Informed Environmental Actors Knowing and Acting in Time and Space

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Introduction

Most environmental problems that confront us today are the result of people's beliefs and behavioral practices (Oskamp, 2000; Howard, 2000). Therefore, behavioral research has stressed that behavior is the chief determinant to human action because both the causes identified and remedies proposed are "behavioral in nature" (National Center for Environmental Research, 2006).

The dilemma confronting social understanding of human theories of action coalesces around the notion that while individual actors might have positive environmental attitudes and are concerned about an issue of ethical and significant social magnitude, a much smaller proportion of people actually translate their concern to action. In terms of the environment, such incongruity between theory and practice is a social phenomenon worth exploring.

While psychology, sociology and environmental activism have offered a variety of approaches to understanding environmentally sustainable behavior few have focused on the reasons why 'informed' citizens fail to translate their knowledge of the environment in practical ways.

The problem of environmental degradation and the solutions thereof are complex and there are no easy answers. This study seeks to profile the relationship between 'knowing and acting' in informed actors variably removed from the source in terms of time and space.

Theoretical considerations

Many studies have tried different ways of changing knowledge, attitude, and behavior of individuals (Aggleton, 1997; Lee and Balchin, 1995; Whelan, 2001; and Zelezny, 1999). These have ranged from instructive style methods which involve telling people how to do, to reward based methods where the required behavior can be rewarded either by tangible incentives or social praise. At the same time, many environmental organizations such as government and private have invested substantial capital (moral and funds) to engender more environmentally sustainable behavior, yet there is little evidence in the literature that many of these theories applied have achieved substantial environmental outcomes (Intergovernmental Panel on Climate Change, 2007).

Despite the variance and sometimes differing positions within the discipline, psychology has responded to the challenge offered to explain human behavior in environmental terms (Hatwell, 2000). One explanation offered is the existence of conflicting values (cognitive dissonance) whereby individuals may value the environment and its preservation but also value their current lifestyle despite negative impacts on the former (Tertoolen, VanKreveld, and Verstraten, 1998:172). Another concerns the higher level of difficulty associated with action as opposed to professed attitude wherein significant external or internal barriers affect the expected result (Andrich and Styles, 1998; Styles, 1993).

Sociology in turn has been slow to respond to the environmental crisis, but has in catching up, significantly pointed to the importance of the historic specificity of the problem in influencing future action (Whitaker, 2002:17). Additionally, sociology has helped in raising awareness that the relationship between the individual and society is a two way street of reciprocal obligations (Callicott, 1994).

As for education, while more and better education has been called for in the environmental field, Gruenewald (2004) examined recent trends in environmental education and argues that its institutionalization within general education works against

its own socially and ecologically transformative goals. However, to the extent that education can play an important role in terms of teaching towards human positive environmental action, then it is of the kind that is able to negotiate the complex ecological interactions between science, politics, and culture (between social and ecological systems) and the resultant impact on human and nonhuman life (Gruenewald, 2004: 94). Ethically, while education has argued that in order to create a sustainable human society we need to change how we think about our relationship with nature, attitude change has not been enough. Similarly, the difficulty in explicating the meanings of key concepts such as "environment," "sustainability," and "sustainable development" have compounded the difficulty in realizing ethical educational approaches that have desired to save the world (Stables, 2004: 235).

An organization as a cultural entity is an important venue where socialization occurs and battles over beliefs and action are waged. By organization is meant an institution whether public or private where individuals either work, learn, or both, that provide an important socialization process to which indoctrination is at the same time both complex and influenced by specific dominant societal ideas of time and place. According to Robbins (2005) where socialization is successful and the dominant ideas validate existing paradigms for change, positive change is possible and can be profound. However, Hacker and Washington (2005) have also noted that the main reason change programs fail is that individuals resist change mainly because those that implement the change don't understand its import. For change to be lasting there must be detailed understanding of what the change is. Therefore, the same problems that education has found in the vagueness of key environmental concepts and policies, has plagued organizational change too in effecting positive environmental programs. Additionally, organizations have to reconcile the often divergent aims and actions of its members. Where, clear support from management has been provided, success has come too (Wake, 1999). However, organizations like society are complex cultures, and often individual beliefs conflict with organizational values (Emerson and Tansley, 1999).

In terms of political economy, the problem is ultimately traced back to the contradictions of modern industrial society and the role of citizens individually and

collectively. For instance, while there is an overwhelming message from citizens that they want the environment protected, there's little, if any, evidence that most voters are willing to do as much as is required to achieve sustainability (Steffen, 2004; Shellenberger and Nordhaus, 2004; Lee, 2003).

The literature has highlighted the need for a multidisciplinary approach to understanding the relationship between theory and practice (Judson, 1991; Hacker and Washington, 2003). Consequently, this research draws on 'social impact theory' (Latane, 1981) from psychology and on Jung's psychological archetypes in the Competing Values map (Quinn and Rorbaugh, 1983) to aid in understanding the way social actors modify their knowledge, beliefs and actions as they negotiate a complex time and space (Cameron, 1985).

