Work In Progress Paper submission to SACLA 2006.

Title: **DEFINITION AND MEASUREMENT OF CULTURAL DIVERSITY IN PROJECT TEAMS.**

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Abstract

This paper describes work-in-progress endeavouring to measure the construct of team cultural diversity. The concepts of "surface level" (e.g. ethnicity) and "deep level" (e.g. uncertainty avoidance) dimensions are described, together with some well known measures and instruments for measuring individual cultural profiles and team heterogeneity. A data set is currently being captured and the analysis will be presented at the conference.

Introduction

The advent of democracy in South Africa in 1994 has resulted in the transformation of society at large, as well as the ethnic profile of young people studying for various qualifications, including Information Technology, at the tertiary educational institutions. Affirmative Action and Employment Equity is contributing towards the transformation of the profile of business leaders and employees, including project teams responsible for implementing IT projects. These project teams are likely to consist of a variety of different cultures in the new South Africa, with associated advantages and disadvantages.

An analysis of racial classification of 1000 final year students, studying Information Systems (IS) or Information Technology (IT) at a leading University and a leading Technikon, respectively, in the Johannesburg area, for the years 2003, 2004 and 2005, was conducted recently (Addison, 2005). The results suggest that the composition of IT project teams in Commerce and Industry in the short and medium term in South Africa will, for a five person team, often be three Africans, one white and one Indian.

Paletz, Peng, Eraz and Maslach (2004) state that work teams will become increasingly diverse. Consequently, the degree or type of diversity, and how it affects team members from different ethnic groups, will in the short or medium term become an important

factor in explanation of team performance. Guzzo and Dickson (1996) suggest that the relationship between "diversity" and "team performance" provides excellent opportunities for further research and theorizing.

The work is a section of a broader study, the purpose of which is to understand, ultimately, the relationship between (team) cultural diversity and IT project team performance.

Theoretical Underpinnings

This study draws on previous research on culture and cultural diversity. Notable researchers in this area were Hall, Hofstede and (more recently) Schwartz. The impact of cultural diversity on small group research is in its infancy, and work has been pioneered by Mcleod, Lobel and Cox. The work of Harrison and colleagues drawn from this field plays an important role in conceptualising *cultural diversity*. Williams and O'Reilly, and more recently Fischer and Smith present meta-analyses of culture research. Booysen, and also Thomas and Bendixen, have been prominent researchers in South Africa in the attempts to measure cultural diversity and asses its implications for business management.

Cultural Diversity

Harrison, Price and Bell (1998) introduce the concepts of surface- and deep- level diversity. For cultural diversity, the surface level would be represented by differences in race / ethnicity and heterogeneity would refer to overt, physical features. Deep level cultural diversity refers to attitudinal differences. Harrison *et al* (1998) assert that as people continue to work together and interact, deep-level attitudinal similarity and differences become more important than the surface-level dimensions, when we try to improve our understanding of how diversity affects the functioning of work groups.

Dutch researcher Geert Hofstede identified four cultural dimensions which are widely used in cross cultural and multicultural research. The four dimensions emerged from his research in the worldwide IBM corporation in the late 1970's, and published in 1984.

Later Hofstede added a fifth dimension (Long-Term Orientation). For purposes of anonymity at the time, the IBM corporation was allocated a pseudonym of 'Hermes'.

Hofstede's findings, as far as the South African statistics are concerned, are largely invalid in the context of the current South African situation, because the study was conducted 20 years ago and the sample of South African IBM employees at that time was predominantly white Caucasian males.

Another limitation of Hofstede's work is his attribution of one culture to one country, and this is clearly unrepresentative of the current as well as the historic South African situation. South Africa consists of numerous cultures, demonstrated by the (current) government recognition of eleven official languages.

The work of Hofstede which can be used is his classification of five dimensions of culture. Hofstede (1984) initially identified / described the first four dimensions below. In 2001 Hofstede added the fifth dimension.

The five dimensions he defines (1984 and 2001), (which would be relevant to Harrison *et al's* "deep level" / attitudinal diversity) are

- Power Distance: This is based on the premise that all modern societies have disadvantaged groups who earn less and enjoy life less and die younger. Power Distance is the extent to which the less powerful members of groups, expect and accept an unequal distribution of power within the group. The issue relates to the extent that the less powerful members of a certain culture in a group regard others within the group as being more powerful or influential.
- Uncertainty Avoidance is the extent to which an individual in a cultural group feels comfortable in situations which are unusual or unknown. Individuals differ in the degree of being uncomfortable in unstructured situations, and their attempts to control situations in which they have limited or no control. Individuals with high Uncertainty Avoidance will be less tolerant of uncertainty and ambiguity.

