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From the Editor

Dear readers of the *Journal of Today* this second volume of our Journal is the outcome of the sincere, enthusiastic and committed efforts of all its contributors. This issue is devoted to research articles and reviews in the areas of Humanities and Social Sciences, Applied Sciences, Economics, Heritage Tourism and Management.

With this volume we aim not only to publish articles that focus on current, popular and interesting issues, but also to minimize the time that elapses between acceptance and publication of articles. You may have noticed that this issue of the *Journal of Today* gained a little weight. In this second volume, we have invited more articles than in our inaugural edition. For the approval of the extra number of journal pages we are grateful to the administration of Americanos College that firmly supports the *Journal of Today*.

This administrative support together with the commitment of the editorial team and the contributing authors form the yeast for the development and success of our Journal. We are thankful to all the authors who allowed us to publish their quality and interesting articles. We also thank all the authors whose articles have been accepted but were not possible to be included in this volume. I sincerely and warmly acknowledge all the authors' contribution not only for their enthusiastic support, but also for the excellent communication network that we have developed.

To all the contributors of the *Journal of Today* and its readers I express my appreciation and my best and warmest wishes for the New Year 2004.

Charalambos Louca

A PILOT MENTORING SCHEME FOR INTERNATIONAL STUDENTS AT LONDON METROPOLITAN UNIVERSITY

JAN KATHERINE BAMFORD*

ABSTRACT

Research carried out in a large Business School at a UK university into the cultural and educational experiences of international postgraduate students determined that the business department needed to employ additional strategies for the pastoral support of those students during their time at the University. International students are an important source of income generation for UK universities. The explosion in terms of the number of international students coming to the UK requires the development of strategies to ensure the positive experience of these students whilst they are at university in the UK.

Focus groups based on cohort identities of international students were held and resulted in highlighting the need for some of the students to be allocated with a mentor or 'buddy' during their duration of study at the university. This was lacking in the support system that existed. This paper represents a work-in-progress, which follows the introduction of a pilot mentoring scheme for international students, on two of the postgraduate programmes at the University. The paper analyses the findings of the focus groups as well as the success of the introduction of the pilot scheme for the postgraduate students. The success of the pilot scheme was monitored through informal feedback from the students and from focus group interviews with the mentors and those, they were mentoring. It is intended that the paper will represent some of the preliminary findings of the students' experience and an evaluation of the pilot mentoring system.

Key Words: Mentors, International students, Student support systems

1. INTRODUCTION

This paper represents a work in progress aimed at assessing the impact of the introduction of a mentoring system at postgraduate level, which

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supports international students of Business subjects in a Business School in the UK.

The present economic climate has meant that universities have had to look to external sources to support the allocated government funding that they receive. An easily accessible source of this funding is that of the income generated by the recruitment of international students, that is students who are required to pay the 'full fee' for their tuition for their course at both postgraduate and undergraduate levels. As a result of the expansion in international student numbers at London Metropolitan University it has become necessary to consider issues concerning the impact of the increase in numbers from different cultures on the existing university administrative structures as well as the type of student support that is offered by the institution. An example of the expansion in student numbers for the institution is offered in the case of China, where the intake of students in 1997 was only four compared with 292 in the academic year 2002/3.

Previous research carried out¹ at the institution last year raised questions with regard to issues concerned with the pastoral care of international students. This was further supported by focus groups being held with different groups of international students in the former Business School. The focus groups were set up with the aim of assessing whether the University needed to set up separate committee structures to address issues specifically pertinent to international students. The total number of international students, that is, full fee-paying students, in the Business School at that time numbered some 595 international students (this figure excludes EU students). The paper considers some of the suggestions made by the focus groups and follows through on one of the suggestions made by the students, the introduction of a mentoring scheme that would provide crucial peer support. The issue of mentors was raised by the focus groups and was further highlighted by a research dissertation carried out by a postgraduate student in the Business School².

The concept of mentoring itself as Amstrong, Allinson and Hayes (2002) argue is not new and the term mentoring is really only a modern term for what is a 'teacher/student relationship' (Hagenow and McCrea 1994, 42 cited in Amstrong, Allinson and Hayes 2002, 2) and therefore applicable to all types of learning situation. A definitive proposition of exactly what

mentoring is perhaps not possible as it will mean different things in different situations and to different people but it is clear that there are common threads to a definition, that are considered thoroughly in the relevant literature. A developmental and caring relationship that offers support during the early stages of learning that improves the growth, knowledge and skills (Shea, 1995) of the other party seems to provide some general basis for how the term can be defined. However as (Colley, 2002) suggests a conceptual analysis of the role of a mentor has had little attention and most of the research has focused on the practical impact of a particular mentoring scheme. Gibb (1994), offers a broad definition of a mentor as being someone who is an accomplished and experienced performer who is able to take a special interest in someone who is more junior or inexperienced to themselves and is able to guide and help them. Clutterbuck (1991) defines mentoring as simply the efficient developing of talent. Dutton (2003), accepts that there is no common definition of a mentor as there is no commonly accepted conceptualisation, except in the sense of its Greek mythological origins as *Mentor* being the guardian and trusted teacher of *Odysseus*. The term has been commonly adopted in business practice, similar in fact to the adoption and use of the Hindu word *Guru* and used generally to mean a guide. He proposes that the term describes someone who encourages career development and personal skills. Given the generally accepted nature of what we can take a mentor to mean the use in the educational context is unsurprising. What is not so common is the use of mentors amongst peers in the educational context albeit the business educational context. The application of this format of support to international students, joining postgraduate business courses, therefore offers a conceptual application of the nature of the mentoring process to students, who are unfamiliar with the UK educational framework for higher education and the cultural differences most experience when first arriving in the UK.