Research rationale and populations

The central hypothesis revolves around the notion that university students on the whole are more likely to practice positive environmental behaviors than alumni are. Similarly, both students and alumni are more likely to practice what they believe when focus on environmental issues is immediate. The leading image and rationale for this assumption draws on the metaphor taken from the children's playground in the 'merry-go-round' which postulates that when an object is placed further out from the center it feels a greater force (Qi, 2000).

The research instrument was validated through a study conducted at Thammasat University (Bangkok Thailand) between 13th and 20th February, 2007 where target and accessible populations were drawn from an Environmental Program in the Faculty of Environmental Science (Momiroski, 2007).

In terms of the present paper, the main purpose of the study was to describe the existing environmental knowledge, attitude and practices base of current and former environmental students at a major Thai University and to give that 'base' a cultural context.

A quantitative questionnaire survey was administered to students and alumni of existing and past environmental programs at Mahidol University, Salaya Campus in Thailand between 1st July and 31st July, 2007

For the student group, student population was fixed at N=530. Using a Confidence Level of 95% and a Confidence Interval 5% yielded a required sample size of 223 (n=223). Two hundred and thirty one (231) responses were collected by the due date. An additional forty (40) questionnaires arrived after the due date representing 51.1% usable rate of the total and over the sample size required.

For the alumni group, alumni population was fixed at N=1403. Using a Confidence Level of 95% and a Confidence Interval 5% yielded a required sample size of 302 (n=302). One hundred and seventy six (176) responses were collected with 25 questionnaires unclaimed by the due date. An additional eight (8) questionnaires arrived after the due date representing 60.9% usable rate.

The questionnaire consisted of four (4) parts: 1) demographic; 2) feedback about education; 3) knowledge, attitude and practices; and, 4) organizational culture.

This paper reports the findings in terms of part three (3) that elicited answers to questions on a **Leichart scale** with respect too existing environmental knowledge, attitude and practices and part four (4) organizational culture that utilized an adaptation of the OCAI culture instrument (Quinn and Rorbaugh., 1983; Cameron and Quinn, 1999) to measure organizational culture and conflicting values. The study was classified as descriptive-correlational.

Results

Knowledge, Attitude and Practices

Overall the practice component of the questionnaire results for students and alumni resulted in important data that can be analogously compared to knowledge and

attitude that helps us to better understand the relationship between the three categories and among groups. There are important similarities and differences in the returned data for both students and alumni and between them.

For students the significant aspect of the data is in the consistency between knowledge, attitude and practice (Figure 1). From the result findings, it would seem that high knowledge has high potential to translate into high attitude in the absence of impediments such as time and context. Similarly, high knowledge and attitude gives rise to high effective practices given appropriate contexts. The knowledge data results for students is in line with expectation for respondents who are at the source of the knowledge (90.74%). Similarly, there is a neat fit between attitude (92.4%) and practices (89.06%) because impediments to practice are low when social actors are at the source and intimately immersed in the message content. This is consistent with the theoretical framework proposed by social impact theory and in the central metaphor taken from the children's playground which argues that an object placed in the center is not subjected to the greater force that can eventually lead to falling off (Qi, 2000).

Figure 1

Student comparison between knowledge, attitude and practice

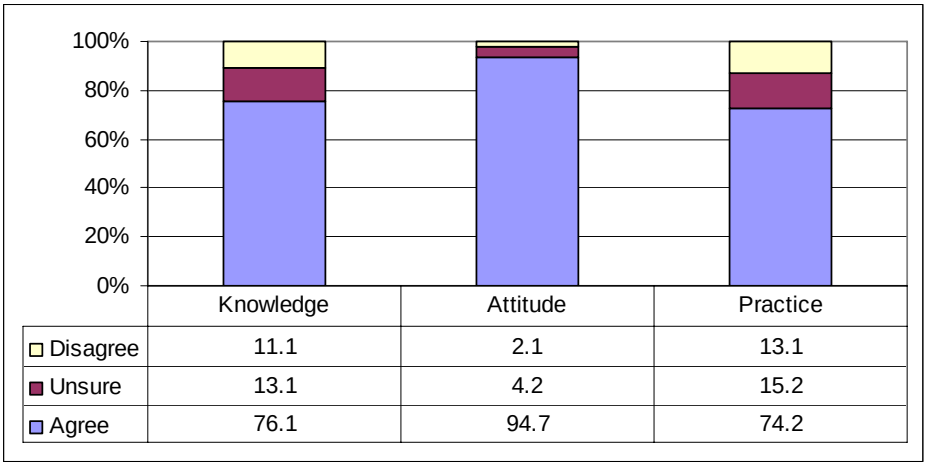
	Knowledge	Attitude	Practice
Disagree	3.4	0.3	2.5
Unsure	5.9	7.5	9.6
Agree	90.7	92.4	89.1

For alumni distance, time and space from source of knowledge as well as the cultural contexts within which they operate have created alternative realities and results than that reported for students.