- Individualism on the one side, contrasted with its opposite, (collectivism), measures the extent to which individuals look after themselves or remain integrated into groups, (which are usually the family).
- Masculinity (versus its opposite femininity) refers to the distribution of emotional roles between males and females, the polarities are “tough” (masculine) and “tender” (feminine) societies. Team members with high masculinity place a high emphasis on material possessions, including money.
- Long-term versus short-term orientation: “The extent to which a culture is concerned with an emphasis on the future rather than the present or the past. Long-term cultures program their members to accept delayed gratification of their needs, be they material, social or emotional, and they behave and invest accordingly.

South African cultural characteristics

Marcus (2005), using the original four Hofstede dimensions, suggests the following core values shape sub-Saharan African cultures:

- High Power-Distance. These cultures recognise the authority of wisdom being based on age, and the recognition that structures based on wisdom and experience are essential in agrarian, subsistence economies.
- Collectivism (low individualism). The extended family is essential for survival in poor economies.
- Femininity. (low masculinity) The need to maintain harmonious relationships within the collective unit or team.
- Low uncertainty avoidance. A fatalistic ethos assuming natural events and the future are unpredictable and cannot be controlled.

While the validity of these suggestions are not disputed, the author suggests that there may be generalisations based on assumptions such as poverty, and this would have only indirect applicability in the context of a South African IT project team.

Booysen (2001), in a study of 263 managers at various management levels in the banking sector, found the characteristics as per table 1 below:

Table 1: Hofstede profiles of managers in the banking sector, abbreviated from Booysen (2001)

	Whites	African Blacks
Uncertainty Avoidance	High	Average
Long-Term Orientation	High	Low
Individualism	High	Low

Thomas and Bendixen (2000) used Hofstede's VSM 94 instrument to measure the cultural characteristics of 586 middle managers in South Africa, in a study into management culture and effectiveness. They reported the following characteristics (Table 2) according to the Hofstede dimensions:

Table 2: Hofstede profiles of middle managers, adapted, from Thomas and Bendixen (2000)

	Whites	African Blacks	Indians
Power Distance	Low	Low	Low
Uncertainty Avoidance	Low	High	Average
Long-Term Orientation	Average	Average	Average
Individualism	High	High	High
Masculinity	Below Average	Below Average	Below Average

The results suggest various contradictions. For instance Thomas and Bendixen reported white SA managers as being low on "uncertainty avoidance" whereas the study by Booysen reported the same dimension as being high. The Booysen study also included other characteristics apart from those suggested by Hofstede. These included assertiveness, humane orientation and performance orientation.

The Thomas and Bendixen study focused on middle managers, and included a richer diversity of cultural groups (e.g. white English speakers, white Afrikaners, and various different black cultures.)

The finding of low Power Distance for the Thomas and Bendixen study is as expected; Hofstede (1984) points out that workers have high PDI, professionals and managers have low PDI. It is speculated that IT team members will have lower than average PDI.

A surprise finding in the Thomas and Bendixen (2000) study (African blacks high on Individualism) is explained by the writers according to different forms of individualism, together with a suggestion that the VSM94 instrument is expanded to include the concept of communalism when applied to African cultures.

The generally low scores for PDI reported by Thomas and Bendixen (2000) are explained according to the current intolerance of hierarchical structures in a country where until recently the majority of the population was disenfranchised and subjected to authoritarianism.

Additional studies on culture in South Africa are not reported as the findings may be suspect on account of small sample sizes.

Studies need to be conducted using as sample the specific role of the member of an IT project team, and the overall cultural diversity of the teams. According to Harrison *et al* (1998) findings are inconsistent for surface-level heterogeneity studies for variables such as race. This suggests that surface level diversity is not a surrogate for deep level diversity and the two should be considered separately in an assessment of cultural diversity.

In the above studies, no differentiation is made between the different African groups (Zulu, Xhosa and others). In addition there may be a wide range of variance in one of the classifications (e.g. Power Distance of Black Africans, which is the author's representation for at least 11 ethnic / language groups.) McShane and Von Glinow (2005) point out that the attribution of certain values to an entire group (in this instance Black

Africans) is a form of stereotyping limiting our ability to understand some of the more complex realities. For the White groups (predominantly English and Afrikaans), the Thomas and Bendixen study shows higher values among Afrikaans speakers (relative to English speakers) for UAI and MAS. Also, there may be important differences in religion within a group, for example Hindu and Muslim within the Indian group.