Jowett and Stead (1994), suggest that the introduction of mentoring systems and the academic study of the implementation of these systems has become widespread. They argue that the focus of higher education has been on the development of vocational training but the increasing tendency to develop new and flexible learning strategies has required further consideration of how students are supported through their learning process. A mentoring system for postgraduate students would therefore enhance and facilitate their learning process whilst relieving some of the concerns that

may arise on arriving in a culturally different education system and a new country for the first time. The new students will know few if any people and will have to quickly learn to research and write about issues relevant to the assessment of their postgraduate modules, written in another language in which they are unlikely to have fluency to the level of native speakers.

Research into the issue of mentoring underlines the importance of a mentoring network as a support system for many environments. This paper argues that it is particularly important where external factors such as dealing with new systems and cultures in a short period of time add to the internal pressures of arriving in a new educational institution.

It is also clear in terms of the educational value of mentoring systems that the mentor benefits from the mentoring experience.

'Mentors can gain personal prestige, recognition and self-satisfaction as well as developing a network of supporters' (Dutton, 2003, 23).

Dutton acknowledges that little has been done in terms of measuring the depth of the gain although research clearly underlines that there is a positive gain on both sides. The application of this to an educational context is clear. Whilst the focus of this paper is not on learning styles, it cannot be disputed that mentoring encourages reflective learning on the part of the mentor and through an experiential learning approach (Kolb, 1984) to the subjects they have studied, thus they become deeper learners than they were the first time they approached the study of a particular subject. The transformation of a mentee into a mentor will continue the process for those that were the original mentees on the pilot scheme that was introduced.

A study carried out by Santos and Reigadas (2002) acknowledges that a relationship with a mentor can expand the student's awareness of resources available for cooperating successfully with demanding academic conditions and leading on from this, his or her sense of personal competence and self-efficacy. In their study of Latino students they argue that developing planned mentoring relationships may be a productive way of addressing the college adjustment needs of the Latino students. The difference however with the study carried out by Santos and Reigadas (2002) is that it was structured as a faculty-student interaction as opposed to being the peer driven relationship that was proposed for the present students' institutions.

Their findings of the increase in student efficacy were positive and led to an increase in better-defined academic goals, although they felt that their findings indicated that students were still concerned about their academic performance, the mentor- student relationship had fostered a more positive student identity among Latino students. The introduction of the mentoring scheme on two postgraduate courses was aimed at providing a positive support relationship for international students that would respond to some of the criticisms that were raised as a result of the focus group meetings described below.

2. FOCUS GROUPS

There were two phases to the focus groups approach that was used for the project. During the previous academic year, 2001/2 a series of focus groups were held with international students at both postgraduate and undergraduate levels. The aim of holding the focus groups was to try to establish whether the University's formal and informal feedback mechanisms were working in terms of a representation of international students' views and that issues pertinent to their student experience were being raised at faculty level. The intention was to try to establish whether there was a need for a separate forum for the representation of international students, which fed into the formal mechanisms such as the committee structures of the University. The method employed to achieve a response to this question was to hold a series of focus groups consisting of international students from different courses in the Business School at both undergraduate and postgraduate level. Attendance at the groups was good and a broad mixture of countries was represented. Four groups were asked a series of structured questions. The responses that were posed to each group were noted and analysed for common themes. A number of issues were raised as a result of the focus groups, the pastoral care of international students offered by the University being an important discussion area. What is offered here is an analysis with regard to the responses given by the students on issues of pastoral care and how these were and are relevant to the development of a mentoring scheme. The second phase consisted of focus groups of the mentors and mentees, separately and again a series of semi-structured questions were posed.

For the first focus groups on the student experience, it was found that students were often not aware of the support framework that the university offered and much of the information that was disseminated did not seem to have reached all the students especially those who enrolled on their courses late. Cultural differences were also clearly identified as a problem. This was exacerbated for postgraduate students who are only in the UK for a year's duration and often have to deal with the demands of the course as well as making adjustments to a new cultural environment.

One of the most concerning aspects of the responses of the different focus groups was that there was a feeling of dissatisfaction from international students with regard to the lack of communication between them and the University. One of the reasons for this it is argued is due to the administrative functions of the University having to become more 'distant' in order to deal with increasing numbers of undergraduate students and that it is a natural consequence of the centralisation of the university administrative structures. It is speculated however that an element of this could be for cultural reasons, for example in East Asian cultures; it is common for a student to have a distant and extremely formal relationship with their tutors and lecturers.