Alumni reported their environmental knowledge level as 76.1% with attitude at 94.7% and practice at 74.2% respectively (Figure 2). What the returned data suggests is that it is possible to have a high attitude but low practice. While students reported a fit between all three categories for alumni this fit is only true for knowledge with 76.1% and practice 74.2%. It would seem that attitude is contingent on other factors for alumni that are not integrally linked to either knowledge or practice as they are for students. In other words, on the one hand the ethical nature of attitude questions gives rise to a strong stance that might fail to be translated into action over time. On the other, it reaffirms the prospect that the world outside university campus is a far more complex cultural concern where individuals and groups seek to balance disparate forces as they are drawn towards a common consensus.

Figure 2

Alumni comparison between knowledge, attitude and practice



	Knowledge	Attitude	Practice
Disagree	11.1	2.1	13.1
Unsure	13.1	4.2	15.2
Agree	76.1	94.7	74.2

As with the student results, the alumni data outcomes are in line with the theoretical proposition of social impact theory but for different reasons on account of their respective position to the center (Figure 2).

For alumni knowledge and practice have fallen consistent with the way social impact theory would explain it, and they have done so in unison because they are integrally linked when impediments are constant. Whereas attitude has not and remains high because it contains ethical and moral assumptions that can have universal currency and are by necessity not linked to either knowledge or practices in their moral presuppositions. In these terms, the disconnect between ethical values, knowledge and practices in environmental issues, is not dissimilar to the strong ethical position articulated by the phrase "thou shall not kill" in most major religions. Yet, certain circumstances and low focus give rise to low levels of reflective knowledge and consequently low practices when compared to the high ethical stance professed and on which the assumption rests (Pape, 2005; Scheuer, 2005). In religion the knowledge component is neutralized by demonizing the enemy. We dehumanize them on racial (biological) and ethnic (religious) grounds and this makes it easier to kill them. Accordingly, the ethical stance towards the commandment would still be high, yet the perceived knowledge and practices of this ethical stance would decline when focus upon it is low and additionally would be highly dependent on time and place where it is practiced (Pape, 2005). In environmental terms, the "dehumanizing" observed in religion can be analogously compared to the concept "fetishism of commodities" in modern society. Marx argues that the commodity remains simple as long as it is tied to its use-value (Marx and Engels, 1996). However, its magical qualities arise when the labor expended on production is hidden, so that the consumer sees an object that he or she wants, not a product of someone else's labor. Such dehumanizing of object can result in neutralization, or at the very least a modification in the 'will' to act, when the human attitude to action is untied from the consequence of not acting. Untying the knot that connects attitude to action in both examples has resulted in a metaphoric divorce from the tyranny of remorse for acting or not as the case might be.

From a different viewpoint, the data for the knowledge component of this research is highly illustrative of the differences in social reality between students and alumni. Whereas student knowledge responses are fairly consistent across all responses with S.D of between 0.731 - 0.797 such consistency in response was not noted for alumni. Alumni data was more in line with a range of opinions that are expected for

experienced social actors who seek to balance knowledge and experience (S.D. 0.506 - 1.309) in terms of a host of moral and ethical question. Furthermore, alumni also differed greatly across individual questions, where students did not.

The alumni knowledge results are consistent with individuals who are variably removed from the source of knowledge and intimacy from contemporary issues and their level of saturation and exposure to current environmental messages is lower. It is also consistent with a host of issues that have a bearing on social understanding that give rise to doubt that are by necessity drawn from experience. Unsure for alumni was preferred 13.0% of the time whereas for students it was 5.9 percent. For students, unsure was evenly preferred, whereas for alumni it was question dependent. This result is in range of the central hypothesis that intimacy and saturation, as well as increase in impediments (time and space) ought result in lower degree of knowledge when actors are removed from the source of that knowledge.

Where strongly disagree was reported at 0.5% for students (3.4% when disagree is included) alumni disagreement differed greatly with that of students in sum, consistency and on individual issues. For alumni the strongest disagreement offered by respondents were to questions: 2 (Humans have the right to modify the environment) with 6.0% (27.2% when disagree is included), 6 (The earth has plenty of resources if we can learn how to develop them) with 20.1% (58.7% when disagree is included), 7 (Plants and animals have equal rights to humans to exist) 3.3% (9.3% when disagree is included) and 8 (The balance of nature is strong enough to cope with the impact of industry) 5.4% (11.4% when disagree is included). In terms of the ethical implications the responses to questions 2 (6%), especially question 6 (20.1%) and question 8 (5.4%) point to a tendency towards the rejection of the man “rules nature” thesis. Although the response to question 7 (3.3%) that plants and animals have equal rights to exist as man tend to contradict this view. At the same time, the responses to question 12 (Humans were meant to rule over the rest of nature) where 15.8% disagreed and question 14 (Humans will eventually learn enough about how nature works to be able to control it) with 15.2% does tend to reinforce the humanist ethical position of alumni in a cultural sense. The ethical implications of human interaction with the environment for alumni respondents is further reinforced by the strong unsure responses to questions 4 (Human

ingenuity will ensure we do not make the earth unlivable) 46.7% and question 14 (Humans will eventually learn enough about how nature works to be able to control it) with 29.9%. Ethical positions of this type that verge on the strong or give rise to doubt would be consistent with the views of social actors who have developed ethical positions in response to their perceived environmental knowledge as a result of life experience outside the confines of university campus. Student on the other hand, neither have the range of social experiences, nor the variety of venues from which such differing opinions might be drawn and feelings attributed to such issues outside the static campus world is constant.

