

emphasizes ethics and values, normative goals and hence citizen participation. It denies the possibility of a value-free science with respect to human or societal objectives. This second tendency thus casts the problem of SIA in a wider context, emphasizing not simply the local impact of a project, but the impact of the larger process of development of which any particular project is but a part, on society as a whole. SIA, from this perspective, necessarily raises three questions: Where are we? Where are we going? Where should we go?

These observations have been made by many who have participated in impact assessments in the last decade or so, although Torgerson systematizes these divergent trends quite lucidly. Further, however, he elaborates what most of us are less aware of, which is the premises and origins of these positions in modern social thought.

How to resolve the divergence? Torgerson argues that it is indeed necessary to answer the larger questions implicit in social impact assessment, and that the second tendency can do so on what are, in the end, more rational grounds than the first. That is because these questions are in part trans-scientific — neither the scientific method nor the existing body of scientific achievement can alone answer them. Torgerson sees the possibility of arriving at rational answers to these questions through a reflective process of social inquiry that incorporates rather than ignores the normative views of the community. SIA would be a means of rational and conscious, but democratic, control over the course of social development.

It follows, although Torgerson does not add this, that the second mode of SIA has the potential to become a major public forum in which to consider the general pattern of social and economic development, both that which currently obtains, and the alternatives to it. That implies a much more clearly political, rather than scientific, inquiry as we commonly understand those terms. Those who might welcome such a prospect will find *Industrialization and Assessment* an essential aid in sharpening their analysis. Those who do not, should read it anyway, for enlightenment.

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THE THICK-BILLED MURRES OF PRINCE LEOPOLD ISLAND. By A.J. GASTON and D.N. NETTLESHIP. Canadian Wildlife Service Monograph Series No. 6. Cat. No. CW65-7/6E. ISBN 0-660-10857-7. Ottawa: Canadian Wildlife Service, 1981. 350 p. Hardbound. CAN\$32.00; outside Canada CAN\$37.50. (Available in English or French.)

This excellent monograph may be the most comprehensive treatment yet published on an arctic seabird; it is by far the best on the Thick-billed Murre. Unlike Tuck's (1961) earlier and more popularly written monograph, Gaston and Nettleship have presented their work in a highly quantitative fashion, with almost 90 tables and over 100 graphs and histograms interspersed over 350 pages; a thorough statistical treatment of their data is given throughout. The detailed treatment given most subjects demands a slow and careful assimilation. This book should not be considered light reading.

The book's six chapters provide a review of the relevant background information, a detailed description of the study area in western Lancaster Sound, a review of study techniques, a discussion of attendance and behaviour at the colony, timing and success of reproduction, the development of young, and a discussion of the foods, feeding areas and weights of adults during the breeding season. The final chapter is an integration and synthesis of the information given in preceding chapters and gives a review of the biology of the Thick-billed Murre; I thought this was the best chapter in the book.

Each chapter has been organized so that it is independent of the others, without need for extensive cross-referencing. As the authors state in the Preface, this has "... resulted in some repetition and a somewhat unorthodox order of appearance of some topics". Regardless, most readers will appreciate that each chapter is self-contained, with an introduction, a description and discussion of the specific methods used to investigate each subject, a detailed presentation of results and a thorough discussion and summary of the main points.

The production quality of this book is excellent. The printing is good (I found only three typographical errors throughout) and reproductions of the excellent colour photographs (mostly by Nettleship) are extremely good.

The major objective, as stated by the authors, "was to gather as much information as possible on the reproductive biology and ecological requirements of Thick-billed Murres breeding at a single location in Lancaster Sound, the gateway to the Northwest Passage". They were most concerned with

