Identifying Culture as a Threshold of Shared Knowledge
A Consensus Analysis Method

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ABSTRACT This methodological article takes Fredrik Barth's anthropology of knowledge as a point of departure and identifies culture as knowledge shared above a specified threshold. The method samples domains of knowledge in organizational settings and asks diverse members of the organization to list the elements of the domains. After compiling the elements, the informants are re-interviewed, along with a wider sample, to prioritize the elements according to a criterion of importance. A consensus analysis of the informants' data matrix reveals the degree to which the knowledge is shared and constitutes a culture, or is less shared and constitutes a proto-culture, subculture, counter-culture, or a fragmented and idiosyncratic domain. Three case studies are used as illustrations. Widely adaptable in international management research for exploring organizational cultures and subcultures, inter-organizational fields, and international ventures, the consensus analysis method articulates with the three major theoretical perspectives on culture, the integration, differentiation, and fragmentation perspectives.

KEY WORDS • consensus analysis • cultural knowledge • cultural variation • ethnographic methods • multiple perspectives

The ‘classical’ culture concept has come under concerted attack in the last two decades for a variety of supposed weaknesses (e.g. Ajiferuke and Boddewyn, 1970; Child, 1981; Abu-Lughod, 1991; Rodseth, 1998; Lenartowicz and Roth, 1999; Barth, 2001; Boyagiciller et al., 2004). According to this critique, the concept promotes such errors as essentializing, homogenizing, and ‘othering’ the object of study, while encouraging the visualization of culture as a bounded, single-site, static entity. Some writers urge the reformulation of the concept; others its abandonment (Liep and Olwig, 1994; Caulkins, 2001). Barth urges us to abandon the concept of culture in order to focus on knowledge. Knowledge, according to Barth’s useful definition (2002: 1) is ‘what a person employs to
interpret and act on the world’, including ‘feeling (attitudes) as well as information, embodied skills as well as verbal taxonomies and concepts: all the ways of understanding that we use to make up our experienced, grasped reality’. I depart from Barth by identifying ‘culture’ as knowledge that is shared above a minimum threshold within a population. Below that threshold of sharing may be other important patterns of diversity that our method allows us to discover. Knowledge can also be idiosyncratic, randomly distributed, shared within a subgroup, or contested by two or more different groups that ‘know’ different things.

The purpose of this article is to suggest and illustrate a methodology for identifying culture as shared knowledge. This methodology addresses some of the key issues for cross cultural management, since knowledge is distributed in complex ways in cross cultural groups, organizations, local or global social networks, multinational firms, and interorganizational networks. The construction and transmission of knowledge (and the threshold phenomenon, culture) occurs generally through social discourse and communication, whether written, oral, or, increasingly, digital or electronic. As Barth suggests, this complexity presents three important questions:

The most obtrusive questions under such circumstances [of large populations, diverse, and multisided traditions] seem to be three: the nature of the subdivisions in the total body of what people know; that is, the separate branches of knowledge that coexist in the population; the degree of standardization and sharing of knowledge that is produced within each branch, and the form and degree of ideational precision, coherence, and generality that is developed and maintained in each branch. (Barth, 2002: 6)

In this article I develop a method for addressing Barth’s three inquiries, using methods associated with cognitive anthropology. The first task is identifying domains or categories of knowledge, using “freelisting” (Bernard, 1994; Borgatti, 1994) to establish the elements or context of the domain. The second is identifying the degree of sharing of knowledge/culture using consensus analysis (Romney et al., 1986; Handwerker, 2001), and, third, identifying the coherence of knowledge by examining the way that informants in organizations and business fields prioritize the elements of the domains of knowledge/culture (Caulkins, 1998).

This analytic framework will be illustrated by case studies from business environments in Scotland based on multiple interviews and participant observation. For simplicity, each case study focuses on one or two domains, although we recognize that cultures consist of many linked domains of knowledge.

Method

Domains of Knowledge

By ‘domain’ I mean a subdivision or category (Barth, 2002) within the knowledge or meaning system of the target population. All knowledge systems include taxonomies with cover terms for the categories and elements within each category. These domains are constructed in discourse between members of an organization, network, or field and are discoverable through participant observation, interviewing, or content analysis of documents. If, in a conversation, a member of a firm mentions their ‘organizational goals’ we can infer that this is a domain in the local knowledge system, containing multiple elements. When we ask members of a firm to talk about the domain of ‘organizational goals’ it should be a sensible question to them. They should be able to enumerate, or ‘freelist’, the elements of the domain. These might include “becoming the premier software firm in our field”, “acquiring additional firms to strengthen our international business”, and “increasing our market share in Africa” or ‘cutting back on product diversity and concentrating on our core business’.
Domains and their elements are ‘emic’, that is, part of the local knowledge system, rather than analytic categories imposed by the researcher. They may be sensible categories for the researcher as well. The best way to discover domains within the local knowledge or meaning system is to listen to members of a group talk to each other about the business, using their ‘insider’ language. That allows the researcher to hear and identify domains that members of the target population consider important. Alternatively, the researcher can interview members of a firm and ask them to talk about the important features of the firm or about the topics of interest to the researcher, for example international trade. The point, of course, is that the domain of knowledge should be important to the target population as well as to the researcher and the more familiar the researcher is with the target population, through participant observation or other forms of fieldwork, the less likely it is that the informant will have to translate the information out of his or her own system into an observer-analytic system. Thus the method adopted here is an inductive approach to identifying the knowledge/culture of a target population. This contrasts with the use of observer-analytic scales of concepts such as individualism/collectivism (Schwartz, 1994) or power relations (Hofstede, 1980) that are assumed to be important for theoretical reasons.