Conflicting values

While respondent data returned is an important indicator of individual and group knowledge, feelings, attitudes and concerns as well as providing opportunities to identify patterns of current action serving as a valuable means to predict in terms of the future, nevertheless data is static and it must be given cultural context in order that individual actors and groups might be given life dimensions. The operational culture under which individuals and groups operate is the purview and object of interest of the Organizational Culture Assessment Instrument (OCAI). The OCIA is an appropriate tool to study the dynamics of society as it moves and provides important opportunity to give contextual meaning to quantitative individual and group sentiments.

As a snapshot of life at a moment in time the OCAI depicts Students and Alumni as inhabiting two disparate worlds where there are commonalities and important differences that impact upon the data returned. The value of this tool is in its predictive dimensions because it offers a current snapshot as well as future desire in the views and responses by the participants themselves.

For the purpose of the study, instrument validity and reliability for students were established (Table 1). In assessing the reliability of scales used in the questionnaire a coefficient of internal consistency was calculated using Cronbach's alpha methodology (Santos, 1999). The results for the statements contained in the

Organizational Culture Assessment Instrument (OCAI) for both current and preferred situations are shown in (Table 2).

Table 1: Student Conflicting Values - Coefficients of Internal Consistency

Coefficients of Internal Consistency Using Crombach's Alpha Methodology			
Culture Type	Reliability Coefficients for Current Situation	Reliability Coefficients for Preferred Situation	Comparison Reliability Coefficients*
Clan	.65	.82	.81
Adhocracy	.73	.85	.81
Market	.79	.71	.65
Hierarchy	.81	.74	.76

* Reliability coefficients reported by Cameron and Quinn (1999).

Conflicting values axis positions that help explain student personnel in both current and preferred situations provide a cultural context within which respondent data for this group might be framed (Table 2), whereas Figure 3 depicts the data in the now and preferred situation in pictorial form.

Table 2: Student Conflicting Values mean axis positions

Mean Scores by Culture Type for Both Current and Preferred Situations										
Culture Type	Current Situation					Preferred Situation				
	Mean	S.D.	df	F	p	Mean	S.D.	df	F	p
Clan	22.5	9.26	81	1.99		35	12.25	78		
Adhocracy	22.5	5.97	81	1.169	.186	27.5	16.69	79	1.124	.237
Market	27.5	8.01	83	5.290	.000*	18.75	11.57	79	5.595	.000*
Hierarchy	27.5	4.62	83	2.023	.000*	18.75	14.57	79	1.941	.000*
	100.0					100.0				

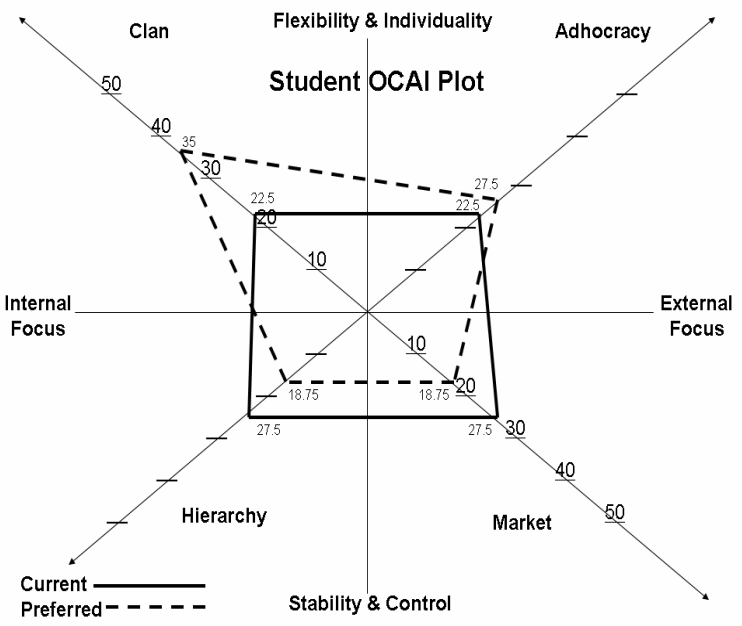
* $p < .05$

Note: *Mean scores could range from 0 to 100. Representing a percentage out of 100.*

The solid rectangle for students shows that the cultural types that dominate are Hierarchy and Market followed by Clan and Adhocracy (Figure 3). This culture type is typically concerned with stability and control (Hierarchy and Market) and less so with flexibility and control (Clan and Adhocracy). It tends to be a culture equally balanced between internal and external focus whereby the existent culture is more readily reproduced. It is an environment that is not easily susceptible to change and is weary of free inflow of new ideas that might readily be given a forum and therefore acceptance towards action.

Figure 3

Students Conflicting Values Culture Plot (OCAI)



Instrument validity and reliability of the OCAI for alumni were established (Table 3). The results for the statements contained in the OCAI for both current and preferred situations are shown in (Table 4).

