

# The concept of culture and its challenge to ethnomathematics

Wilfredo Vidal Alangui  
Department of Mathematics and Computer Science  
College of Science, University of the Philippines Baguio

## Abstract

This paper reiterates the need for ethnomathematics scholars to problematize the use of culture as a critical construct in the field. This is in light of recent criticisms by Hottinger (2016) charging ethnomathematics scholars of not "engaging with the scathing critiques of anthropology." As a response to Hottinger, I reiterate a concept of culture that has been informed by, and evolved out of the challenges posed by an uncritical use of the concept. I consider Hottinger's recent critique as an opportunity for continuing dialogue and debate on how the use of the concept of culture is evolving within the field of ethnomathematics.

**Keywords:** Culture Concept; Ethnomathematics; Agency; Culture Change

## Introduction

This paper reiterates the need for ethnomathematics scholars to problematize the use of culture as a critical construct in the field. As a programme looking at the interplay of mathematic and culture, ethnomathematics argues that culture impinges on all aspects of knowledge, including mathematics. Embarking on ethnomathematical research, therefore, entails clarifying the concept of culture, because it means different things to different people.

'Culture' remains a contested concept and "resists reduction to any single meaning" (Ray, 2001, p. 3). Any research in the area of culture must elucidate its own definition of the concept. This is true for ethnomathematics.

The criticisms levelled at the use of culture in the ethnomathematics program continues. Hottinger (2016) writes that the field faces "difficult critiques" that generally fall into two categories. The first category covers critiques of the field's understanding of mathematics and the second involves critiques on the field's understanding of culture. For the second category, Hottinger refers to the writings of Vithal and Skovsmose (1997) and Pais (2011) that articulated the difficult relationship between the field of ethnomathematics and the concept of culture.

Alangui and Barton (2002) argue that confronting the question of culture does not mean that all ethnomathematicians need to agree on one definition, but rather anyone working in the field must be explicit about what they are meaning. The more awareness we have of the debates within anthropology around this concept, the better. Hence the field of ethnomathematics needs to examine its assumptions in view of the contested notion of culture, as well as being able to respond to the challenges and difficulties that come with such a conception.

One of the stinging criticisms of Hottinger (2016, p. 141) has to do with the anthropological notion of culture. She claims, mistakenly, that ethnomathematics scholars

desire to distance themselves from what many consider to be the neocolonialist, racist project of traditional cultural anthropology. Yet they do this without actually engaging with the scathing critiques of anthropology... And ethnomathematic scholars rarely turn that critical, self-reflexive mirror onto their own field of study.

This criticism is not entirely accurate, as a growing number of ethnomathematics scholars have recognized and engaged the problematic use of the anthropological notion of culture, and have thus attempted to use a more critical conception of culture in their work. Many have also acknowledged the interplay of power and culture in the areas where they do their ethnomathematics research. For example, the works of Gelsa Knijnik (whom Hottinger actually acknowledges in her essay), Maria Cecilia Fantinato and Sousa (2016), Charoula Stathopoulou (2016) and Aldo Parra (2017), to name but a few, are informed by the need to acknowledge the dynamics of power and culture, and thus the necessity to use a critical concept of culture away from the anthropological one.

The work of Alangui (2010) has attempted to respond to the challenges we face in the field with the use of the anthropological notion of culture. This paper is my response to Hottinger, and I reiterate a concept of culture that has been informed by, and evolved out of the challenges posed by an uncritical use of the concept. I thus see Hottinger's recent critique as an opportunity for continuing dialogue and debate about how the use of the concept of culture is evolving within the field of ethnomathematics.

First, I briefly review what is referred to as the anthropological notion of culture and the difficulties it presents, and then discuss the changing views of culture that helped me evolve a notion of culture that guides my work as an ethnomathematician.

### **The Anthropological Notion of Culture**

Strauss (2000) says that the general characterisation of the idea of a single culture, or what is referred to as "the anthropological notion of culture" (McConaghy, 2000, p.xi), has concerned many anthropologists. Strauss lists some of the concerns articulated by scholars and anthropologists about this notion: it implies stasis (Clifford, 1988; Wolf, 1982); homogeneity within the group whose culture is described (Roberts, 1961; Wallace, 1970); definite boundaries between entities (the culture of the x, the culture of the y), overlooking exchanges of ideas, objects, and practices (Appadurai, 1990; Wolf, 1982); and it elides the way representations are disseminated by dominant groups and resisted by nondominant groups (Foucault, 1972; Gramsci, 1971).