By focusing research on domains that are important in the target knowledge system, we minimize the possibility that we will identify a real but relatively trivial part of the culture. We recognize that knowledge systems (and cultures) are potentially vast arrays of domains, and any study is likely to tap into only a small percentage of the important domains that make up that system. We should attempt, therefore, to identify important, central, over-arching, or organizing domains. Participant observation or extended interviews in organizational settings will provide the best indication of the centrality of the domains for members of the group or firm. Two domains that will almost certainly come up in any set of interviews (see examples that follow) are (1) the services and products produced by the organization and (2) the problems faced by the organization. These domains can provide a way into the knowledge systems for non-profit organizations as well as for corporations and for divisions within firms.

If we interview a sample of employees, asking them to freelist the elements of the domain, we are unlikely to get the same answers from everyone. Knowledge, of course, is distributed. Some people know more about the goals of the organization than others. Some are new to the organization and have yet to learn the culture. Others may have forgotten some of the goals. Some failed to read the memo from head office and don’t know about proposed new goals. In any case, freelisting with a sample of members of a firm is likely to produce an overlapping but not identical list of elements of, for example, the domain of ‘problems facing the firm’. It is best to continue interviewing individuals from different or diverse structural positions in the organization until no new problems are mentioned. The next task is to consolidate this list at the same level of abstraction (not five general problems and 10 highly specific ones) and eliminate any truly idiosyncratic elements (or retain them if there is evidence that these idiosyncratic responses may be a key to innovation within the organization).

**Prioritizing the Elements of the Domain**

Once the freelisting is completed and a consolidated list of elements of the domain is as assembled, the next step is to interview members of the firm to obtain an evaluation of those elements according to some appropriate criterion. Knowledge, after all, includes the evaluation of things; everyone in
the organization knows that some problems are more important than others. Values inform the prioritization. In this step, the researcher re-interviews the former sample of informants (or a larger sample), taking steps to assure diversity in the sample. Each informant is interviewed individually and is presented with a set of note cards, with one element of the domain listed on each. The cards are shuffled before each interview to avoid order bias. After explaining, for example, that the set of cards represents the set of organizational problems identified by members of the firm, the interviewee is asked to sort the cards into three piles according to their importance and then arrange them in a complete hierarchy from most to least important. Alternatively, the elements (problems facing the organization) could be rated on a scale of 1 to 5, but rating has the disadvantage that it can be used to avoid discriminating — by giving all the elements a 4, for example. We have now collected the local knowledge about a domain, the elements within the domain, and the rankings of these elements according to some criterion of importance.

**Identifying a Cultural Threshold of Knowledge**

Next we factor analyze the dataset of, for example, 20 employees (interviewees) by 15 organizational problems (domain elements). Normally, factor analysis is used to discover groups of intercorrelated variables in the data. Contrary to usual practice, in consensus analysis and associated approaches (Romney et al., 1986; Caulkins et al., 2000; Handwerker, 2001), we factor analyze on the units (interviewees) rather than the variables (ranking of problems), using the minimum residuals method, without rotation. This will show the intercorrelations among the sample interviewees and the degree to which their rankings are shared or different. A large first factor shows a high degree of knowledge sharing. We identify ‘culture’ as a threshold of knowledge-sharing in which the eigenvalue of the first factor is at least three times larger than the eigenvalue of the second factor. This three-to-one ratio has been widely accepted in the consensus analysis literature as an appropriate threshold (Romney et al., 1987). Results above this threshold mean that a large proportion of the variance, usually 60 percent or more, is explained by the first factor.

**Below the Cultural Threshold of Shared Knowledge**

Below the cultural threshold we find three other major patterns: (1) weak agreement or ‘proto-cultural’ domains, (2) idiosyncratic or fragmented domains having no real structure, and (3) multicentric domains with overlapping subcultures or non-overlapping counter-cultures. In the case of weak agreement, or proto-culture, the first factor is relatively large, indicated by eigenvalue ratios between the first and second factors ranging between 2.0 and 2.9, rather than above the cultural threshold of 3.0. Typically in cases of proto-culture, variance explained by the first factor ranges between 50 percent and 59 percent. Since we are taking a snapshot in time, we don’t know whether such a domain is experiencing a growing, declining, or unchanging level of agreement. Further interviewing or longitudinal studies can establish the direction of change for these proto-cultural domains.

