

Integrating Local Ecological Knowledge into Fisheries Planning and Management: Another Context for Knowledge Management Research?

Abstract: An integrative review of 121 recent studies on collecting and utilising local ecological knowledge (LEK) for fisheries science and management suggests that insufficient attention is given either to conceptualising LEK or to the critical issue of how LEK is defined. Elements from knowledge management guided the analysis.

Résumé : Une revue intégrant 121 études récentes traitant de la collecte et l'utilisation du savoir écologique local pour la science et la gestion du domaine de la pêche suggère que ce domaine est négligé, particulièrement en ce qui concerne la conceptualisation du savoir écologique local ou encore la question fondamentale à savoir comment ce savoir est défini. Des éléments de la gestion des connaissances ont guidé cette analyse.

1. Introduction

Over the past twenty years, increasing attention has been paid to the potential and real benefits regarding the use of local ecological knowledge (LEK) in fisheries science and management (Neis & Felt, 2000). Formerly concerned primarily with biological conservation and resource allocation, one recent trend in fisheries management has been devoted to integrating the fishing and ecosystem knowledge of local fishermen into research and/or management planning and decision-making. As a result, a definable body of research has been published on these efforts.

This body of research covers a vast range of subject fisheries, from the highly industrialized in the North Atlantic to the artisanal in the South Pacific. Within these studies questions remain about how best to gather local ecological knowledge and fully integrate it into fisheries science and management (McGoodwin, Neis & Felt, 2000). Methodological concerns have been raised regarding the disciplinary boundaries between social scientists, as the researchers most interested in the knowledge of fishermen, and natural scientists, who are responsible for fisheries science and management (McGoodwin, Neis & Felt, 2000). The diversity of methods (Neis & Felt, 2000) and the lack of systematic approaches (Davis & Wagner, 2003) used to gather LEK, are also considered to contribute to the lack of acceptance for integrating LEK by fisheries scientists and managers.

Local ecological knowledge has been presented as a panacea for fisheries management in troubled times (Neis & Felt, 2000). With all the benefits LEK is claimed to provide for fisheries science and management it would be expected that a full understanding of the nature of LEK, its attributes and characteristics, would also be important to consider in order to encourage greater acceptance for its integration into the knowledge base for fisheries science or the practise of fisheries management. In order to achieve the stated purposes and potentials of LEK research, researchers need to become more attentive to

discussing and reporting on the characteristics of LEK and more diligent in defining and conceptualising the nature of the knowledge system under investigation.

A parallel interest in the benefits of practitioner knowledge has been a driving force in the development of the field of knowledge management. The elements of knowledge management could offer some guidance for better defining and characterising local ecological knowledge in order to improve its acceptance into fisheries science and management. Thus, criteria developed from knowledge management have been used to analyse the body of research in question. The purpose of this paper is to investigate what appears to be a problematic aspect of LEK research documentation, the lack of attention to the nature of the knowledge it purports to be collecting. An understanding of the nature of LEK has implications for both the method of collection and of integration. Complete definitions and descriptions clearly demarcate exactly what will be collected and integrated. These additions would not only improve the quality of the research but also ensure a greater acceptance of LEK into science and management.

2. Rationale

Although knowledge management, like fisheries management, covers a vast area of practice and study, there is general agreement that knowledge management is an approach to organisational management that includes certain basic elements. These elements are: recognition of the critical role of knowledge in furthering organisational goals, an effort to develop some conceptualization of the knowledge for that particular context, utilisation of at least one of the basic quartet of knowledge management processes, and the belief that the organisation will derive some benefit from the knowledge management approach. There is also an understanding that technology will further any or all of the knowledge management processes.

Agreement on the importance of the role of knowledge, that it is the centre of the knowledge management approach, is clear. Knowledge has been referred to as a significant asset or a strategic resource (Alavi & Leidner, 2001; Dalkir, 2005), and there is a recognition that knowledge even from unexpected sources has the potential to be an organisational asset.

As a key factor for organisational success, knowledge, if managed properly, has the likelihood of providing a number of benefits to an organisation. McAdam and McCreedy (2000, 156) point out, "The benefits claimed by organisations, as derived from applying knowledge management, are many and relate to most areas of organisational performance and employee emancipation (e.g., increased customer satisfaction and increased employee empowerment)." Also, among these benefits is the creation of knowledge repositories providing access to best practices and to the organisations' extended knowledge base (Alavi & Leidner, 2001).