"... aspects of ecology and behaviour which might allow us to predict the effects of environmental changes, particularly those associated with human activities, and... the evaluation of methods in hope of formulating guidelines for future investigators." The authors considered the main shortcomings of their work to be associated with the extreme intra-year and intra-colony variation in practically every aspect of the biology of the Thick-billed Murre. In some instances (chick growth and feeding rates) their sample sizes were small and therefore possibly not an accurate representation of the whole colony. The amount of information on the distribution of birds at sea was especially disappointing; they were able to conduct aerial surveys on only 10 days during three seasons (1975-1977). In my view, however, the greatest shortcoming of this monograph was that it contained almost none of the very important and relevant information gathered during the 1978 breeding season at Prince Leopold Island. During this year (and in 1979 — see Birkhead and Nettleship, 1981) unusually cold weather and heavy ice conditions persisted in the Lancaster Sound area throughout much of the summer; nearly 100% ice cover prevailed near Prince Leopold Island and eastward several hundred kilometres as far as the entrance to Lancaster Sound. Some seabirds, such as Black-legged Kittiwakes, did not lay eggs in the Lancaster Sound area in 1978 and it is probable that during this year no murre chicks survived to leave Lancaster Sound (Nettleship *et al.*, 1980). It is understandable that some data collected may not be included in a monograph of this type because of publication deadlines or financial constraints. But, considering one of the primary objectives stated at the beginning of the monograph was to gather enough information to be able to predict the effects of major environmental changes, I was disappointed that the biology of the Thick-billed Murre during the 1978 breeding season was not thoroughly described and compared with the earlier three seasons [n.b.: some discussion of this subject is given in less detail in Nettleship *et al.* (1980) and Birkhead and Nettleship (1981)]. The documentation of methodologies has served the authors well in realizing their second major objective of formulating guidelines for future investigators.

In his Foreword, Hugh Boyd wrote, with respect to the authors: "They devise hypotheses and ways of testing them so as to obtain clear results, and otherwise behave like scientists, rather than voyeurs. This is more remarkable because they have been surrounded by the flummery of environmental assessment." The authors do indeed present a number of hypotheses throughout the monograph; however, there is an important difference between an hypothesis presented *a priori* and subsequently tested by careful experimentation, and an hypothesis presented *a posteriori* (i.e., after the research) as an explanation for observed phenomena; most of the hypotheses presented in this monograph appear to fall into this second category. With regard to "the flummery of environmental assessment", this indictment seems especially inappropriate considering the large body of top-quality scientific research, much of it oriented towards environmental assessment, that has been conducted in Lancaster Sound and adjacent waters during recent years (for example, see *Arctic*, Vol. 35, No. 1). Nevertheless, Boyd's main point is well taken: Gaston and Nettleship are to be commended for their rigorous scientific approach.

The authors made thorough use of most relevant literature describing similar research in other parts of the world, with special attention given, for obvious reasons, to investigations conducted in the Atlantic. But I was disappointed at the lack of consideration given literature that has been available for several years on the biology of the Thick-billed Murre in Alaska (see Searing, 1977; Springer and Roseneau, 1977, 1978; Springer *et al.*, 1979; Murphy *et al.*, 1980.)

With these few shortcomings, I strongly recommend this book to all serious students of ecology, and especially to those interested in seabirds.

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NORTHERN NOMADIC HUNTER-GATHERERS: A HUMANISTIC APPROACH. By DAVID RICHES. London and New York: Academic Press, 1982. 225 p. + bib., index. US\$24.50.

At the outset Riches outlines his theoretical orientation, contrasting what he calls the "humanistic" approach which he proposes to follow, with the "scientific" which is presented as that used by most northern scholars. A disclaimer is made of any attempt at ethnographic completeness, together with a denial of the value of native mythological and cosmological knowledge, and an admission of the extinct nature of most of the societies considered. We are left with an approach that is based on what plausibly must have been native conceptions of environment and their societies together with assumed decision-making processes which shaped their societies. Given the highly subjective and speculative nature of this approach, I cannot see that the terms humanistic and emic (which are used synonymously) are appropriate.

Stripped of these questionable epithets, Riches' method involves examination of statements about northern hunters on the basis of some premises which are built from a preliminary examination of ethnography. In short, he seems to be making a case for the deductive approach as an alternative to the largely inductive stance of most scholars of the North.

The premises which he evolves are overwhelmingly ecological in nature, as the author admits in his final chapter. However, he cautions that he is departing from the "use of the language of scientific ecology" as conventional ecological studies "are plainly of no explanatory relevance in this study, since they are quite outside... Eskimo and Indian perceptions of the arctic and subarctic environment." I do not feel that he can adequately represent Inuit and Indian perceptions without making greater use than he does of the ethnography which attempts to portray such perceptions.

In the last analysis the reader is left to judge whether the interpretations of previous studies of northern hunters, based largely on empirical data but involving as well some speculations, present more cogent arguments than those of Riches, which are more intuitive but whose validity must ultimately rest in the ethnography. I believe that while the informed and objective reader will concede that at times Riches does offer pithy criticisms, for the most part his interpretations will not achieve greater acceptance than those given previously.