Idiosyncratic or fragmented domains would have even smaller first factors, with the ratio between the first and second factors below 2.0, indicating little agreement among the informants. Variance explained by the first factor would be below 50 percent for fragmented domains. Over time, idiosyncratic or fragmented domains can become proto-cultural, particularly if there is pressure from the external environment of the organization or division to address or adapt to the issues implied in the domain.

Finally, we might have multiple cultures – subcultures or contesting counter-cultures –
that are discoverable by partitioning the sample (perhaps into those persons loading positively on the first factor and those loading on the second factor), and running the factor analysis on each of the subsamples (Caulkins and Hyatt, 1998, 1999). If the factor analysis of the subsample shows strong first factors at or above the 3:1 threshold, we have identified a smaller culture embedded within the larger sample. International branch offices may constitute a subculture of a firm. Similarly, different divisions within large firms often constitute subcultures, as measured on several key domains, within a firm. Typically, mergers of very different firms produce counter-cultures that take months or years to adapt to each other.

The ability to identify not only cultures, but also proto-cultures, fragmented domains, subcultures and counter-cultures is of central importance for cross cultural management, since it is widely understood that large organizations, multinational corporations, and transnational ventures may create complex and diverse cultural configurations (Martin and Siehl, 1983; Sackmann, 1992). The consensus analysis method described here allows us to identify these patterns.

Content of the Cultural Domain: Collective and Individual Perspectives

The final step in identifying cultures involves not just discovering the pattern of knowledge sharing, as discussed, but also the content of the cultural domain. This is most conveniently done with specialized software, ANTHROPAC 4.0 (Borgatti, 1992). If the factor analysis of the dataset reaches the ‘cultural’ threshold (first factor three times the second factor), the program provides a weighted average of the answers to questions posed in the evaluation of the elements of the domain, in this case, “in this culture, how highly ranked is each of these problems?” The analysis provides, in short, the ‘culturally correct’ answers, showing the way that these problems are understood in that culture or subculture. We can also learn the degree to which each individual’s perspective agrees with the ‘culturally correct’ knowledge. An individual’s knowledge score is indicated by their loading on the first factor. A strong positive loading would indicate that they are highly knowledgeable in the domain and in agreement with the cultural perspective; a low or negative load indicates that they are culturally marginal, counter-cultural, or un-socialized in the culture.

To summarize the argument thus far, knowledge is distributed, but we can identify culture as shared knowledge. We can measure that knowledge most easily by exploring domains, or taxonomic units of knowledge, which contain elements that are differently evaluated by members of a group, organization, or collectivity. If members of the group tend to evaluate the elements in the same way, as revealed by factor analysis, we can say that we have identified a cultural threshold. Less extensive knowledge-sharing, below that threshold, is also important for a variety of reasons. The knowledge could become cultural through consensus-building, or it could become the core of a factional counter-culture. A variety of insights into cultural dynamics become possible once we have identified culture as shared knowledge and established a method for measuring that threshold of sharing.

Case Studies as Illustrations

The three case studies, as indicated in Table 1, include, first, a multi-sited study of eight small-business advisers in Scotland’s ‘Silicon Glen’, second, a heritage site and tourist attraction in central Scotland, and third, a prominent Scottish high technology firm. The case studies are intended to illustrate the method, rather than to introduce new substantive information.
Table 1  Case studies of organizations, fields and domains

<table>
<thead>
<tr>
<th>Organization or field (interviewee sample)</th>
<th>Domain of knowledge (number of elements)</th>
<th>Evaluation of elements according to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Interorganizational field of Scottish small business advisers ($N = 8$)</td>
<td>Forms of small business success ($N = 33$)</td>
<td>Ranking of importance of each form of success</td>
</tr>
<tr>
<td>2  Staff of 'ScotHistory' heritage site ($N = 13$)</td>
<td>(a) Services offered ($N = 20$), (b) challenges facing the organization ($N = 14$)</td>
<td>Ranking of importance of services; challenges</td>
</tr>
<tr>
<td>3  Management of high-tech 'ScotFirm' ($N = 8$)</td>
<td>Important elements of organizational culture ($N = 13$)</td>
<td>Ranking of importance for firm</td>
</tr>
</tbody>
</table>

**Case Study 1: Small Business Advisers and the Domain of Success**

Business advisers are practical interpreters of new ideas in management, production, marketing, personnel, and sales. They dispense information about business problems and opportunities within the local economy. In addition to their role of translating expertise into practice, business advisers also have the task of helping to translate entrepreneurs' goals and ideas into workable business practices. Business advisers have implicit notions of business success and failure that have been built up through years of experience with dozens and sometimes hundreds of firms (Caulkins, 1995, 1998). To what degree is this knowledge really shared among business advisers – do they know the same things about success?