Conceptualisations of knowledge are another central feature to the appropriate practise of knowledge management (McAdam & McCreedy, 2000; McInerney, 2002). How an organisation thinks about knowledge can influence; the choice of the knowledge management strategy, the enabling role of information technology, and the knowledge transfer process (Alavi & Leidner, 2001).

Most conceptualisations include a discussion of knowledge as part of a hierarchy that includes data, information and knowledge (Dalkir, 2005; McInerney, 2002). Others have

looked to different ways to conceptualise knowledge through the development of taxonomies, typologies, or dimensions. The most commonly discussed dimension has been that of tacit and explicit, which is regularly related back to work done by Michael Polanyi in the 1960s and Ikujiro Nonaka in the 1990s (Alavi & Leidner, 2001).

One area of particularly animated discussion in the knowledge management literature is the cognitive dimension. Is knowledge a 'state of mind' that enables learning and application, a 'skill' or capability to use and interpret, or an 'object' to be stored and manipulated (Alavi & Leidner, 2001; McAdam & McCreedy, 2000). Other categories, typologies, or dimensions of knowledge also exist. As McAdam and McCreedy (2000, 155) note, "... the taxonomy of knowledge management is extremely broad." Alavi and Leidner (2001) point out, no matter how knowledge may be classified, perhaps the most important dimension is the pragmatic dimension, which is defined as that knowledge an organisation finds useful. In any case, "A variety of knowledge approaches and systems needs to be employed in organizations to effectively deal with the diversity of knowledge types and attributes" (Alavi & Leidner, 2001, 131).

Consensus on the knowledge dimensions and attributes does not seem to exist, although there is definite agreement that some sort of conceptualisation of knowledge is necessary in order to practise knowledge management. There is general agreement in the literature that problems will occur if no attempts are made to conceptualise the knowledge that needs to be managed.

The final area of general consensus in the practise of knowledge management is agreement on the basic processes involved. These have been identified as creation, storage/retrieval, transfer, and application. Each includes several sub-processes (Alavi & Leidner, 2001).

The first process, knowledge creation or generation can include knowledge acquisition, knowledge capture, knowledge identification, and location (Dalkir, 2005). The storage process can include codification, making knowledge explicit and accessible (Dalkir, 2005), and retrieval (Alavi & Leidner, 2001). The transfer process includes updating and sharing knowledge. The transfer process has also been referred to as knowledge distribution, dissemination, diffusion, or transformation (Alavi & Leidner, 2001).

There are many ways in which an organisation can utilize knowledge, such as including it in research and development, planning, and decision-making. This process is often referred to as knowledge application or use (Dalkir, 2005). Although the terminology may vary, there is clear consensus that the knowledge management approach includes at least one, and preferably all, of the four basic processes identified here: to create or acquire knowledge, to find a way to store it and make it accessible, to transfer it throughout the organisation, and to apply this knowledge.

These elements of knowledge management will guide the analysis of the fisheries management body of research. This body of research purports to investigate a type of knowledge. How much attention has been directed to the nature of the knowledge being investigated? How well are the substance and character of this knowledge considered and reported on? In other words, how completely do these studies report on the role of LEK in science and management, the benefits due to the collection and utilisation of LEK, the definitions and conceptualisations of LEK, and the processes of LEK generation, transfer and use?

3. Methods

To address the concerns about the fisheries body of research posed earlier, this study will take advantage of the strengths of the integrative review method. This type of review allows for the inclusion of research that uses a broad range of data collection methods, as well as data from more theoretically oriented work. For this paper, the integrative review will examine the fisheries management literature for inclusion of elements regarding knowledge that were derived from the field of knowledge management.

In an integrative review the search process, or information retrieval stage, affects the rigour of the study (Whittemore & Knafl, 2005). To identify research devoted to the gathering of the LEK of fishermen and integrating that knowledge into fisheries management, three types of search methods were used.

First, it was determined, for an emerging and interdisciplinary topic such as this, only research that had been peer-reviewed or had gone through a book editorial process would be included. The peer review process is critical to establishing a reliable body of research and knowledge and, like the book editing process, raises confidence in levels of accuracy and in research standards. Although, as in most areas of scientific research, a huge number of conference papers have been published on this topic, they were excluded, as were all articles from non-peer-reviewed journals. Language was another criteria used to limit the number of articles retrieved.

