

Object Technology: Community and Culture

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1. INTRODUCTION

When the word "culture" is used, it is usually understood to refer to organizational or national culture. However, very little attention (but see [9]) has been given to "disciplinary" or "professional" culture, that is, the culture of a community of professionals working in the same discipline, such as software development. We are interested in the culture of object-oriented technology and how that culture shapes – and is shaped by – the object-oriented community.

2. CULTURE & COMMUNITY

Culture and *community* are not independent concepts. A community will have a culture, and a culture cannot exist without some kind of community in which the culture is supported.

2.1 What do we mean by "community"?

The idea of a "community" is familiar to us all. A community is a group of people who have a common focus and who support each other in growing and sustaining the community. In recent years, communities of practice have received much attention. These communities are a way of structuring knowledge sharing and providing practical support. They have three characteristics: mutual engagement, joint enterprise and a shared repertoire (routines, tools, words, processes, concepts, genres, gestures) [7].

We see the object-oriented community as an extended community of practice going beyond the boundaries of one organization [8], supporting and sustaining itself through the shared focus and ideas of practitioners in the field (as we discuss below).

2.2 What do we mean by "culture"?

Various definitions of culture have been suggested. For example, organizational culture consists of three layers: *values* which may be written down as statements about the organization's mission, but they tend to be expressed only vaguely; *beliefs* which are more specific but can be identified and discussed by the culture's members; and *basic assumptions* that are taken for granted. Basic assumptions constitute the core of a culture, are implicit, and are difficult to identify [5].

Williams *et al* [10] liken culture to a lily pond. Behaviour is observable and corresponds to the lilies on the top of the pond;

attitudes and values, represented by the stems under the water, are reportable but not directly observable; while beliefs, represented by the lilies' roots are unconscious.

2.3 Indicators of Community and Culture

There are many indicators of culture. These are the visible, observable aspects of a community's culture: the lilies on the top of the lily pond. Indicators include: who does the community regard as 'heroes', who are the decision-makers, what rites and rituals underpin a community's behaviour, the relationship between the formal and the informal in repertoires, what jokes are told and so on.

3. WHY DOES IT MATTER?

One of the responses we have encountered before to work in this area is what we've dubbed the "so what?" factor [6]. Understanding one's own community and recognizing cultural influences within it may have academic appeal, but why does it matter really? We suggest the following. Understanding better our community and the culture underlying it will:

- Help us to prepare newcomers to the field more appropriately. We hear repeatedly that young people leaving the education system are not adequately prepared for work in industry. One approach to education [3] believes that new professionals should face a period of enculturation if they are to be accepted into a professional community. This requires us to know what professionals in the target domain actually do;
- Help us to support and sustain the community appropriately, and maybe to encourage other (sub-) communities to flourish too. This suggestion arises from our data which indicates that the strength and character of a community can dramatically shape the associated technology and its success;
- Recognize what works and what doesn't work, and inform decisions about changing working practices. An example from our previous work is the existence of a 'maverick' genre and management's need to recognize its influence [4].

4. HOW DO WE FIND OUT ABOUT IT?

Characterizing a culture is difficult. Studying community behaviour and interpreting it according to the models we have of culture is the best we can do. Our approach is one of field studies of naturally-occurring data – what takes place at conferences, what gets written in conference proceedings & journals, observations of work settings, examination of chat room talk or newsgroup postings, etc. We analyze this data with a view to

uncovering the taken-for-granted ways and means that a community reflects, sustains and recreates its own culture.

5. THE OBJECT-ORIENTED COMMUNITY

Here, we describe one of the approaches which we have found useful (and exciting) in gaining an understanding of the object-oriented community – studying its social history to uncover the individuals and groups involved in creating the technology and the key moments and issues in debates about the technology.

The background and some more detail about this work is in [6] but here we highlight one result from our work – a result that for OOPSLA aficionados may be a commonplace but one that is remarkable in terms of the contemporaneous evidence. The first OOPSLA conference took place in 1986, over two decades since Dahl and Nygaard's pioneering work. Our work points to this as being a pivotal moment when a separate object-oriented community emerged and rapidly developed its own fora for the discussion and dissemination of object issues. A simple measure graphically illustrates this: in the 6.5 years from June 1978 to December 1985 only 9 papers in SIGPLAN Notices mention object technology in some substantive way whereas the figure for the 4 years from January 1986 to December 1989 is 286 papers. Furthermore, OOPSLA signified a move from object-oriented issues being described in terms from some other area within computer science (programming environments, human-computer interaction, educational tools, or whatever) to a description in terms of the intrinsic value of object-oriented technology. Another graphic illustration is the pre-OOPSLA case of a notice (in ACM SIGPLAN Notices August 1981) for the ACM Golden Gate Chapter of 'A Smalltalk Update' by one Adele Goldberg – the notice makes no mention of objects or object-oriented technology.

One characteristic of a community of practice is mutual engagement in a shared task. The object-oriented community as typified by OOPSLA had the common purpose of bringing object-oriented technology 'to the world' – to rectify the fact that the world of traditional software development had not recognized an important and viable technology 'because the computer science community did not yet understand objects' [2].

We believe that OOPSLA '86 was the public expression of momentum that had built up both formally and informally as the object-oriented community began to constitute itself. All this underscores the importance of a consciously constituted community with a clear purpose in terms of the development of a software technology.

6. CULTURE

What then of the indicators of object-oriented culture and how can we characterize it? Our work suggests that the following are significant features of gatherings such as OOPSLA.

- We have our heroes such as Dahl & Nygaard, Beck and others. Our heroes have been responsible for helping us to build a community around a significant insight into software – the truth of objects. And that community has a responsibility – a shared trust and custodianship for the 'hoarding of golden techniques' as Beck [2] describes them.
- Our rituals and repertoires emphasize a belief in the value of the informal as well as the formal with birds-of-a-feather sessions and the publication of Addenda to capture what is 'left on the floor' – the 'less formal material, less fully developed material, and perhaps the "latest gossip" of the field ...' [1].
- We value the push towards the frontier, being influential in developing radical approaches such as agile methods, and this OOPSLA features an Onward! Track, specifically seeking new paradigms and metaphors.
- The culture is open and inclusive, valuing people: practitioners and developers as well as researchers, encouraging 'the melting pot' [2] to bring the technology 'to the world'.

7. CONCLUDING REMARKS

We have only begun to scratch the surface of this exciting area. There are many aspects of object technology's community and culture that we have yet to collect data and evidence about. In particular we lack information about the indicators of daily practice. Please come and contribute to our poster or contact us to share your experiences.

8. REFERENCES

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