *and* they also serve a second order constitution of science through constituting evaluative standards for their own application. This really is pulling yourself up by the bootstraps. Helen Longino has scientists as privileged in being able to use the rules of the game they are involved in to evaluate the worth of that game!

While logic and observation form the corner stone of Longino's account they receive relatively little treatment in the text. This is a pity for we are never confronted squarely with the paradox which underlies Helen Longino's position. There is no essence to logic, which might or might not be conceived of as value free. The logic of science is itself a product of the system of thought of science. There are no value free, culture free positions to be adopted, even as ideals. There is a similar lapse in her consideration of contextual values, the moral values of individuals and groups. Her lack of consideration of their nature means that the complexity of what constitutes moral values does not emerge. As with logic, morality cannot be regarded as a relationship between an autonomous

individual and a belief system. Necessarily social factors are crucial elements of all moral discourse.

In her account of contextual empiricism Helen Longino has avoided relativism in an individualistic sense yet she is vulnerable to another form of relativism which is evident when we come to consider how science, as Longino conceives it, might relate to other systems of thought. Mediation and mutual enrichment of contesting systems of beliefs and values is impossible. The science of Helen Longino is in the end, closed to the possibility of systematic reform through institutional interaction with social movements and contesting systems of thought. Individual scientists who wish to retrieve something of the liberating impulse of science are left with the task of single-handedly introducing critique and reform.

Helen Verran-Watson
University of Melbourne

Economics of Tourism: Case Study and Analysis *edited by Clem A. Tisdell, Colin J. Aislabie and P.J. Stanton*
(Institute of Industrial Economics, Newcastle, Australia, 1988), pp. vii + 378, ISBN 0-7259-0538-3.

A book gathering papers surveying contributions of economic analysis to the study of tourism in an Australian and South-East Asian context is needed. The urgency of the issues brought about by the rapid growth of 'global tourism' required that one questioned the relative lack of attention paid by applied economics to the subject of tourism by focussing on the limitations of what has been courageously attempted in the past. The editors argue that the 16 chapters (mostly of a working paper nature) are attached to at least one of four recurring themes found in the literature on the economics of tourism: the state of the theory pertaining to tourism in relation to economic theory and economic development; socio-economic impact of tourism on communities; the inter-relationships with the environment; and the public policy implications arising from tourism growth.

The justification for assembling such seemingly heterogenous contributions stems not only from the gap between the increased importance of tourism and the limited availability of data and research, but also from the overlapping nature of the issues. Aislabie (Chapter 2: Economics of tourism: major issues in the literature) observes that the complex nature of the tourism phenomenon has lead to research lacking in rigour. No accepted definitions, characteristics or principles seem to have emerged from what would appear an interesting field for applied economics.

He notices that most such attempts have resulted in standard supply and demand theorising over hypothetical 'tourism commodities' with arbitrary stylised characteristics, varying from one study to another. Aislabie suggests that those characteristics important for matching supply and demand of tourism should constitute the primary basis for an economic contribution to tourism research. Hidden in his account of the specific contributions of micro-economic principles (such as the anaylsis of congestion, pricing and marketing) is the