***The Accident of Change and Absence of Agency:*** A major concern raised about the anthropological notion is the implication of it being an essentially fixed and bounded category. This view conjures an image of a group of people leading an unadulterated life, homogenous and immune from outside influences. This notion de-emphasises conscious change as well as the role of human agency in culture change. Carrithers (1992, p.8) explains that in this notion of culture, "whatever events and changes that have occurred in a traditional society are merely accidental, epiphenomenal, mere ruffles on the great sea of tradition, stability, and cultural conservatism." At the same time, cultural subjects/human agents are, to borrow McConaghy's words, "either absent or visible only in re-action" (McConaghy, 2000, p. 18). Viewing cultures as having defined boundaries also glosses over the fact that cultures (and societies) have historically been undergoing processes of interactions, although in varying degrees and in different forms.

***Defining the 'Other': Indigenous Peoples and Alternative Ways of Knowing:*** The idea that cultures are discrete entities has resulted in the construction of the category of the 'other.' Difference is explained through the mutual exclusivity of cultures, making them "ahistorical, observable, and able to be compared" (Vincent, 1991, p. 46). McConaghy

(2000) writes of scientific culturalism as one mechanism developed around the anthropological notion of culture to explain human variation, suggesting that “Anthropology invented a notion of culture which claimed to draw processes on scientific reason and objective rationality to explain the proliferation of variations in human ways of life” (McConaghy, 2000, p. 96).

This comparison provided the epistemological basis for judging European culture and ways of thinking as superior to non-European ones. For indigenous peoples, scientific culturalism has become one effective mechanism in their ‘othering’ as well as in the denigration of their forms of knowledge. Because of this, culture becomes one of the principal technologies in the twentieth century by which indigenous peoples “are objectified, dehumanized and designated as alterior” (McConaghy, 2000, p. 97).

The irony is that whilst the notion of ‘discrete and bounded cultures’ ignores, or downplays historical interaction and negotiation of cultures, certain forms of these processes facilitated the subjugation of one culture by another. As an uneven interaction characterised by violence and domination, colonialism is one such process. The experience of indigenous peoples under colonialism explains how certain types of knowledge have come to be dominant over others. For Smith (1999, p. 64), colonialism also meant “the imposition of Western authority over all aspects of indigenous knowledges, languages and cultures.”

With culture being at the heart of the anthropological endeavour, McConaghy (2000) makes a case about the complicity of anthropology and colonialism in the propagation and imposition of Western forms of knowledge through what Gayatri Chakravorti Spivak calls epistemic violence against other forms of knowledge.

***Claims of Equality and Denial of Interrogation and Conflict:*** McConaghy (2000) further argues that the anthropological notion of culture and the binary logic of objectivist science and philosophy also created the idea of cultural incommensurability, the idea that there exist two distinct cultural and racialised groups – indigenous and non-indigenous – that are “oppositional in almost every sense” (McConaghy, 2000, p. 100). This notion gives too much emphasis to difference instead of connectedness, and closes all possibilities for meaningful interaction. Because of incommensurability, there are no higher or lower cultures, no superior or inferior knowledge. An implicit claim of equality is made, a claim that is deceptive. It denies the fact that Western societies have for long enjoyed the upper hand in the encounter – the dominance of Western cultures over other cultures is a hallmark of modern civilization.

The notion of cultural incommensurability may be linked to the idea of cultural relativism, which holds that one can only understand a specific society’s practices within its specific cultural context (Moore, 1997). For holding that truth or value is relative to milieu or that intelligibility is entirely contextual, relativism, just like incommensurability, eschews the very possibility of interrogation and confrontation (Mendoza, 2001).

### **Changing Views of Culture**

With the turn to social/cultural in intellectual thought, the anthropological notion of culture is increasingly being challenged. A more appropriate conception of culture is needed to capture the realities of a globalising world, in an era of cultural postmodernity. As Peters (2001, p. 12) argues, “globalisation ... tends to bring into question more and more the concept of a single enclosed culture bounded by the nation-state or enclosed by

the closed system of ethnic solidarity.” What is needed is a notion that “recognises the fluidity, interaction and hybridisation of cultures today” (Peters, 2001, p. 13) as well as a notion that effects substantive changes in structures and relations of power and knowledge (McConaghy, 2000).

**An Emerging Conception:** I propose a notion of culture that responds to the challenges above. This notion is drawn from the ideas of Wolfgang Welsch and James Tully, who each use a conception of culture they both attribute to Ludwig Wittgenstein. Welsch’s (1999) perspective of transculturalism builds on Wittgenstein’s notion of culture as shared practices (Peters, 2001). Welsch (1999) argues that Wittgenstein’s concept of culture is “free of ethnic consolidation and unreasonable demands for homogeneity.”