Postgraduate students commented specifically that they felt that the 'University did not care' and that there was little guidance in terms of leisure activities and career development. In addition, there was some serious concern that many of the students had arrived late, in terms of joining their courses, both from the perspective of those who had arrived late and the perspective of those who had not. Late arrival for courses is often put down to visa problems or accommodation problems, which added to the stress the students experienced on their arrival in the UK. In addition, missing their induction programmes contributed to their disorientation. Students also considered that further political and cultural orientation to the UK was necessary. Some students whilst recognising that lecturers on the whole made an effort to take on board the international body of a particular cohort of students, felt that they 'got lost in class' due to a lack of cultural knowledge of the UK. This was particularly true of undergraduate students. The opinion at postgraduate level was split with some commenting that as postgraduate students are more confident, further induction and support was not necessary. One student commented that 'a lot of postgraduate students are already familiar with the UK'.

This issue of the distance between students and University staff has been further corroborated by research carried out by a postgraduate Greek student whose finding suggested that students feel that they are left to drift by the University.³ Focus groups held by this student provide a peer perspective from international students and would seem to support the argument that some international students feel a sense of isolation on their arrival in the UK, which then hinders effective study.

Many felt that they had not had sufficient help with their courseworks in the sense of knowing what was required of them and that group work, being an aspect of many of their assessments caused further stress. Whilst the University provides extensive language support it was felt that the centralised system was not appropriate and that there needed to be faculty level support particularly with regard to having someone available to check their coursework for grammatical and language errors.

It was suggested by the postgraduate students that a mentoring or 'buddy' scheme be introduced so that students could approach a peer who would understand some of the issues that the student may be concerned with and be able to guide the student with regard to relevant information and support schemes.

3. THE PILOT SCHEME

The aim of introducing a pilot scheme was address some of the concerns raised by the students and to provide a further form of support for international students that would come from their peer group as opposed to some of the formal student support systems that the University offers. Gil and Katsara (1999), suggest that Greek students found the introduction of other Greek students studying at the same institution, to potential new Greek students, helped to relieve some of the anxieties of both the new students and their parents about coming to England. Gil and Katsara (1999) also found that academic essay writing was a significant problem. The focus groups underlined the need to counter student anxiety on issues of language and completion of the coursework. Sternberg & Zhang (2000), found significant differences in learning preferences between national cultures. Although it has been well documented that students from differing cultural backgrounds have different learning styles and preferences, many UK

universities have done little to tackle this issue. A previous study⁴ highlighted the fact that certain cultures may prefer a teacher centred approach to education with a lot of class contact time and 'traditional' teaching as opposed to the experiential approach increasingly adopted by UK universities. This study found that group work was much less popular with international students, particularly East Asian students, than traditional lectures, which were perceived as a very effective teaching method.

The discussion assesses the introduction of a mentoring programme at postgraduate level in terms of how or whether it could be perceived as working as a student support mechanism and whether it aided international students in becoming more responsible for their own learning whilst having to deal with issues such as cultural change and a new educational environment in a very short period of time. In addition could access to a peer mentor, aid the student in acquiring the necessary skills for UK higher education?

As the initial scheme was intended as a pilot scheme, mentors were carefully selected from the previous semester's cohort of students. These mentors were then allocated mentees from those who requested some initial further support. The mentees were allocated on an ad hoc basis and there was deliberately no consideration of cultural/country background or gender. Mentors were not provided with formal guidelines for their roles but were simply asked to act as a 'buddy' for the students they were allocated to. They were required to be supportive but it was not necessary to develop a deep friendship with their mentee. They were to simply act as a guide offering advice on University procedures, library facilities and the social programme of events that the University has on offer as well as directing them to services such as the university's language support service.

All the mentors were allocated an initial four mentees each. It was felt that this was an appropriate number of mentees and would not prove too onerous for the mentors in terms of an interference with their own studies at the University. The learning styles and personality of each of the mentors was not taken on board when identifying who was appropriate to be chosen as one of the initial mentors although there was some consideration of responsible nature of the personalities of those chosen to act as mentors for one of the courses. The mentoring scheme was piloted on two of the most popular courses in the Business School with international students, the MA

International Business and the MBA. The other reason for choosing these two courses to develop the scheme was practical. Both courses have a significant cohort of Semester A and Semester B entrants thus enabling the mentoring scheme. As the postgraduate students are only in the UK for twelve months it would be difficult to allocate mentors to new students when they would only be in the country for another week or two or at the most 3 months if they chose a later date to hand in their dissertation.

As already stated there was no real guidance provided to the mentors as to what form their role should take as it was intended to assess the way the students behaved as mentors. It was felt that giving too much guidance would hinder this process. In the same way, the mentees were provided with no guidance as to what they could expect from their mentor. It was set up through the provision of email addresses of the mentees to the mentors. How and what form any contact should take was left entirely up to the mentors and the mentees. What became clear however was that the different culture of the two courses that the pilot scheme was implemented on would have implications for the success of the scheme and also for the research that was being carried out on the implementation of the scheme. The group of mentors on the MBA kept in regular contact with the author with progress reports whereas the group of mentors from the MA International Business had no contact with the author and did not respond to emails requesting meetings. The focus of the research therefore on the success of the implementation at the present time has been on the MBA.