Notions of business success change from one historical period to another, inspired by a dominant metaphor of the era (Scott and Ritchie, 1984). The local industrial structure, local family business traditions, and histories of local success can all be important in shaping local understandings of success and failure. Therefore, to control for the strong possibility that definitions of success may vary according to region, this study focuses on business advisers in one particular locality, 'Silicon Glen' of central Scotland, the region between Glasgow and Edinburgh. We might also expect to find some diversity among business advisers employed by different kinds of organizations that, in Scotland, include local government, academic institutions, and private organizations. In their business-support role, business advisers have become the cultural experts on success and are often called on to judge and diagnose the potential vitality of small firms, from low-tech businesses such as taxi cab companies or specialty market growers to high-tech computer software and hardware businesses that market internationally. Is the knowledge about success shared across these different kinds of organizations, within similar organizations, or not shared at all?

As mentioned, we can imagine the following four possible patterns of knowledge distribution:

1. *Cultural consensus*: Knowledge of business success and failure shared by most
business advisers above the required threshold, regardless of the kind of organization they work for. Constitutes a coherent ‘business culture’ (Hofstede, 1991: 229–30) or at least a ‘business advisers’ culture’.

2 Proto-culture (weak agreement): Some tendency toward agreement, but considerable variability as well. Below the cultural threshold for sharing or agreement.

3 Subcultural or counter-cultural (multi-centric): Less tightly shared, with greatest agreement among advisers in similar institutions, e.g. those employed by academic institutions differ from those working for local government. Knowledge contested by different sets of advisers.

4 Idiosyncratic or fragmented: No agreement on what constitutes business success. Every adviser has a different view.

These four possibilities are really implicit competing hypotheses about the pattern of knowledge sharing. They arise again in each of the case studies and, as we will see, are linked to important theoretical perspectives.

**Interviews and sampling** To gather further information on the domain of success I interviewed a wide variety of advisers. I asked the question ‘Apart from profitability, what kinds of small-business success are there?’ Earlier interviewing demonstrated that ‘profitability’ was universally accepted as the most important form of success, but was often used as a mantra or slogan, repeated as a substitute for thinking more deeply about success. Since it would add no new information and would inflate the consensus of the sample artificially, I omitted it. I tape-recorded each of the interviews, wrote copious notes during the interview, and eliminated conceptual redundancies from the list of elements (see Table 2). The 33 forms of success are indigenous knowledge, not imposed by the outside researcher. They are what business advisers ‘know’ not only from personal experience but also from talking about that experience with others on a daily basis.

The list in Table 2 shows that the advisers did not confine their ideas to narrow technical measures of success. They mentioned not only those more conventional criteria, such as good customer relations, adequacy of financing, and increasing profit margin and sales, but also concerns for regional development, such as using local sources of goods and services and increasing the number of employees.

To assure needed diversity in the sample I selected a theoretically important range of types of business advisers that most entrepreneurs might encounter: (1) those working with community business adviser organizations, often with extensive business experience, (2) those employed by government with political policy interests, and (3) those business trainers who have primarily academic backgrounds. In interviews with the advisers I gave them each a set of note cards, with each form of success printed on a separate card. I asked them to prioritize them according to their importance in the opinion of the adviser. The task was for them to report on their own knowledge, not to speculate on what their clients might think. This process produced complete rank orderings of the set of knowledge elements.