I want to devote the remainder of the review to what I consider to be some of the major problems of the volume, realizing that because of the great range of questions considered I can touch on only the most obvious faults.

In the second chapter the author addresses himself to the question of determinants of group size among northern hunters. His awarding primacy to ecological determinants seems to be based on our ability to objectify them more easily than the more elusive social factors, but this quality does not justify assigning ecological factors primacy and disallowing efficacy for social factors.

As an ethnographer of the group in question I was shocked to find Riches using the Iglulik Eskimo as "the exemplar Eskimo society" when I have stressed their aberration. I am also uncomfortable about his using the same group as the type case for Eskimo marriage practices in contrast to the cousin-

marriage systems of the Subarctic. Published accounts of Eskimo exogamic-endogamic ideals and practices are simply too few and too incomplete to allow setting up such a dichotomy as he does. Also in the third chapter, his argument for social-organization differences between Copper and Netsilik being based on different levels of subsistence remains unconvincing to me.

In the fourth chapter Riches presents a new scheme of types of groupings which pose some interesting possibilities. However, when he uses ethnographic examples to illustrate his types he is not always convincing. I am thinking in particular of his identification of the Inuit-*miut* designation with his "locational band". This identification ignores the analyses of Stefansson, Jenness, Birket-Smith and Burch who have pointed out the elusiveness of, and especially the relativity of, the *-miut* postbase as applied to actual groupings of people. In addition to failing to refer to these authors in that context, omission of mention of other authors seems inexcusable. How can one discuss the problems of the band or of motives for aggregations in the Subarctic, as does Riches, without citing the relevant works of Slobodin and of J.G.E. Smith? How can one claim to represent the emic approach to subarctic ethnology when the writings of Hallowell and Preston (to give only two appropriate names) are not mentioned?

In Chapter Five Riches concludes that "hunter-gatherer leadership is in fact exercised rather less often in respect of matters of production" than one might expect, yet his analysis of Inuit leadership rests almost entirely on premises related to production. His out-of-hand rejection of the importance of kinship factors related to leadership prevents him from exploring the subtle interactions that exist between the ideal and the actual, the nominal and the operational apparent in several Inuit societies.

Those ethnologists who specialize in the Subarctic are better qualified than I to comment on Chapter Six, where the question of family hunting territories is examined. In the seventh chapter attempts to analyze problems of contact-caused changes are particularly inchoate in the confusion of time levels and in the attempt to solve too many problems in too short a space. Riches' struggles with the unfortunate concept of materialism are not successful and his speculations regarding the probable changes which occurred in fifteenth- and sixteenth-century Netsilik institutions fall well outside the realm of historical conjecture that will be acceptable to either social anthropologists or ethnologists.

If his refutation of Sahlins's concept of the original affluent society in the final chapter is addressed to students of northern hunters, he is preaching to the converted, for this notion has met with wide-scale rejection beginning with the 1966 Man The Hunter Conference where Sahlins rather facetiously introduced it.

I find the greatest difficulty of this work to be its expansiveness. Too many problems are tackled, and the burden of both arctic and subarctic hunters is too great a weight to shoulder. The book is in fact an attempt at a *tour de force* of northern hunters as well as of a number of generalized hunter-gatherer problems. Had Riches limited the range of these problems and narrowed the scope of societies considered, and in doing so more adequately represented scholars whose works are relevant to the discussions, and taken into account more fully the nuances of their arguments as they differed or agreed with his own, he might have made a stronger case for the deductive approach and achieved a significant contribution to northern studies.

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AN EXAMINATION OF PREHISTORIC COPPER TECHNOLOGY AND COPPER SOURCES IN WESTERN ARCTIC AND SUBARCTIC NORTH AMERICA. By U.M. FRANKLIN, E. BADONE, R. GOTTHARDT and B. YORGA. Ottawa: National Museums of Canada, 1981. (National Museum of Man Mercury Series, Archaeological Survey of Canada Paper no. 101). 158 p. incl. bib., Mercury Series bib. No price indicated.

This important monograph summarizes the study of the technology, typology and distribution of 342 native copper artifacts from Canadian Eskimo and Athapaskan ethnographic and archaeological collections, with supplementary observations on several Alaskan Athapaskan archaeological collections. A uniform copper technology crosscut ethnic and temporal boundaries and produced finished artifacts which were all quite small. It was based on the folding of small sheets of native copper and the consolidation of these sheets by hammering into larger artifacts in a process clearly involving annealing and/or hot working.