4. INITIAL FINDINGS ON THE IMPLEMENTATION OF THE PILOT PROGRAMME

Mentors and mentees were issued with a structured series of questions aimed at addressing the issues that the pilot scheme hoped to resolve. However, the response rate was not very satisfactory. All the mentors on the MBA responded but only four of the mentees from the MBA responded and none of the MA International Business students have responded. However, the responses were helpful in the sense that they corroborated the focus group findings from both the mentors and the mentees.

All the mentees responded that they had found the mentoring scheme extremely helpful, both in the questionnaire and in the focus groups. They

helped the students to deal with issues such as living in a new country (this was more important for some than for others), tutor expectations, understanding what was expected of you, coping with homesickness, coping with the pressure of a Masters course and coping with coursework.

The response to a question posed on how the mentor had helped them varied but there was a focus on the issue of coursework:

'They have been really helpful and showed me where to start my coursework' (Juan).

'Most particularly the mentor has been able to help me in my coursework' (Adebayo).

'Not anything in particular but they have been very helpful' (Alok).

'Having a mentor assigned to me has helped me in the area of adapting to a new school environment. This is very very useful for someone like me that had never studied abroad. I was very much able to generally have a pre-knowledge of how to basically study abroad in the UK' (Omolara).

When asked on whether the mentoring scheme should be available for all international students the response varied but was generally extremely positive and focused on the issue that mentors were providing something that the academic staff were not:

'Certainly yes, international students that have not studied in the UK before should be availed of the opportunity of mentoring. Lecturers, with no disrespect do not give the full support on the coursework plus how to effectively do the assignments and prepare for exams. Though they tried in their ways, mentors must complete the task of the lecturers' (Omolara).

'Yes. They can help with normal expectations and how to fulfil them. Coming from outside we don't know about things here' (Alok).

'Yes, because it's very helpful to all the students' (Juan).

'Yes, because it has been very helpful for me in dealing with my assessment' (Adebayo).

When asked whether the mentoring scheme had added to their student experience the responses of the mentees were again extremely positive:

'It has enabled me to see what other people from other cultures think about the course' (Adebayo).

'It's been really nice to have help from another student and I find it really helpful for my progress during the course' (Juan).

'As a student I have had too many doubts in my mind about a lot of things. They have cleared them with good competence' (Alok).

Whilst it is clear that the mentoring scheme was a positive experience for these students it must be emphasised that a full picture was not provided due to the lack of responses from all the mentees. What was clear however is that the issue of assessment and expectations of this would appear to cause the most apprehension for students and the mentor scheme would seem to alleviate these apprehensions to some extent. This was corroborated by comments made in the focus groups.

The findings of the focus group held with the mentors reinforced the initial conclusions with regard to the preoccupation that the mentees had with assessments. Comments from the mentors were not always positive especially with regard to the amount of 'input' that some of the mentees expected and required in relation to assessment issues. In fact, it was obvious for some mentors that it was difficult for them to be able to draw a line under the type of guidance that they should be providing the mentees with. The gender division evident in the findings was interesting although this aspect has not been explored further here. There were two male mentors for the MBA and two female mentors. The female mentors were much more controlling in their approach and were able to adhere strictly to the number of mentees allocated as well as being clearly able to restrict the type of information that they supplied.

'In the end I only had two mentees. Their requirements died down after a month or two and they became friends' (Yanfen).

'I think I must be a really terrible mentor. I didn't meet two of them and the other was very pushy. The other was nice and we are still talking. I had

two more by chance. I met more with them but the relationship was more informal' (Diana).

The opposite was true of the male mentors. Both took double the amount of mentees that were allocated but the most popular mentor ended up with at least nine mentees. Dealing with the issues that they wanted to talk over with him took over two full days. Needless to say, he recommended that there should be a tight control on the numbers allocated to one mentor in the future. He felt that part of his problem was that because he was always in the library he was easily accessible. The approach of the mentors to meeting with their mentees differed. Both Yanfen and Simon had tried to meet them altogether. Simon in fact had tried to hold focus groups but had found them totally unsuccessful as all the mentees were not of the same level. All the mentors felt that the scheme needed to be expanded to all international students as it was an extremely positive support system for the students.

'The frustration that most new students face is due to their inability to identify learning resources. The mentor/mentee scheme helps to relieve much of the fear 'confusion faced' (Simon).

'The main issues it helped me with, are control and understanding because mentoring helps students to bring out the best in them. I strongly believe it will help scholars understand what life has to offer after UNL' (Chris).

In terms of how the scheme had added to their student, experience all felt it had improved their interpersonal skills and contributed to future employability. Yanfen felt it had provided a kind of social interaction that she may not otherwise have had.