**Consensus analysis** ANTHROPAC (Borgatti, 1992) produced a correlation matrix of the eight business advisers, and then factor analyzed the $8 \times 8$ correlation matrix using the minimum residuals method with no rotation, extracting three factors. The cultural threshold of 3:1 is exceeded (a ratio of 5.143 to 1 between first and second factors) indicating a multi-sited ‘business advisers’ culture’ represented by the first factor, which explains 83.7 percent of the variance for the success rank orderings. As mentioned earlier,
<table>
<thead>
<tr>
<th>Rank</th>
<th>Consensus score</th>
<th>Type of success</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.72</td>
<td>Having a reputation for reliability</td>
</tr>
<tr>
<td>2</td>
<td>3.20</td>
<td>Enjoying running the business</td>
</tr>
<tr>
<td>3</td>
<td>3.34</td>
<td>Having adequate finances for the business</td>
</tr>
<tr>
<td>4</td>
<td>3.39</td>
<td>Customer satisfaction</td>
</tr>
<tr>
<td>5</td>
<td>3.91</td>
<td>Producing high quality goods/services</td>
</tr>
<tr>
<td>6</td>
<td>3.99</td>
<td>Learning from business mistakes and overcoming problems</td>
</tr>
<tr>
<td>7</td>
<td>4.38</td>
<td>Ability to appreciate the value of planning</td>
</tr>
<tr>
<td>8</td>
<td>4.67</td>
<td>Having a detailed knowledge of how the business is performing</td>
</tr>
<tr>
<td>9</td>
<td>7.13</td>
<td>Increasing market demand</td>
</tr>
<tr>
<td>10</td>
<td>10.81</td>
<td>Increasing profit margin</td>
</tr>
<tr>
<td>11</td>
<td>11.23</td>
<td>Fully utilizing the skills of the management and employees</td>
</tr>
<tr>
<td>12</td>
<td>12.47</td>
<td>Having a sense of control over one's destiny</td>
</tr>
<tr>
<td>13</td>
<td>14.89</td>
<td>Satisfaction of having created or maintained a business</td>
</tr>
<tr>
<td>14</td>
<td>16.01</td>
<td>Taking calculated risks and surviving in business</td>
</tr>
<tr>
<td>15</td>
<td>17.01</td>
<td>Upgrading the skills of management and employees</td>
</tr>
<tr>
<td>16</td>
<td>18.09</td>
<td>Having a smooth-running organization</td>
</tr>
<tr>
<td>17</td>
<td>19.82</td>
<td>Increasing the number of employees in the firm</td>
</tr>
<tr>
<td>18</td>
<td>20.28</td>
<td>Involving the employees in running the business</td>
</tr>
<tr>
<td>19</td>
<td>20.34</td>
<td>Achieving a desired quality of life</td>
</tr>
<tr>
<td>20</td>
<td>20.41</td>
<td>Increased turnover</td>
</tr>
<tr>
<td>21</td>
<td>21.97</td>
<td>Introducing innovative products or services</td>
</tr>
<tr>
<td>22</td>
<td>22.36</td>
<td>Getting a living wage from the business</td>
</tr>
<tr>
<td>23</td>
<td>23.37</td>
<td>Acquiring personal wealth</td>
</tr>
<tr>
<td>24</td>
<td>23.47</td>
<td>Achieving a moderate level of profitability without creating a great deal of stress</td>
</tr>
<tr>
<td>25</td>
<td>24.52</td>
<td>Expanding premises</td>
</tr>
<tr>
<td>26</td>
<td>25.50</td>
<td>Establishing a business to be passed on to the next generation</td>
</tr>
<tr>
<td>27</td>
<td>26.00</td>
<td>Local sourcing of materials/services</td>
</tr>
<tr>
<td>28</td>
<td>26.33</td>
<td>Being able to run the business and still have time for friends and family</td>
</tr>
<tr>
<td>29</td>
<td>27.03</td>
<td>Having a public image as a successful business</td>
</tr>
<tr>
<td>30</td>
<td>28.53</td>
<td>Having the respect of the business community</td>
</tr>
<tr>
<td>31</td>
<td>29.76</td>
<td>Developing the business so that it can be sold at a substantial profit</td>
</tr>
<tr>
<td>32</td>
<td>32.19</td>
<td>Becoming a business leader</td>
</tr>
<tr>
<td>33</td>
<td>32.65</td>
<td>Having community approval and support</td>
</tr>
</tbody>
</table>

*Group 1, Group 2, Group 3, Group 4, Group 5*
ANTHROPAC estimates a ‘knowledge’ score (ranging between +1 and −1) for each adviser, based on his or her loading on the first factor. The higher the loading, the greater the similarity between the individual's own knowledge and the culturally correct perspective. The average knowledge score was 0.74 for the success domain. In short, the business advisers, in spite of their very different backgrounds and institutional affiliations, demonstrated a cultural level of shared knowledge, constructed through their daily practice of analyzing and articulating the cultural models of business success.

Now that we have identified the domain of knowledge and the cultural level of sharing of that knowledge among the advisers, our next task, according to the Barthian framework (Barth, 2001, 2002), is to discover whether or not that knowledge is coherent. To do so we must look at the consensus answers or culturally correct answers – sometimes called the ‘answer key’ – to rank tasks for the 33 forms of success. The consensus analysis module in ANTHROPAC derives this answer key from the factor scores, a weighted average of the consultants’ responses and their knowledge scores (their factor loading). This answer key is meaningful only if the data show a cultural level of agreement, as is the case with the business adviser data. The consensus answers are given in Table 2. The purpose of exploring the structure of the ‘culturally correct’ answers is to show that the methodology advocated here can capture cultural logic, as well as patterns of knowledge sharing.

**Coherent models of knowledge/culture?**

The advisers agree closely on the content and the relative importance of the forms of small-business success. This set of priorities constitutes a cultural model showing the hierarchical organization of this domain of knowledge (see Table 2). ‘Having a reputation for reliability’ is the highest ranked success item, and ‘having community approval and support’ is ranked last. As these items would suggest, the first generalization about the model is that it places greatest importance on types of success directly related to business performance over which the entrepreneur can have some control, such as reliability and developing a customer base. The least salient items in the model are those that pertain to secondary issues, such as wealth or community approval, which are outcomes or results of the primary business activities and other extrinsic factors.

A second generalization, flowing from the first, is that the successes in the lower rankings are dependent or contingent on the items above them. ‘Having community approval and support’ (ranked number 33) is unlikely unless the business has produced ‘customer satisfaction’ (ranked number 4). In short, the items at the top of the rankings are likely to be the causes, means, or enabling conditions of the successes at the bottom of the rankings.