3.1 Data collection

Due to the interdisciplinary nature of the topic, three specialized databases were searched in an attempt to find all relevant research. These were; *Aquatic Sciences and Fisheries Abstracts* (AFSA), *Sociological Abstracts*, and *Anthropology Plus*. Several searches were performed in each database using various combinations of thesaurus descriptors and keywords to retrieve citations and abstracts. Whittemore and Knafl (2005) point out that, although database searching is efficient, it can also be problematic due to inconsistent search terminology and other indexing issues.

ASFA does not have descriptors for “local ecological knowledge,” “traditional ecological knowledge,” “indigenous knowledge,” “fishers’ ecological knowledge,” or any other approximations for this category of knowledge. Available descriptors are; “fishermen,” “fisheries management,” “fishery management,” and “sociological aspects.” Four searches were performed in order to retrieve the greatest number of articles on the topic and to overcome some of the difficulties noted by Whittemore and Knafl (2005).

Search #1 combined keywords (knowledge or information) in the title or abstract with descriptors “fishery management” and “sociological aspects.” Search #2 combined keywords (local or traditional or indigenous) and (knowledge or information) in the title or abstract with descriptors “fisheries management” or “fishery management.” Search #3 combined keywords (local or traditional or indigenous) and (knowledge or information) and (fishermen and management) in the title or abstract. Search #4 combined keywords (local or traditional or indigenous) and (knowledge or information) in the title or abstract and the descriptor “fishermen.”

Each of these searches was characterized by very high recall and quite low relevance. There was considerable overlap in relevant retrievals, but each search also contributed unique results. In each search, there were a large number of non-peer reviewed articles and conference proceedings. Also, although the language limiter was used, searches

retrieved citations that had been translated into English, although the actual article was in a different language.

ASFA Searches	Journal citations retrieved	Relevant journal articles	Duplicates from other searches	Book citations retrieved	Relevant book chapters	Duplicates from other searches	Total
#1	60	12	0	47	0	0	12
#2	149	20	8	86	1	0	13
#3	37	10	6	30	1	1	4
#4	57	11	9	2	1	1	2

Table 1: AFSA database search results

Search #1 retrieved 60 peer-reviewed journal articles, of which 12 were relevant. Search #2 retrieved 149 peer-reviewed journal articles and 86 book chapters. Twenty of the journal articles were relevant, but 8 were duplicates from the first search. One book chapter was relevant and it was duplicated in the subsequent two searches. Search #3 retrieved 37 journal articles; 10 were relevant, but 6 were duplicates from previous searches. Search #4 retrieved 57 journal articles. Eleven were relevant, but 9 of those were duplicates.

Sociological Abstracts covers material in both sociology and anthropology. It did have thesaurus descriptors for “local knowledge,” “fishermen,” and “fishery.” Three searches were performed using combinations of keywords and descriptors. Search #1 combined keywords (local or traditional or indigenous) and (knowledge or information) and (fishery or fisheries) in the title or abstract. Fifty-three journal articles and one book chapter were retrieved, of which 4 journal articles and 1 book chapter were found to be relevant. Search #2 combined descriptors “local knowledge” and “fisher*.” Eight journal articles and one book chapter were retrieved. Three of the articles and the book chapter were determined to be relevant, but they were all duplicates of the results of the previous search. Search #3 combined keywords (local or traditional or indigenous) and (knowledge or information) and (fishers or fishermen) in the title or abstract. Forty-nine journal articles and 1 book chapter were retrieved. Three out of the 49 articles and the book chapter were considered to be relevant, but they also were all duplicates. So, a grand total of 4 relevant articles and 1 book chapter citations were retrieved from this database.

Soc Abstracts Searches	Journal citations retrieved	Relevant journal articles	Duplicates from other searches	Book citations retrieved	Relevant book chapters	Duplicates from other searches	Total
#1	53	4	0	1	1	0	5
#2	8	3	3	1	1	1	0
#3	49	3	3	1	1	1	0

Table 2: *Sociological Abstracts* search results

Several combinations of keyword and subject searching were performed in the *Anthropology Plus* database. However, all the searches done in this database resulted in the retrieval of one relevant article citation that was duplicated in one of the searches in the ASFA database.