'I found my value during the mentoring scheme. Sometime giving is also receiving. I am really happy being a mentor, because when I saw their making progress I felt happy and really meaningful, more than just a mentor' (Yanfen).

'I have learnt to lead and to be a good leader to people who are willing to be led' (Chris).

Diana commented that, in some ways it had made her feel demotivated when she got to know the mentees better and see the way they responded to her. She was not able however to express the reasons for this. She did however feel that the scheme was a good idea and should be continued.

5. CONCLUSION

Rather than a gender issue, it could be a case of Chris's success being as a result of his ability to develop successful informal relationships with other students. Amtrong, Allinson and Hayes (2002), argue that informal mentoring relationships are more successful. They suggest that differences in cognitive style can have an important impact on the success or lack of success on the mentor/mentee relationship and that mutual liking led to a significant enhancement in the quality of the mentoring relationship. There is an implication that intuitive people will be more productive in the mentoring relationship because of their ability to generate ideas. There needs to be further exploration of the cognitive styles of the mentors and the impact on mentees to understand the success of some of the mentors. In addition, there needs to be further consideration given to the way in which mentors are allocated. Is an ad hoc system fair to either mentor or mentee? Matching cognitive styles of learning would be extremely difficult to achieve, as this would need assessing for each student before allocation of a mentor. The mentors themselves felt that only the best students should be considered as eligible to act as a mentor although what the 'best' is defined as is open to debate as good communication skills have been seen to be an essential requirement.

Clearly one of the main issues that needs to be addressed is the need for a set of guidelines for both mentors and mentees. All the mentors agreed that this was necessary in order to limit the type of help that was requested for assessments. They had all been surprised at the level of support that was expected, although it is surmised that from an academic point of view this is normal and academics are familiar with such requests. It seems that the mentees were supplanting the tutor role from the lecturer to the mentor who was more easily accessible and more familiar with the problems that they were trying to tackle.

The most positive aspect of the study is that the introduction of the mentoring scheme provides a further aspect of arguably crucial support for postgraduate international students. Following the success of the pilot scheme on the MBA all the new intake of international students have all been offered the possibility of having a peer mentor. There has been nearly a full uptake and nearly all of the students have been allocated with a mentor. Most of the mentors were former mentees. A selection of qualitative interviews will be undertaken to follow up on the findings of the focus groups and to explore in more depth some of the issues that have been raised by the project to date.

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2. Theodore Berdousis, (2002). *A strategic approach towards international students' support: a case study of the University of North London*, unpublished dissertation.
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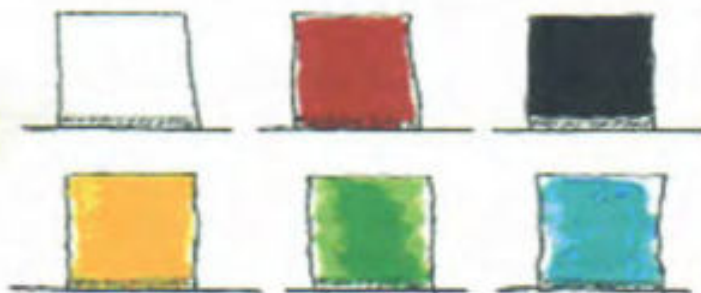
BREAKING THROUGH THE BARRIER: THE APPLICATION OF REFLECTIVE PRACTICE TO ASPECTS OF POLYTECHNIC EDUCATION

CHARLES E. ROBERTS*

ABSTRACT

How many times as educators have we complained about students' work because of a lack of critical analysis? This informal article seeks to address this perennial problem through the application of reflective practice, particularly within the context of polytechnic education. Briefly outlining the benefits that can accrue from its introduction. The article also identifies the main barrier for students in developing reflective practice. Whilst suggesting a commercially available tool to overcome this barrier. Whilst not advocating an educational revolution, the article suggests a practical solution to a universal problem.

FIGURE 1: De Bono's "THINKING HATS"



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1. INTRODUCTION

1.1. What is reflective practice?

Originally described by Dewey (1933), as reflective thinking, it is "an active process of careful consideration of a belief or supposed form of knowledge, of the grounds that support that knowledge and conclusions to which that knowledge leads".

Boud, Keogh and Walker (1985), define reflective practice as "those intellectual and affective activities in which individuals engage to explore their experiences in order to achieve a new understandings and appreciations".

More recently, Moon (1999), described reflective practice as "a set of abilities and skills, to indicate the taking of a critical stance, an orientation to problem solving or state of mind".

This last definition clearly indicates a link between reflective practice and critical thinking.

2. WHY DO WE NEED REFLECTIVE PRACTICE?

As polytechnic educators we provide students with an academically based practical education to equip them with the skills necessary to compete and succeed in the outside world.

There is general agreement on the need for polytechnic students to be able to critically analyse from an academic viewpoint.

However, the practical aspect of the education we deliver means that students are also "Learning by Doing" and it is here where reflective practice may well be most important.