Table 3: Alumni Conflicting Values - Coefficients of Internal Consistency

Coefficients of Internal Consistency Using Crombach's Alpha Methodology			
Culture Type	Reliability Coefficients for Current Situation	Reliability Coefficients for Preferred Situation	Comparison Reliability Coefficients*
Clan	.61	.83	.82
Adhocracy	.78	.82	.83
Market	.82	.68	.67
Hierarchy	.83	.73	.78

* Reliability coefficients reported by Cameron and Quinn (1999).

The conflicting values axis positions that help explain alumni personnel in both current and preferred situations are shown below (Table 4), whereas, Figure 4 depicts the data in the now and preferred situation in pictorial form.

Table 4: Alumni Conflicting Values mean axis positions

Mean Scores by Culture Type for Both Current and Preferred Situations										
Culture Type	Current Situation					Preferred Situation				
	Mean	S.D.	df	F	p	Mean	S.D.	df	F	p
Clan	16.87	4.58				28.75	6.94			
Adhocracy	17.50	4.62	83	1.173	.182	23.75	5.17	79	1.134	.238
Market	33.12	7.52	83	5.310	.000*	22.50	4.62	79	6.595	.000*
Hierarchy	35.00	4.63	83	2.003	.000*	22.50	5.74	79	1.943	.000*
	100.00					100.00				

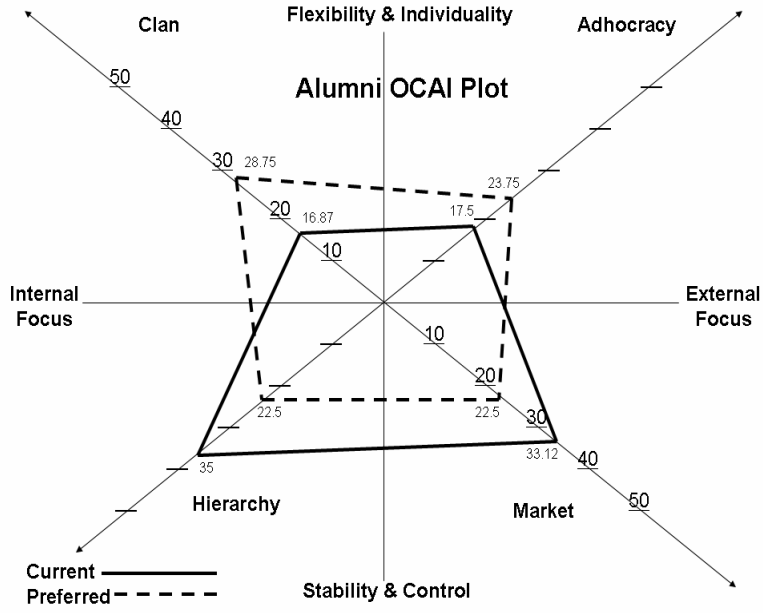
* $p < .05$

Note: Mean scores could range from 0 to 100. Representing a percentage out of 100.

Six dimensions were analyzed by the organizational culture assessment instrument using the competing values framework: 1) Dominant Characteristics, 2) Organizational Leadership, 3) Management of Employees, 4) Organizational Glue, 5) Strategic Emphasis, and 6) Criteria for success. The mean scores for each of the culture types across the 6 dimensions in both current and preferred situations for alumni are shown above (Table 4). In the current situation, the highest mean score exhibited by

alumni was in the organizational leadership dimension (Mean= 35) where management was described as one that emphasized "coordinating, organizing, or smooth running efficiency", while the lowest mean score recorded was in the dominant characteristics dimension (Mean= 16.87) where the organization was described as least likely to be one that was "dynamic and entrepreneurial [where] people are willing to stick their necks out and take risks".

Figure 4
Alumni Conflicting Values Culture Plot (OCAI)



Alumni operate in a cultural environment that is predominantly Hierarchical followed by Market then Adhocracy and Clan. Theirs is a world that places high regard on following the rules and maintenance of the system as it currently exists and is excessively inwardly focused (Hierarchy). Competition, both internal and external is prized (Market), however not to the extent where it comes into conflict with and at the expense of loss of stability and control. Flexibility and support for individuals is low (Clan), and individualism valued only marginally higher (Adhocracy). Both for student and alumni new ideas, outside of popular group-will are hard pressed to gain acceptance and even more to win consensus.

The cultural OCAI snapshot described above sits in relative comfort with the knowledge, attitude and practices findings for both students and alumni, because it confirms the emphasis on stability and control. To the extent that the data returned by students differs it does so because the culture type was one from the very start that more readily accepted environmental ideas and their realization, whereas for alumni that process and reproductive cycle was variably there in the first place. As for the difference in alumni attitude and relatively low practices by ratio it is better explained by what cultural type respondents wish for (prefer).

In terms of what cultural type students and alumni would prefer both opted for a high Clan and Adhocracy culture at the expense of Hierarchy and Market. In the imagined world that they would like to inhabit, both groups wished for a supporting environment where individual expression is relatively high and where individual and group wishes might more easily be accepted. This would be a world that would be supportive of new ideas and more ethically in tune with environmental concerns expressed by concerned individuals and groups who demonstrate high levels of attitude. In such a world consensus would be won and reproduced both by and through group consensus. It would also be a world where alumni environmental attitudes might more readily be brought in line with both their knowledge and with their environmental practices. Both groups call for stability and balance in terms of rules and competition but at a different level to what it currently is. This is a call for a paradigm shift that moves all boundaries wholesale and not arbitrarily.