In addition to the work of Hofstede, other cultural classifications will be considered as a basis for determining cultural diversity. For instance, the dimensions suggested by Edward Hall (1966), for example polychronic versus monochronic will be considered. [Monochronic societies (such as northern European) schedule and expect one thing at a time. Polychronic societies such as southern Europeans do several tasks simultaneously. According to Prime (1999), the black population of South Africa is recognised as polychronic and the whites as monochronic.]

Schwartz (1999) critiqued the current applicability of the work of Hofstede, and identified seven value types as being currently more relevant in the work setting. Schwartz's work will be examined more closely for relevance, recent academic respectability and availability of instruments in the post-proposal stage of this study.

Based on the cultures of individual team members, teams can be categorised according to whether or not they are culturally diverse. Watson, Kumar and Michaelsen (1993), for instance, referred to a culturally diverse team as one which had members from two or more nationalities and three or more ethnic backgrounds (i.e. at the surface level). Groups not satisfying these criteria were referred to as culturally homogeneous. Team diversity is thus considered to reflect the differences between team members along a set of cultural dimensions reflecting both surface and deep level diversity.

Proposed Measures.

It is proposed to measure "Surface Level" diversity (based on ethnicity) by the index developed by Blau (1977): Diversity = $1 - \bullet p_i^2$, where p is the proportion of team

members in a category (e.g. a race/ethnicity category), and i is the number of different categories in the team. The index varies from 0 to 1, where zero refers to a team with no diversity, and a very diverse team would have an index approaching 1. [Blau's expanded measure of diversity is $1 - \{ \bullet x_i^2 / (\bullet x_i)^2 \}$, where x_i is the number of persons in each group and the sum is taken over all groups. The formula simplifies to $1 - \bullet p_i^2$ if the number of persons in each group is expressed as a fraction of the total population. In the event that all persons are in one group, there is no diversity (1-1 = 0); if all groups are of the same size, diversity approaches a value of 1 with an increasing number of groups.]

"Deep level" cultural dimensions of individuals in teams will be measured according to the Hofstede dimensions of Power Distance, Uncertainty Avoidance, Individualism, Masculinity and Long-Term Orientation. The Hofstede VSM 94 questionnaire is partially shown in the appendix, and it is proposed to use the 20 questions unmodified. The anchors for these 20 questions, as well as the formulae for calculating the individual and group values for each dimension, are also shown in full in the appendix. Individual scores will be used as a basis for calculating team diversity scores. The formulae will be used at both the individual and the team level. Per team, this will enable the scoring of all attributes (Power Distance, Masculinity etc.) for each team member and each team. Thereafter, for each team the mean score (all team members) for each attribute, and standard deviation, will be calculated. An overall diversity score for a team will then be derived by averaging the standard deviations for the five attributes.

Analysis

A data set is currently being captured and the analysis will be presented at the conference. The sample is third year students in Information Systems at the author's tertiary institution.

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Appendix.

Measuring deep-level Cultural Diversity: Hofstede's VSM 94 questionnaire.

Pre-amble to questions 1 to 8: Please think of an ideal job, disregarding your present job, if you have one. In choosing an ideal job, how important would it be to you to ... (please allocate a value from 1 to 5 per question):

(1 = of utmost importance, 2 = very important, 3 = of moderate importance, 4 = of little importance, 5 = of very little or no importance)

1. have sufficient time for your personal or family life
2. have good physical working conditions (good ventilation and lighting, adequate work space, etc.)
3. have a good working relationship with your direct superior
4. have security of employment
5. work with people who cooperate well with one another
6. be consulted by your direct superior in his/her decisions
7. have an opportunity for advancement to higher level jobs
8. have an element of variety and adventure in the job

(truncated)

Formulae for index calculation: The 20 content questions allow index scores to be calculated on five dimensions of value systems: Power Distance, Individualism, Masculinity, Uncertainty Avoidance, and Long-term Orientation. Index scores are derived from the mean scores on the questions.

Illustration:

Individualism Index (IDV) **IDV = –50m(01) +30m(02) +20m(04) –25m(08) +130** for the group, and

IDV = –50i(01) +30i(02) +20i(04) –25i(08) +130 for the individual.

The index normally has a value between 0 (strongly collectivist) and 100 (strongly individualist)

(Similar formulae for the other four dimensions).