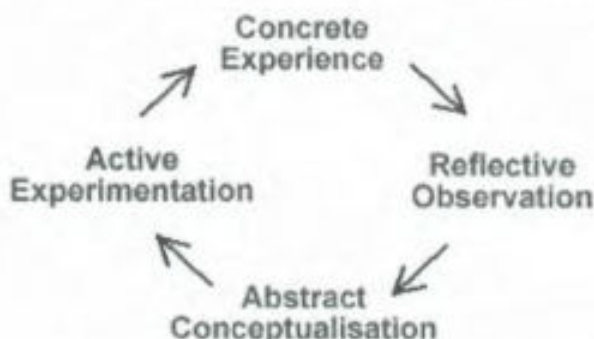
This learning by doing, indicates that students are learning by experience. This can be an unstructured process with highly variable outcomes eg: the widely varying quality of work placement reports, poorly structured final year works. Moon (1999), puts this in context, by suggesting

that, "reflection on work experience and study abroad, enables the student to learn from the experience or make greater use of learning where there is no formal teaching or guidance".

Practical experience on a daily basis, of endeavouring to extend students to learn from experience, as well as informal interviews with students, has highlighted a particular problem. Namely accessibility.

If viewed in the context of Kolb's learning cycle (fig. 2), experience has shown that students have little difficulty in describing concrete experience. What this means in practice is work placement reports that consist of tasks completed, with little in the way of learning from the performance of these tasks.

FIGURE 2: KOLB'S LEARNING CYCLE



Accessibility to the second phase of Kolb's cycle, reflective observation appears to be the main problem. Without access here students have little hope of being able to conceptualise or make connections with previous learning.

This is the barrier referred to in the title of this work.

Whilst it would be wrong to assume that reflective practice and critical analysis are one and the same, it is correct to say that reflective practice provides a solid foundation on which critical analysis can be developed.

Reflective practice offers the opportunity to turn experience into learning.

3. HOW DOES REFLECTIVE PRACTICE WORK?

Reflective practice works on the principle that the observer sees most of the game. However, the observer needs to be trained, what to look for and how to use the new information.

The advantage is that by reflection you can benefit more from your activities and experiences. More information goes into your long-term memory store. You can improve your future practice by adapting the processes you have observed into your own schema and procedural methods (Cotton: 1995).

However, without organisation of new information and clarity of aims, reflection can turn into a meaningless process of introspection in which no learning takes place.

4. WHERE IS REFLECTIVE PRACTICE APPROPRIATE?

Reflective practice is appropriate to all levels of human activity. However, in the context of polytechnic education it may lend itself most readily to those vocational aspects of the programme such as Work Placement, Study Abroad and the Final Year Work.

By incorporating reflective practice into the above areas we have the opportunity to escape the two-dimensional descriptive work we see now, replacing it with work that is three-dimensional. Thus providing students with a sharper set of tools for the life outside the polytechnic.

5. HOW DO WE IMPLEMENT REFLECTIVE PRACTICE IN THE POLYTECHNIC?

As previously stated, initially reflective practice would seem to lend itself to the more vocational aspects of our programme, namely Work Placement.

For this to be successful we would need to consider the following areas:

- What are the objectives of the work placement? At the moment these may be two dimensional and confused.
- What does the student need to become a reflective practitioner?
- How do we provide the students with what they need?
- How can this link with other parts of the curriculum?
- How will our students benefit?
- What resources would be required?

6. OBJECTIVES OF THE WORK PLACEMENT

Whilst we correctly emphasise the link between polytechnic teaching and the practical experience of the work placement, we are ignoring an equally important aspect of the placement, that of the personal development of the student.

P.D.P. or personal development is actively taught in UK universities.

However it is often taught in isolation from vocational work, the advantage of the Finnish polytechnic system is that P.D.P. through reflective practice can be incorporated into the Work Placement experience, thus providing a genuine application for students.

Our objectives for the Work Placement should recognise this and be equally balanced between professional development and personal development. This could be accomplished by ensuring that students set themselves personal development objectives for the work placement.

7. WHAT DOES THE STUDENT NEED TO BECOME REFLECTIVE PRACTITIONER?

Thinking is a routine human process and to some degree we are all reflective practitioners. We reflect on events to come, we reflect whilst engaged in activities and we reflect after the activities are over (Schon: 1983).

What students need, is a way to organise this reflection, almost a blueprint for thought.

Edward de Bono with his "Six Hat method" provides a systematized way of thought that allows individuals to organise their observation, thus encouraging structured reflection to take place (De Bono: 1993). The "Six Hat method" was originally devised as a problem-solving tool and is currently used by many world-class organisations.

Comprising of six imaginary coloured hats, De Bono's system allows users to isolate aspects of their experiences.

- ☐ White Hat: facts and figures known or required
- ☐ Red Hat: emotions feelings
- ☐ Yellow Hat: values, benefits and positive view
- ☐ Black Hat: consequences, negative view
- ☐ Green Hat: creativity, new directions alternatives and possibilities
- ☐ Blue Hat: managing the thinking process

Each hat should be used on its own and the results written down. The order of use is immaterial.