The findings in the present study compare favorably with the 66% of institutions in the US who report a Clan culture type with a mean of 28% (+/- 5%) (Smart and Hamm, 1993; Smart and St. John, 1996). Likewise the call for a paradigm shift in favor of a Clan culture also sit well with the findings of the questionnaire pilot test conducted for Thammasat University (Momiroski, 2007) where students also called for a an increase in the direction of Clan.

The plot serves as an organizational culture profile to understand the present and to know of respondent future intention. It is, however, also an important step in initiating a culture change strategy (Cameron and Quinn, 1999). The group cultural profile within which students and alumni wish to operate is overwhelmingly a clan type where the department is a very friendly place, where the professors (for students) and management (for alumni) share a lot of themselves. The leaders, or professors and department heads in this imagined world be inhabited by mentors or possibly parent

figures. In the Clan culture, the organization is held together by loyalty or tradition, and commitment is high. This implies that the department where the students and alumni currently operate is not one where it is currently achieving its objective of supporting students and employees learning outcomes through the advising process. A Clan culture would result in an organizational profile that indicates that the department emphasizes the long-term benefit of human resources development and attaches great importance to cohesion and morale (Cameron and Quinn, 1999).

In terms of success, the clan culture defines this in terms of sensitivity to customers and concern for people, with the organization placing a premium on teamwork, participation, and consensus (Cameron and Quinn, 1999). Student and alumni rating in the preferred situation indicate that the department students (faculty/staff) and alumni (workplace/management) wish for would be achieving the primary mission of the university and modern organization which is to provide a collaborative, learning-centered environment in which highly qualified and diverse staff, and social participants would be able to integrate knowledge, attitude and practice in a creative and community oriented environment (Rowan University, 2004).

Limitations with regard to the OCAI exist, as with any instrument, so far as external validity is concerned when data might be extrapolated to the general population. For example, results from this study may not necessarily be projected to all other students and or groups. Furthermore, generalization may be difficult due to the possibility of the Hawthorne effect which demonstrated that individual behaviors may be altered because they know they are being studied in a research project (Franke and Kaul, 1978). Nevertheless, the conformity between student and alumni desire for a Clan culture in the preferred situation does point to consensus of the type that would be far more accommodating of change strategies in favor of the environment than it currently is.

Alumni Knowledge and Practices Regression

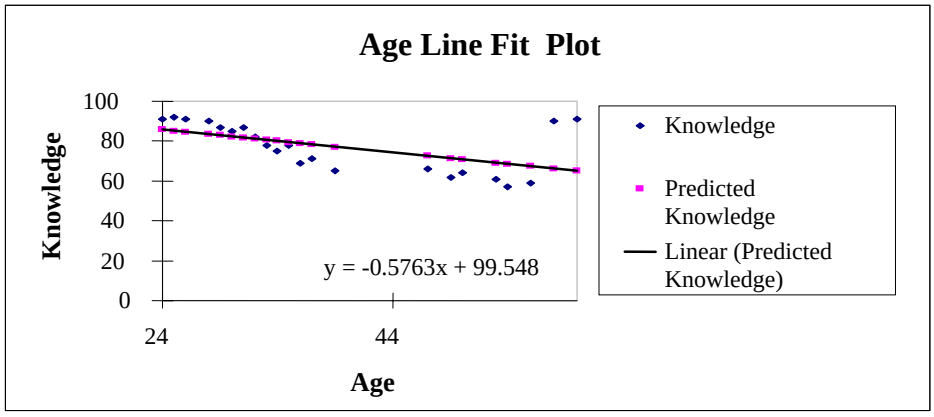
Alumni data results showed that regression between knowledge and practice took place over time whereas for students this was not noted as they are at the source of knowledge. Similarly, attitude stayed high for both groups and it was not a significant determining variable for either students or alumni where student attitudes were reported at 92.4% and alumni were at 94.7%.

While a comparison between knowledge and practices highlight that these two categories relatively mirrored each other for both students (Knowledge = 90.7% and Practice = 89.1%) and alumni (Knowledge = 76.1% and Practice = 74.2%) within group, for alumni there was within-group variation in terms of age group for both knowledge and practice.

Regression data is a useful tool that helps place emphasis on the variables that impact on this decline over time. It would seem that issue focus is a significant factor upon retention for both knowledge and practice levels for alumni over time. However, since the regression reverses in the mid to late 50's in terms of age, it is also suggestive of factors outside the scope of this research that have a bearing on the results. Nevertheless the reasons for which this phenomenon occurs can be implied and is most likely related to life situations, culture and availability of time.