Tully (1995), in his work on modern constitutionalism, argues for an aspectival notion of culture, a view he also traces to Wittgenstein (Peters, 2001). This notion of culture is based on a belief of cultures as overlapping, interactive and internally differentiated as opposed to cultures that are separate, bounded and internally uniform. He proposes a view of cultures that overlap geographically, and where cultures are “mutually defined through complex historical patterns of historical interaction, and they are continuously transformed in interaction with other cultures” (Tully, 1995, p.13).

According to Tully (1995, p.11), “the identity, and so the meaning, of any culture is thus aspectival rather than essential: like many complex human phenomena, such as language and games, cultural identity changes as it is approached from different paths and a variety of aspects come into view.” This notion of cultural difference suggests the necessity of interrogating difference, not to show incommensurability of cultures, but in order to find meaning, similarities and connectedness in one’s rapidly changing world.

**The Promise of Culture:** It is true that “culture emerges to help us make sense out of a world that could no longer be accounted for by existing ways of thought” (Ray, 2001, p. 185). The fact that ‘culture’ has become a highly differentiated concept makes it all the more important to clarify what it means for practitioners in the field of ethnomathematics, especially because some of the criticisms levelled at ethnomathematics revolve around the very concept of culture (see Eglash, 2000; Vithal & Skovsmose, 1997). The debate around culture is indeed complex, yet it can only lead us to a situation where we can better articulate the perspectives of ethnomathematics, and the reasons why it is important to value other forms of mathematical knowledge.

### **Re-viewing Culture: Challenges to the Theory of Ethnomathematics**

There are several challenges that ethnomathematics needs to address regarding the concept of culture. The first is a challenge directed at ethnomathematical studies that deal with indigenous peoples. It is the challenge of essentialism, of what Eglash (1997) calls primitivist romanticism – the idea that culture is harmless, innocent, authentic, exotic, and all good. This tendency is reinforced by the anthropological notion of culture. Ethnomathematical studies looking at the mathematical ideas of non-Western cultures need to be careful not to portray a romantic/romanticised view of indigenous (mathematical) knowledge. As suggested by Eglash, such a view is reductionist as it implies that non-Western knowledge is ahistorical and unchanging.

The second challenge concerns the implications of the ethnomathematical programme. It is the challenge of how to deal with cultural incommensurability and relativism. McConaghy’s work on indigenous education in Australia shows that the notion

of each group of people having its own integrity and its own values has been used as “an intellectual justification for segregated schools, housing, sexual sanctions and apartheid” (McConaghy, 2000, p.191). She argues that whilst cultural relativism has been used to justify programmes that support inclusion, it has also been used to exclude. In ethnomathematics, this difficulty has been reflected in debates about the relevance and dangers of an ethnomathematical curriculum, of writing “under the multicultural mathematics rubric which are far less attentive to educational requirements, sacrificing mathematical content for a third-world cultural gloss” (Eglash, 2000, p. 20).

Welsch’s use of culture as shared practices, and Tully’s elaboration of culture as aspectival are particular readings of Wittgenstein’s notion of culture. I argue that these may help us to critically reflect on ethnomathematics and its relationship to mathematics. I summarise the points that are important to this critical reflection. The notion of culture adopted here: recognises human agency; implies fluidity and hybridisation; connotes differentiation and rejects homogeneity; argues for the necessity of interrogating foreignness; recognises geographical overlaps, entanglements and intersections leading to a new conception of cultural difference; and accounts for continuous change and transformation through interaction.

Awareness of the debate on culture, and acknowledgement of its assumptions about culture can direct the field away from being a tool for the perpetual subjugation of the poor and the downtrodden (Fossa, 1998), or one that is guilty of tokenism, where the value of non-Western traditional and indigenous cultures is grudgingly recognised (Peters, 2001). One challenge for ethnomathematics is to develop a way of engaging different forms of cultural knowledge, specifically on how it is possible for mathematical knowledge and other forms of knowledge to interact and influence each other. For this to succeed, I reiterate Hottinger’s suggestion for scholars in the field to use a notion of culture that abandons the anthropological one. Doing this will help position ethnomathematics as a discipline that assists in the realization of D’Ambrosio’s vision (1999, 2000) of a new planetary order without inequity, arrogance and bigotry.

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For the presentation in Colombia:

Reminders when dealing with the concept of culture:

1. On the definition of culture: not enough to just say (the usual definition)
2. Preservation of culture is problematic
3. When dealing with cultural practice:
  - a. take time to understand dynamics of production, political-economy, power relations;
  - b. before claiming authenticity (which in itself is problematic), try to examine how the practice has evolved through the years because of innovation and interaction.