De Bono (1999) describes the process by using the metaphor of colour printing, "With colour printing each colour is printed separately, one at a time, and in the end the full colour effect is obtained. It is the same with six hat thinking - we do one thing at a time and in the end the full picture emerges".

8. HOW DO WE PROVIDE THE STUDENTS WITH WHAT THEY NEED?

Reflective practice requires the student to develop thinking skills. By using De Bono's method we are providing the tools for this. However the students need to be instructed in the use of this tool to ensure effective development.

Our present system of seminars and individual tutorials is ideally suited to the development of these new skills. Through group work in class the students will learn to use these thinking methods to particular problems. Then individual structured tutorials will allow students to apply these skills to their work placement. Thus turning experience into learning.

As an example the requirements for a work placement could be:

- Essay reflecting on the experience to come, with personal objectives, self development etc.
- A reflective journal that allows the student to reflect in action (not the single sheet we have now).
- Essay reflecting on the experience that has past, were the objectives achieved.

9. HOW CAN THIS LINK WITH OTHER PARTS OF THE CURRICULUM?

As already stated, reflective practice may well be suited to the more vocational aspects of our curriculum. However, it could be incorporated into more mainstream subjects, for example reflective practice could look at the expectations of students prior to commencement of a particular course, set objectives, review during the course and finally reflect at the end of the course.

Reflective practice could also be incorporated into specific events such as field trips.

10. HOW WOULD OUR STUDENTS BENEFIT?

- By gaining an insight into their own strengths and weaknesses.
- By being able to measure their own ability against the objectives they set.
- By being able to identify areas that, require development.
- By developing the connection between experience and learning.

11. HOW CAN WE IMPLEMENT REFLECTIVE PRACTICE?

Initially, the reflective practice exercise should be piloted with perhaps 8 to 10 students, perhaps those about to start their placement. If successful in developing student's reflective and critical skills it should be introduced to students during the first year, with a specific refresher tutorial prior to their work placement.

For the pilot I would suggest the following:

- 10 weekly one hour sessions to provide the "thinking tools".
- 10 weekly one hour individual sessions with students to discuss and guide their reflection.

"Reflection is encouraged by getting the learner to discuss. This is the well-known process of trying out new ideas by talking about them aloud.

The purpose of tutorial work is very often a way of giving the learner a chance to reflect aloud, aiding both reflection and insight" (Cotton 1995).

If the pilot proved successful in developing students with skills in reflective practice, introduction to first year students would be the next stage.

Because of the larger numbers involved it would be useful to create a new course called "Personal Development". This could be a 2 credit unit

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that ran for ten weeks and could incorporate a number of the areas we have already discussed such as:

- Reflective thinking
- Academic writing
- Presentation skills
- Exercises in critical analysis

12. CONCLUSION

The ideas and suggestions laid out in this document do not represent a great departure from the way we operate now. Rather they represent a sharpening and refocusing of our mission as polytechnic educators, which should be "to equip students for the real world".

To this end, a pilot study at Kajaani polytechnic is now underway, to evaluate the application of the De Bono tool to students undertaking work placement.

Results from the pilot will be available in Spring 2004. The writer is presently preparing a second paper, detailing the methodologies used and practical issues involved with the implementation of the pilot.

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COMPARATIVE PERSPECTIVES ON THE ORIGINS AND THE EVOLUTION OF EUROPEAN LEGAL INSTITUTIONS

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ABSTRACT

This study looks upon the law as it had been born and developed in Western Europe and in Eastern Europe. The way to the knowledge of all aspects of contemporary civilization passes through the divine and the temporal. The greatest legacy of what is described as the Middle-Ages to modern societies is the Law. A discipline born and nourished, out of the interaction of the civil and ecclesiastical powers and founded upon the legacy of the Greek and Roman cultures.

1. PROLEGOMENA

During the Middle-Ages men spoke of a triad of agencies: the *Regnum*, the *Sacerdotium* and the *Studium*. In the East one may observe a similar triad: *Basileia*, *Paideia* and *Ecclesia*. First the *Basileia* was more religiously oriented and determined than the secular *Regnum* of the West. The Byzantine *Basileus* was the symbol of Christian unity and also the symbol of a Christian community based on the tradition of the Apostles, the Fathers and the seven Oecumenical Councils. Byzantium survived because of its Constitution and its Administration; an inheritance of the Roman world, adapted and supplemented throughout the centuries to suit its varying requirements. The Emperor, initially at least, was an absolute *Autocrator*. He had the power to appoint and dismiss all ministers; he had complete financial control; he was the supreme legislator

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and moreover head of the Church, the high priest of the Empire. During the early Empire his title was *Imperator* or *Augustus*. The Empire once orientalized, *Autocrator* replaced *Imperator*, and from Heraclius' days the Emperor was called *Basileus*.

For his legislative and administrative acts, the monarch was responsible to none, except to Heaven. It was a recognized condition of eligibility to the throne that the candidate should be an Orthodox Christian. Christianity was coming to be considered a constitutional condition of eligibility. The autocrat was the supreme legislator; personally he was above the laws, *solutus legibus*. There was no tribunal before which he could be summoned; but he was bound by the principles and the forms of the law.