The database searches resulted in a target population of 36 journal articles and book chapters. Since the object of an integrative review is to identify and retrieve the

maximum number of primary research articles, at least two or three search strategies should be used (Whittemore & Knafel, 2005). Therefore, the next stage in the process was to search the bibliographic references in each of these 36 articles for citations to other relevant articles or edited book chapters. This search provided an additional 46 studies.

Next, a citation search was performed on the original 36 studies and the 46 additional studies. This was done using the *Web of Science* database and returned citations and abstracts to 27 more studies of interest. These two types of searches, examining bibliographic references and citation searching were iterated several more times resulting in an additional 13 relevant studies. The final dataset included 121 studies on the topic of the integration of local ecological knowledge into fisheries science and management. The majority of these were empirical, or in the case of book chapters, based on empirical studies, while 15 were more theoretical in nature.

3.2 Data analysis

Using the criteria derived from knowledge management, each of the articles was analysed for treatment of the following information.

- Was the role of local ecological knowledge in fisheries management clearly noted?
- Did the study describe any benefits that fisheries science and/or management might accrue through the incorporation of LEK?
- Did the study attempt to conceptualise local ecological knowledge by providing a definition, any characteristics, categories, attributes, or otherwise discuss how LEK is acquired?
- Did the study discuss any of the following knowledge management processes: creation, storage/retrieval, transfer, and application?

4. Findings

4.1 The role of local ecological knowledge

Although expressed in a wide variety of ways, every study, whether empirical or theoretical, made some mention of the role local ecological knowledge does or could play in the practise of fisheries science and management. A sample of the most widely used comments about the role of LEK follows. There are no other sources or few other sources for this knowledge. Local ecological knowledge is an essential or valuable resource for fisheries science and management. It is needed or serves a critical need. It is a requirement to use LEK and it is cost-effective. It is a legitimising source for management. It fills a gap in the scientific or management knowledge base. It is a fundamental and relevant building block for knowledge about fisheries throughout the world.

4.2 Benefits

A number of benefits derived from the gathering and use of LEK were discussed. These generally fell into either the category of adding to the knowledge base for fisheries science and/or management or helping to improve participation in scientific research or various management activities. In some cases the benefits were proposed rather than actually documented. There were three exceptions to these broad categories of benefits. In one study, local ecological knowledge was used as supportive evidence in a lawsuit. And, in two other studies, LEK was documented as clearly *not* being used by the fisheries management.

Benefit	# of studies with process
Adding to KB	104
Aiding participation	72
Both	57

Table 3: LEK benefits

4.3 Conceptualisations of knowledge

Considerable variation was evident in the results of the analysis. To begin with, there was a very wide variety in terms used to express basically the same knowledge system. The terms “local ecological knowledge” or “local knowledge” or “local fishing knowledge” were used most frequently. This was followed in number of uses by the terms “traditional ecological knowledge” or “traditional knowledge.” The terms “fishers’ knowledge” or “fishermen’s knowledge” or “fishers’ ecological knowledge” or “fishermen’s ecological knowledge” were also used quite often.

“Indigenous knowledge” or “indigenous ecological knowledge” were used, as well as “practitioner’s knowledge” or “practical knowledge” or “expert knowledge” or “professional knowledge.” Even the terms “folklore” or “lore” or “folk knowledge” or “anecdotal knowledge” were used. Finally, a couple of studies even used the terms “ethnoecology” and “ethnoichthyology,” although this was rare. Many researchers used several of the above terms in one article, contributing to the confusion over what is the nature of any of these “knowledges.”

Terms
Anecdotal information; Anecdotal evidence; Anecdotes; Insights: Anecdotal knowledge
Fishers knowledge; Fishermen’s knowledge; Fishers ecological knowledge; Fishermen’s ecological knowledge
Folklore; Lore; Folk knowledge
Indigenous knowledge; Indigenous ecological knowledge
Local knowledge; Local ecological knowledge; Local fishing knowledge
Practitioner’s knowledge; Practical knowledge; Expert knowledge; Professional knowledge
Traditional knowledge; Traditional ecological knowledge

Table 4: Variation in terms used

Whole or partial definitions for the knowledge system of interest were provided by 23 out of the dataset of 121 articles and book chapters. Thus only 28% of the studies made an attempt to define the knowledge being collected and/or used, and these definitions varied considerably in detail. Every article did describe at least one, and often many more,

category of LEK, but the majority left any discussion or conceptualisation of this type of knowledge out of the study. Thirty-eight, or 46%, of the articles and book chapters made attempts to mention or discuss salient characteristics or attributes of local ecological knowledge. While, only 34, or 41% of the total, gave any indication of how the holders of LEK might have come to have this knowledge. Finally, only 19, or 23%, of the literature on the integration of local ecological knowledge into the science and management of fisheries attempted a complete conceptualisation of the knowledge system being studied.