**Interpreting the cultural rankings**

Table 2 shows that the hierarchy of types of success is not a smoothly decreasing progression of consensus scores. The scores of the top eight success items are tightly grouped but are separated from the next item by an interval of 2.46, a large gap. Similarly, inspection shows the next item, ‘increasing market demand’, is separated from the following item by a gap in scores. Another gap occurs after item 12, followed by a relatively smooth sequence of decreasing scores until item 31, after which there is another large interval before the final two items. Each of these four gaps, found by inspection, is displayed in Table 2.

The first grouping includes the key or essential elements of the model of business success. The scores of the eight items have a very small range (2.95), with several near-ties, which suggests that they are all very important and therefore difficult to rank. Accordingly, a successful small business is reliable,
has a manager who enjoys her or his work, has adequate finances, satisfies customers, produces high quality goods and services, learns from its mistakes, plans for the future, and monitors its performance. This group of items, in short, emphasizes success in products, customer relations, finance, management, and planning. These modes of success are highly dependent on management control.

The second group, consisting of one item (ranked 9), 'increasing market demand', seems less dependent on management control and more on the response of the market.

The third group (ranked 10, 11 and 12) includes 'increasing profit margin', 'utilizing the skills of the management and employees', and 'having a sense of control over one’s destiny'. Each of these implies management control and fine-tuning of the business, rather than the consequences of luck or macroeconomic trends.

The items in the fourth group (ranked 13–31), the largest, are rather heterogeneous, including many items that represent special theories of management ('involving the employees in running the business'), local developmental needs ('local sourcing'), personal goals ('establishing a business to be passed on to the next generation'), or consequences of increased business ('expanding premises'). As indicated earlier, these are clearly contingent on higher-ranked forms of success.

The final group contains two items (ranked 32 and 33), 'becoming a business leader' and 'having community approval'. These are the social duties and rewards that flow from the other successes. In this sense, the more narrowly defined economic successes are embedded in the social relations (Granovetter, 1985; Stewart, 1989: 147; Caulkins, 1992, 2003).

The cultural model of success can be read in at least two ways. First, it is a hierarchy of kinds of success, some contingent on the others. Second, it can be seen as a processual prescription, in which some things must be accomplished before others. The first groups of items are of roughly equal importance and must be addressed simultaneously by any manager of a small business. When those forms of success are in hand, then the second group and the third, fourth and fifth can be addressed.

In this case study I have illustrated a method for identifying cultural patterns as a threshold of knowledge-sharing, and a method for identifying the logic of the cultural content by examining the way that advisers, in this case, construct their priorities in one of the most important domains in their culture. Other case studies of cultural levels of knowledge sharing could be cited. For example, studies of two well-established organizations, a Norwegian environmental research organization (Caulkins and Hyatt, 1998), and a Highland Scottish heritage site (Caulkins et al., 2003), show cultural levels of agreement on the importance of freelisted organizational roles.

**Case Study 2a: Protoculture of ScotHistory Services**

ScotHistory is a non-profit heritage organization located in the heart of Silicon Glen. Unconnected to the high-technology industry, ScotHistory instead draws on one of the other resources of the area: historically important battlefields from the early history of Scotland. As a heritage site, ScotHistory offers a number of services, including an interpretive center, several educational displays for children, programming for school field trips for pupils from England and Scotland, a cafe, and a gift shop with juried craftwork, historical books, and small souvenirs. ScotHistory serves both the international tourist industry, which accounts for approximately 8 percent of the jobs in Scotland, and some of the needs of the local population for resources for historical education. In order to learn more about the complexities of the operating knowledge of the organization, a
colleague and I posed the following freelist-
ing questions in interviews with the manage-
ment and staff of the organization: ‘What
services does ScotHistory provide?’ and
‘What challenges or problems does it face?’
As usual, we interviewed management and
staff at all levels, to assure representation
of diversity, until we had exhausted both
domains. In addition to salaried and hourly
waged employees, the staff included a num-
er of retired volunteer employees, usually
ones with an intense interest in history. We
collated a set of 20 services and 14 problems
or challenges from the freelisting interviews.
The services included ‘preserving heritage
and tradition’, ‘increasing trade and tourism
for the town’, ‘serving as a backdrop for TV
and film’, and ‘providing an educational
experience for all ages’. The challenges or
problems included ‘maintaining the (deterio-
rating) site’, ‘creating new interactive
exhibits’, and ‘restricting the party-political
use of the site’. Next, we asked the 13 mem-
ers of staff representing different positions,
including some volunteer workers, to priori-
tize or rank order the services (and chal-
 lenges) according to the importance of the
services (challenges) to the organization, in
each person’s opinion.