In terms of knowledge, the alumni regression plot below illustrates that group knowledge progressively declines with time (age) from 91.0% after graduation steadily declining (with minor fluctuations) to a low of 57.0% then reverses around the mid 50's and than steadily increases to 91.0% again at age 60 (Figure 5). For Practice it starts at a high of 87.0% soon after graduation and steadily drops (with minor fluctuations) to a low of 50.0% in the early 50's than starts a gradual and steady climb that peaks in the advanced years (60) at 91.0% in the same way as it does for knowledge (Figure 5).

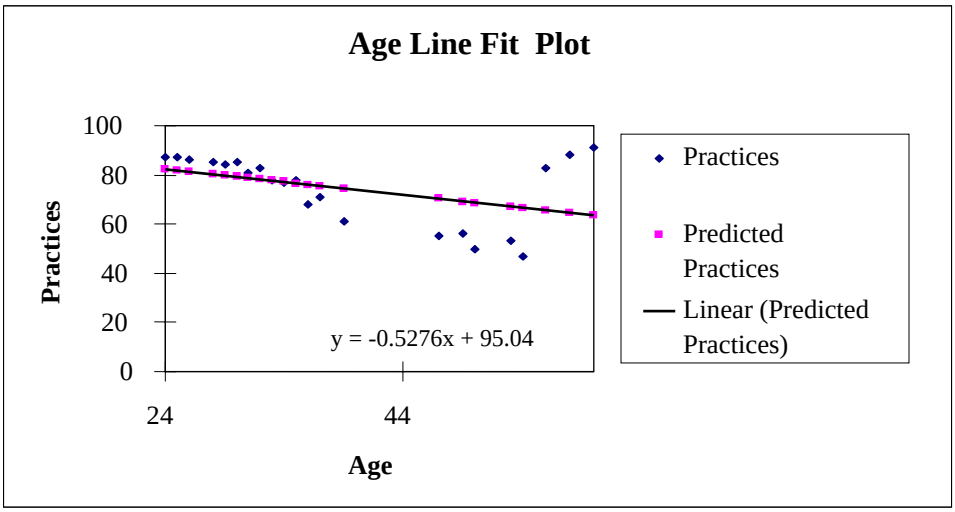
Figure 5
Alumni Relationship Regression Plot between Age and Knowledge



The variation in the relationship between knowledge and age group for alumni is expressed by the following statistical formula where Multiple R = 0.548887 and R Square = 0.301277 (Adjusted R Square = 0.266341) and for Practices by Multiple R = 0.437327 and R Square = 0.191255 (Adjusted R Square = 0.150817) (Figure 6). The significance in these formulas is in the downward trend that they both depict for Knowledge and Practice.

Figure 6

Alumni Relationship Regression Plot between Age and Practice



One way to explain the above progressive decline in environmental knowledge and practices is by pointing to distance and time from the source of knowledge. However, it would seem that the added experience that comes with age also gives rise to contemplation about the legacy we leave behind in our advanced years also. This might help explain the change in pattern in the mid to late 50's for respondents that would be consistent with the view of a new-found environmental consciousness as social actors approach retirement. Such contemplation implicit in the data findings is in line with the lowering of impediments to action that give rise to increasing environmentally friendly practices that social impact theory has elaborated.

However, another way to explain the progressive decline in knowledge and practice for alumni, is by pointing to loss of focus on account of the cultural frame within which social actors operate in. Importantly, data results also suggest that increasing knowledge does not by consequence over time result in increase in practices. This is a significant finding in this research as a number of researches have pointed to such a link in the literature (Fishbein, 1980; Cable, et al., 1987; Young and Kent, 1985; Stasson and Fishbein, 1990; Ajzen, 1987).

While there are many similarities between students and alumni there are important differences too and these have been elaborated above. The main differences that have direct ramification upon the central hypothesis concern the way in which knowledge and practice both decline in the example of alumni respondents over time and in particular contexts, while for students it is in the relative consistency between knowledge, attitude and practices data. Clearly, education is an important socializing instrument for both students and alumni, however, for both, it is also time and place specific. The data returned for alumni for knowledge is consistent with Assumption University research study that reported 72 per cent knowledge for the general population in Bangkok, while for attitude alumni results are marginally higher than the 85 per cent who signaled that they had positive intention to practice in the general population (Bangkok Post, 2007). This is suggestive of the view that education has a positive effect, but that time and place can lead to significant cultural changes in individuals and groups when focus is changed to the detriment of positive environmental outcomes in action. Similarly, it calls for provision of practical tools towards practice for citizens in order that they may be able to translate their desire into positive steps in favor of the environment.

Conclusion

Numerous theoretical frameworks have been utilized to explain the dynamics in the relationship between intention and action in the literature. Fishbein's theory of reasoned action (1980) has generally been utilized to extrapolate action from intention so that it has found wide acceptance in research as appropriate methodology for

application to a wide variety of social situations to predict future action such as to measure the effects of interpretive messages on behavior change (Cable, et al., 1987), predicting recreation behavior (Young and Kent, 1985), predicting seat belt use (Stasson and Fishbein, 1990), and similar. However, its chief shortcoming is to be found in the causal presupposition that attitudes and subjective norms predict behavioral intentions - which, in turn, predict behavior without allowing for the role played by perceived behavioral control which is also related to behavioral intention (Ajzen, 1988). Similarly, neither theory of reasoned action nor the popular alternative 'trait hypothesis' give credence to the value attributable to message focus and nor can they explain effectively situations where attitude and intention are high, yet action is low in the absence of a cultural context (Trafimow and Borrie, 1994).