Conceptualisations of the knowledge system	Social Science Researcher(s)	Natural Science Researcher(s)	Interdisciplinary Team Research	Total	% of dataset
Definitions	8	10	5	23	28%
Categories	46	48	27	121	100%
Characteristics	25	9	4	38	46%
How acquired	17	11	6	34	41%
Conceptualisation	13	6	0	19	23%

Table 5: Conceptualizations of the knowledge system

4.4 Knowledge management processes

The two processes of interest to the majority of these studies were knowledge transfer and/or the utilisation of LEK. Knowledge creation or generation was considered in the previous section on knowledge conceptualisation. Specific mention was made of the diversity of methods for both collecting and for utilising local ecological knowledge in various aspects of fisheries science and management. Collecting consisted of accessing and documenting various categories of LEK. The primary methods used were semi-structured interviews, questionnaire surveys, participant observation, and participatory rural appraisal.

While utilising included such activities as: using LEK to document the scarcity or actual disappearance of fish species; documenting how LEK has been integrated into co-management activities; using LEK to identify areas to be zoned Marine Protected Areas or Essential Fish Habitats; describing how LEK was used to develop hypotheses for further research and to identify areas in which to conduct research; and making LEK available for assessment and management purposes.

Process	# of studies with process
Collecting	104
Utilising	84
Both	62

Table 6: Knowledge management processes

5. Discussion

The findings clearly show that the body of research from fisheries research and management can be analysed by using the elements of knowledge management. These elements provide specific categories with which to evaluate the degree of attention given to the role of local ecological knowledge and benefits regarding its collection and use. The elements from knowledge management also make it possible to discern how completely the characteristics, definitions, and conceptualisations of local ecological knowledge have been reported by the researchers. Indeed, issues regarding the

integration of local ecological knowledge into fisheries science and management parallel many of the issues on concern in the field of knowledge management.

5.1 The role of local ecological knowledge

The role of scientific knowledge in fisheries science and management has been well established. Scientific knowledge for fisheries management consists of research-based knowledge on fish biology, the ecosystem inhabited by the fish, and assessments on how the fish stock has been exploited. However, the role of local ecological knowledge for fisheries management is still emerging. Most of these studies take an optimistic view as they point out how critical aspects of LEK are to the practice of both research and management. That the specific role is still under discussion is evident in the number of articles that take an advocacy stance. “Local traditional knowledge and local norms could therefore prove to be an important, or even a necessary supplement to scientific knowledge for the establishment of ecologically sound and socially just management of common property resources” (Eythorsson, 1993, 140). “Several reasons have been offered for the inclusion of fishers in resource management; an important one has been that harvesters possess extensive knowledge of the species pursued and the wider marine environment, knowledge that is useful for sound management” (Felt, 1994, 251). “Much of this knowledge is available nowhere else, is readily testable, and is of great value today for marine resource management” (Johannes, 2003, 111). Thus, the role for local ecological knowledge has been shown to have a significant importance for fisheries science and management which parallels the view towards the role of knowledge in the field of knowledge management: knowledge is the critical resource.

5.2 Benefits

The role of LEK is also closely tied to the benefits to be derived from collecting and using this knowledge. A summary of the potential benefits follows, although not all the studies included actual implementation. Management could be improved by enlarging the knowledge base for planning and decision-making (Eythorsson, 1993; Johannes, Freeman, & Hamilton, 2000; Neis & Felt, 2000; Ruddle, 1994), by increasing participation in research and management activities (Davis & Wagner, 2003; Ruddle, 1994) with resulting reductions in scientific and management costs, reductions in conflict among stakeholders, managers and scientists, the ability to circumvent the “tragedy of the commons (McGoodwin, Neis, & Felt, 2000), greater concern for social justice (Eythorsson, 1993), increased legitimacy for management (Degnbol, 2005), and hence overall sustainability for fisheries (Eythorsson, 1993). Studies of local, practitioner knowledge could also provide hypotheses and direction for future scientific investigations (Johannes, 2003; Ruddle, 1994). These benefits also parallel those claimed by knowledge management, in particular enhancing the knowledge base for an organisation and empowering the holders of practitioner knowledge.