The domain of ‘services’ seems to call for
straightforward knowledge possessed by all
the staff. However, the task becomes much
more complex when prioritizing those ser-
dvices. The factor analysis of the correlation
matrix of 13 staff members concerning the
ranking of the 20 kinds of services produced
three factors (eigenvalues of 4.29, 1.64, and
1.40) accounting for 58.5 percent, 22.4
percent and 19.1 percent of the variance
respectively. The cultural threshold of con-
sensus was not achieved. Instead, we have
weak agreement on the priorities of the or-
ganization, with a ratio of 2.618 between
the first and second factors, within the ‘weak
agreement’ or proto-cultural range between
2:1 and 2.9:1. The largest factor accounts for
only 58.5 percent of the variance and the
knowledge scores for the 13 staff members
average 0.486, with a high of 0.76 and a low
of –0.29 for Fiona, the manager of the cafe,
whose understanding of the organizational
priorities is very different from most of the
staff. This negative knowledge score raises
the question of whether or not Fiona’s data
are distorting the findings. If we take her data
out and run the factor analysis again, how-
ever, the solution is improved only margin-
ally: 59 percent of the variance is explained
and the ratio between first and second factors
is 2.652. Clearly, the domain of services for
ScotHistory is not simply a matter of general
agreement, distorted by Fiona’s contrary
perspective. Instead, it is ‘proto-cultural’ or
weak agreement and, with increased com-
munication among the actors, might rise
above the cultural threshold. Alternately,
the proto-culture might dissolve or weaken
further if increased communication revealed
previously masked differences of opinion
among the staff.

Case Study 2b: Countercultural
Knowledge(s): ScotHistory
Challenges

One might consider Fiona, the ScotHistory
Cafe manager, as a one-person center of
resistance since she had a negative know-
edge score in the data for ScotHistory
services. Turning to the ‘challenges’ domain,
however, we find that the situation is more
complex. The 14 challenges include, as
mentioned, such problems as ‘creating new
interactive exhibits’ and ‘creating vandal-
proof outdoor exhibits’. Factor analyzing the
correlation matrix of the 13 staff members
revealed a low degree of agreement with
eigenvalues 3.06, 2.06, and 1.36 for the three
factors. The first factor explains only 46 per-
cent of the variance, with an additional 32
percent explained by a large second factor.
The presence of a large second factor sug-
gests multiple centers of knowledge. The set
of 13 staff were then divided into two sub-
groups. The first subgroup comprised six
management team was split between different cohorts of oldtimers and newcomers. The old practice of consensus decision-making no longer worked well and a sense of crisis had set in. Everyone was aware that some changes had to occur, whether they personally liked it or not. Through freelistings interviews with eight managers, a colleague and I obtained a list of 13 elements the managers claimed to be characteristic of ScotFirm’s ‘operating culture’. These items dealt with company identity, goals, sources of pride, modes of interaction, and focus on technical excellence. The list of 13 items was not exhaustive, but provided a fair sampling of the domain of ScotFirm’s operating knowledge/culture. While some newer members of the management might have been less familiar with the history of the organization, all should have been aware of the central outlines of the existing culture, which the managers assumed was a ‘strong’ or homogeneous culture (Martin, 2002).

I asked the eight managers to rank order the 13 elements according to ‘Which elements of the culture are most important to retain as ScotFirm grows and changes?’ This produced an 8 × 13 data matrix of ranked elements. The results of the factor analysis show little agreement, with eigenvalues for the three factors of 3.06, 2.06, and 1.36 respectively, accounting for 47.3 percent, 31.7 percent and 21.0 percent of the variance. The ratios between the first and second factors and between the second and third are roughly similar, failing to achieve the cultural threshold.

The ratio of the first and second factors falls into the fragmented or idiosyncratic range, below the 2:1 level. All the managers knew the 13 elements but there was no agreement on the priorities for continuity in the firm. The coherence of the knowledge resided in each individual’s ranking and rationale, since this knowledge seemed to be idiosyncratic. Given the lack of direction in the management of this firm, it is not surprisin-

Discussion

Methods usually fit best with particular theoretical perspectives. The consensus analysis method illustrated here has the advantage of articulating neatly with three contrasting theoretical developments in the study of organizational cultures as described by Martin (1992, 2002) in major reviews of the field. These are the ‘integration perspective’ which ‘focuses on those manifestations of a culture that have mutually consistent interpretations’, involving a ‘portrait of a culture of consensus . . . throughout an organization’ (Martin, 2002: 94). The integrationist perspective is represented by those authors who focus on homogeneity and ‘strong’ cultures, such as Deal and Kennedy (1982) and Ouchi (1981). Second, a ‘differentiation perspective’, according to Martin (2002: 94), ‘focuses on cultural manifestations that have inconsistent interpretations’ and although ‘consensus exists within the organization’ it does so only within subcultures, which are ‘like islands of clarity in a sea of ambiguity’. The third theoretical approach, the ‘fragmentation perspective’, conceptualizes the relationship among cultural manifestations as neither clearly consistent nor clearly inconsistent according to Martin (2002: 94), with ‘ambiguity, rather than clarity, at the core of culture’. Because they occur so frequently in the conceptual and actual borderlands between national boundaries and international ventures (Caulkins and Weiner 1998, 1999; Jordan, 2003), idiosyncratic/fragmented domains are important and often troublesome for international management. A systematic way of measuring knowledge domains suggested here, gives both researchers and practitioners an advantage in confronting the ambiguities of these fragmented domains.