It is primarily on account of the entrapment within existing paradigms to explaining, that alternative methodologies were used in this study such as 'social impact theory and the 'conflicting values framework' - OCIA by Quinn and Rorbaugh (1983). Ultimately what human actors do and how we seek to explain it revolves around appropriate understanding of the cultural issues that influence individuals as they operate dynamically in groups and organizations. By deciphering what goes on in social groupings we can learn much about the paradoxes in human action as groups are primary venues where culture is created, managed and sometimes even destroyed then reformulated (Schein, 1992). Thereby when inconsistencies exist between individual and group action, such ironies are not unknowable, but can point to important social contexts that have a bearing on action validity of individuals.

Weber (1930) was highly astute in noting the deeper societal meanings that help explain why actors fail to act in the metaphor of the "iron cage". What Weber called "iron cage" Marxism identified as 'false consciousness' or lack of 'idealism' (Gramsci, 1975; Marx and Engels, 1977). What both concepts contribute to the discussion is in the role played by the increasing rationalization of human life, which can entrap individuals into patterns of 'inaction'. The kind of society both Weber and Marxism allude to are typical modern nation-state capitalist societies, but especially those that place high emphasis on rules, rationality and control. Societies that favor high

rationalization can ultimately lead to 'low' levels of environmentalism by emphasizing the maintenance of the status quo. The rationale for this view is to be found in the entrapment of social-individuals in existing paradigms. Students and alumni in this study are pertinent examples of human actors operating within strong hierarchical structures.

Existing paradigms are produced, reproduced and sustained through the hegemonic cultural order of existing society through tools so that they limit and organize realities (Horne, 1986). Ultimately, such realities can lead to social uniformity of the kind that tends to portray a single and unifying consensus of national unity and 'consciousness' (Bennet, et al., 1981 : 61). Students and alumni conform to the uniformity expected in actors operating within existing social networks where realities are thus organized.

To break out of existing cycles requires alternative tools for explaining social interaction with the environment that can lead to appropriate future change-strategies. The value of Latané's (1981) social impact theory is in the simplicity that argues in terms of significant variables that help influence outcomes such as strength (of the message), immediacy (closeness in space and time) and number (the number of influences of the message). It presupposes that positive outcomes are contingent on decrease in impediments to the message. Students and alumni in this study are examples where social impact theory variables have been instrumental to proper understanding of human environmental action in these two groups. Similarly, social impact theory accommodates differences where individual action might have quantitative group dimensions but might differ in its qualitative aspects from the group. Importantly, while group action might have a paradoxical dimension (Le Bon, 1896) in talking of anonymous individuals acting together as group, groups and crowds are not anonymous, their actions not random and their reasons not unknowable. According to Thompson (1971) crowd action is patterned in such a way as to reflect existing cultures and societies. This means that when we act we do so based on a whole host of factors that have a social anchor located in the shared cultural hopes, dreams and experiences of that group and that these can lead to prediction of future action (Horne, 1989). Such cultures

that help explain existing and future patterns of action were identified for students and alumni through the OCIA by Quinn and Rorbaugh (1983). An appropriate understanding of existing action-patterns highlights the need not only for theoretical frameworks towards understanding positive action, but that it must also provide practical and manageable tools for individual practice.

Assumption University research study recently identified some of the reasons why increased knowledge and attitudes do not always translate into practice in a local context. Implicitly the findings argue that Thai people do not know how to contribute to the ongoing fight against the disastrous phenomenon of global warming. According to the poll results (ABAC Poll) conducted among 1,281 people in Bangkok and outlying areas between July 16-21 as many as 97.7 per cent of the respondents said they had heard about the problem of global warming problem while 72 per cent said they knew what global warming was. However, explicitly, nearly 85 per cent said “they wanted to know how any one person could help minimize the impact of global warming” (Bangkok Post, 2007). According to Dr. Noppadol Kannikar, director of the ABAC Poll Centre the results highlight the need for the necessary and "urgent campaign to promote individual contributions to solving the global problem”.

The findings of Assumption University research as well as the present study highlight the necessary rethink of existing approaches to environmental activism that seek to dynamically link knowledge, attitude and practice. More specifically, they point to the need for unlinking current accepted paradigms towards action. Such a change would require a fundamental reframing of the argument for the role that environmental education plays in action by informed actors. Furthermore, that any solution to a possible disjunction between theory and practice might require not only a radically different way of seeing the role that education plays, but also the role that institutions play in reinforcing any such disjunction between knowledge attitude and practices in wider social contexts outside of university campuses. Furthermore, higher order learning requires a rethink of the roles various stakeholders play in such a disjunction across the whole spectrum.

Recommendations that stem form this research include the necessary exploration of the role that intervention strategies can play in changing existing cultural patterns of behavior. It would be valuable for example to identify how quickly regression in informed actors occurs when issue-focus is changed.

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