5.3 Conceptualisations of knowledge

Conceptualisations of knowledge are the most problematic area in this body of research, which may influence acceptance by scientists and managers. There is clearly no consensus on what is the most appropriate term, accentuating the need to provide definitions. If the terms are contested, this should be made clear. If the terms are synonymous, this also should be made clear. Although a few studies go to considerable length to compare terms and clearly state why a specific term was used in that particular study, this is the exception rather than the rule. Not only does this lack of consensus cause confusion, it certainly affects retrieval, and may also impact acceptance. It is possible that certain terms may be more acceptable to managers and scientists than

others. And, it is also possible that certain terms may be more acceptable to the holders of this knowledge than other terms.

Another example of the lack of attention paid by the study researchers to this knowledge system is the absence of definitions, descriptions or characterisations. When such a variety of terms is used for this system of knowledge, a definition, or a description at the very least, is essential to let the reader know the parameters and contents of the knowledge system. This lack also contributes to confusion, and may affect acceptance of the research by fisheries managers and scientists. Indeed, although every study mentioned at least one category of local ecological knowledge, at best only 46% of the studies attempted to describe the characteristics of that knowledge.

The body of research did reveal some discussions regarding conceptualisations of local ecological knowledge. For example, Butler (2006, 107) argues “that a critical recognition of the impacts of colonialism on Indigenous knowledges is crucial if there is to be any successful integration into resource management.” Drew (2005, 1287) emphasises the need to examine the “underlying intellectual components” of LEK, in order to draw the greatest benefits from collecting and using it for scientific research. Felt (1994) discovered significant variation in the LEK he investigated, but pointed out that when the construction of LEK is understood, it is much more difficult to discount it. Finally, Zanetell and Knuth (2002, 807) make a compelling argument for understanding the epistemology of differing knowledge systems in order to create a “synergistic knowledge partnership that is a wellspring for appropriate, adaptive, and innovative natural resources management.” These are only a few of the points made in favour of documenting the knowledge system under investigation more completely and effectively.

An interesting final note about the problematic aspect of defining and conceptualising local ecological knowledge, Felt & Neis (2000) indicated interest in knowledge systems was usually expressed by social scientists. These results show that natural scientists are almost as likely to include important information about the knowledge system under investigation as social scientists were. The disciplinary boundaries are not as clear-cut as was expected.

5.4 Knowledge management processes

Processes involved in the incorporation of LEK into fisheries science and management mirror those of knowledge management as do some of the concerns raised by the authors in a few of these studies. Maurstad (2002) introduced some of the dilemmas raised in the collection and utilisation of local ecological knowledge. First, is the ethical dilemma of revealing local, highly contextualised, information. Second, the local knowledge system does not share the same objectives as fisheries science and management. And, third, revealing this knowledge may actually effect some changes in the knowledge system. Indeed, concerns about ‘whose’ knowledge and who has the ‘rights’ to that knowledge were mentioned in a few of the studies. However, the concern mentioned most often was how to actually integrate knowledge gathered from one system of knowledge into another. This appeared to be viewed as more of a technical difficulty than an ethical one.

6. Conclusion

From the results of this study, it is apparent that the emerging body of research in fisheries management that is devoted to the incorporation of local ecological knowledge into fisheries management could be improved upon by paying more attention to the

elements of knowledge management. It would appear that there are many parallels in the two fields of study. This analysis shows that many researchers, from both disciplinary traditions, are not reporting critical details about the nature of the knowledge being documented, collected for use, and/or integrated into fisheries science and management. As a result it is difficult to cumulate the discoveries made and the knowledge documented, which is particularly problematic in this interdisciplinary area of research. Lack of common terminology, lack of definitions, lack of conceptualisations about the nature of local ecological knowledge certainly contributes to confusion surrounding this specialised knowledge, and possibly also to its lack of acceptance.

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