The consensus analysis methods des-
described in this article obviously capture information on integrated, differentiated, and fragmented domains. Cultural and protocultural domains would be most congenial to the integration perspective, subcultural and counter-cultural domains to the differentiation perspective, and idiosyncratic/fragmented domains to the fragmentation perspective. Martin (1992, 2002) suggests that empirical studies should employ all three perspectives together, which is most easily done if there is a core methodology, as suggested here. While we have used only one or two domains in our case study illustrations, we would expect a thorough analysis of an organization to sample a number of domains, guided by the three perspectives. Martin (2002: 219) asserts that these three perspectives are not merely different statistical measures, but distinct theoretical approaches. I contend that the consensus analysis approach encourages the exploration of all three theoretical perspectives because the method is not biased in favor of one kind of interpretation.

The major disadvantages of the consensus analysis approach are twofold. First, it is best suited to the study of relatively central domains of knowledge, rather than peripheral or obscure ones. As we have seen, not everyone in a firm needs to agree on the evaluation of the elements, but they should know of their existence. Second, the consensus analysis method requires relatively extensive familiarity with the research site and the people in it. It requires at least two phases of interviews: first the freelisting interview, and second the card sorting or prioritization interview. Furthermore, an insightful interpretation of the rank ordering of knowledge requires familiarity with the research setting, either through participant observation or extensive interviewing. On the positive side, this requirement lessens the risk that the research will be compromised by lack of familiarity with the site and setting.

**Conclusion**

This article addresses the major issues in the call for articles for the 'Identifying Culture' conference, which constitutes the impetus for this special issue. By defining culture as shared knowledge we have identified culture as a threshold phenomenon, radically simplifying the problem of deciding the locus of culture. We found that knowledge, following Barth’s definition, is distributed, emotionally charged, internally articulated, and differentially valued. We saw this, for example, in the case study of the logic, values, and meaning of the Scots business advisers' construction of 'success'. By describing a core methodology for identifying culture, proto-culture, sub-cultures, counter-cultures, and fragmented domains, we have laid the foundation for an empirical exploration of cultural processes of consensus building, factionalism, deterioration of consensus and cultural drift in long-term and/or multi-site studies, all of which are important in international management. Changes in organizational culture through time could be mapped longitudinally by taking multiple measures of key domains over the course of one or two years. Similarly, comparative and cross cultural studies of multiple sites could be undertaken as a means of, for example, understanding international trends in particular industries. One additional virtue of this methodological approach should be emphasized. The method works with small samples (Weller and Romney, 1988) as well as with samples numbering in the hundreds (Trosset and Caulkins, 2002). In addition, the dual focus on individuals and their position within a field of knowledge and meanings – shared, and non-shared – encourages the researcher to explore the insights of both individual and collective perspectives. Finally, we have found that the methodology facilitates the use of all three of the major perspectives in research on organizational cultures: the integration, differentiation, and fragmentation...
perspectives, encouraging a systematic, multi-perspective method for identifying culture.

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Résumé

Identifier la culture comme un seuil de connaissances partagées: une méthode d’analyse par consensus (D. Douglas Caulkins)

Cet article méthodologique prend pour point de départ l’anthropologie de la connaissance de Fredrik Barth’s (2002) et identifie la culture comme des connaissances partagées au-delà d’un certain seuil. La méthode se fonde sur la constitution d’échantillons de connaissances dans des contextes organisationnels et sur les listes d’éléments constitutifs de ces domaines fournis par divers membres de ces organisations. Après avoir compilé ces divers éléments, les répondants sont interrogués à nouveau, avec un échantillon plus large, pour établir les priorités de ces éléments selon un critère d’importance. Une analyse par consensus de la matrice des données des répondants révèle dans quelle mesure les connaissances sont partagées et constituent une culture, dans quelle mesure elles sont moins partagées et constituent une protoculture, une sousculture, une contre culture ou un domaine fragmenté et idiosyncratique. Trois études de cas sont présentées à titre d’illustrations. Amplement adaptable à l’exploration des cultures et souscultures organisationnelles en management international, la méthode d’analyse par consensus s’articule autour de trois perspectives majeures d’approche de la culture, les perspectives de l’intégration, de la différenciation et de la fragmentation.

摘要

文化与知识共享：广泛调查分析法

D. Douglas Caulkins

本文是一篇有关方法论性质的文章。文章以FREDRIK BARTH (2002) 年发表的有关人类知识的把文化当作知识共享之前提这一论点为出发点。研究区分出在企业概念上知识的范围，并让企业内部的不同成员列出知识范围的主要内容。在汇编这些主要内容的基础上，有关成员被邀请面谈。根据所收集内容的重要程度，再列出了主要的知识要点。在广泛调查的基础上，总结出在何种程度上会形成知识共享的文化，并在何种程度上知识很少被分享，以及形成次文化或属文化进而存在分裂的特质。研究选择了三个案例作为例证。此种研究方法可以被广泛引用在国际管理研究领域，可用于对企业文化、次文化、企业间交流以及国际投资等领域。广泛调查分析法有助于在三种文化理论方面的研究：综合性、分别性、以及分裂性。