However, as much the Empire was orientalized so the power of the *Basileus* was gradually restricted. Entering the great debate of the beginnings of the Byzantine Empire I would like to make two chronological points emphatical, which can be defined as landmarks for legal considerations. I define the Empire from the reign of Constantine I¹ up to the era of the Isaurian dynasty as the Eastern Roman Empire and I argue the hypothesis that the term Byzantium should be used from the reign of *Leo III*, the Isaurian. Specifically, when *Leo III* and his successors, after the Arab conquest of Syria and Egypt, reorganized their diminished dominions and based the defense of the Empire on the military support of the Anatolian highlanders.² Consequently, I define the law as *Eastern Roman law* for the first period and *Byzantine law* (or *orientalized law*) for the second period. Others have argued that the era of Byzantium began with the reign of *Heraclius* (A.D. 610-641). Undoubtedly, during the early period of the Eastern Roman Empire the *Basileus*, not yet called so, was an *Autocrator*. The Roman elements in every aspect of the Empire were apparent. It was he who made the law, constituted the final court of judicial appeal and controlled the administration. His office comprised the legislature, the judicature, and the executive. The Church, its ceremonial and also its canons, was a part of the commonwealth; and the *Basileus* was in some degree obliged to be the faithful and true servant (*doulos*) and son of the Holy Church, bound to follow the ecclesiastical decrees and canons. *Justinian* may have been the master of the Church, but the Church and the clergy grew in strength and importance also,

during the last seven centuries of the Byzantine community, a fact which had a decisive effect upon legislation. During the first years there was a measure of conservatism, as is illustrated by the retention of the law of Rome as codified by Justinian in the Latin language.

The Church represented a limit on the Emperor's power. From the ninth century onward, the decrees of the seven Councils were an unalterable law that no Emperor could amend. The Byzantine Church became a most important specimen in ecclesiastical history of a State-Church. Its head was the Emperor. He was considered the delegate of God in a sphere which included the ecclesiastical as well the secular order. The Emperors issued edicts and laws relating to purely ecclesiastical affairs, quite independently of Councils. Thus the theory of State and Church in the Eastern Empire is conspicuously contrasted with the theory which in Western Europe was realized under the Pope Innocent III.

- I. In both cases the Church and the State are indivisible.
- II. In the West the Church is the State.
- III. In the East the Church is a department of the State which the Emperor directs.
- IV. In the West we have a *Theocracy*; the Church represented by the Pope claims to possess the supreme authority in temporal as well as spiritual affairs.
- V. In the East relations are reversed; instead of a Theocracy, we have *Caesaro-papism*, but only during the early period. Nevertheless, in the East men did not trouble to theorize about the Empire.

In the West a great constitutional question arose of far reaching practical importance, touching the relations of the two rival authorities, the Pope and the Emperor.

In the East the action of the monarch is limited eventually by:

- I. Public opinion: there is always some point beyond which he is afraid to venture in defying public opinion.
- II. He has to employ human instruments, and their personal views and qualities may modify or compromise the execution of his will.
- III. He may be restrained from sweeping measures by the knowledge that such change will involve other consequences which he does not desire.

Barker³ claims that the *Ecclesia* even in the early stages was not under a system of Caesarism or Erastianism, neither did it acknowledge the supremacy of the civil power in matters spiritual. The Church acted on the principle of federalism. The Byzantine ideal was "a series of autocephalous Churches, linked by intercommunion."⁴ The concept of the *Pentarchy*⁵ was well established in the East and it extended northward and eastward to the mission Churches among the Slavs. The first Emperor to be converted to Christianity was exalted to a position of "Caesar-Pope" and summoned Councils and was called upon to sanction their decisions;⁶ he was God's vice regent in the Church. Even Justinian concerned himself with doctrine: "In the history of the relations of Church and State the epoch of Justinian marks the zenith of imperial influence in the life of the Church."⁷

In the past, the Roman Emperors had construed the refusal of many Christians to acknowledge the Emperor's divinity as political disloyalty, since religion and politics were inseparable in the pagan world. The Emperor was not only *Imperator* but also *pontifex maximus*. The first step towards the alliance of the Christian Church with the Roman State was taken in A.D. 311 with the issue of the *Edict of Milan*,⁸ granting full equality to Christianity. Constantine and his successors embraced the Christian faith personally and thus favored Christianity in a practical manner. The clergy was relieved of the *numera civilia*,⁹ the *testamenti factio passiva*¹⁰ was given to the Church; jurisdiction of bishops was introduced as a matter of private law (*audientia episcopalis*);¹¹ the Sunday holiday was introduced.¹² Furthermore, *Theodosius* (A.D. 379-395), decreed apostasy as a crime¹³ and the pagan religion forbidden,¹⁴ while pagan temples were either destroyed or turned into churches.¹⁵ Lastly, Justinian forced all his subjects to be baptized.¹⁶ Of the other religions only Judaism was to some extent tolerated by the state.¹⁷ Then Christianity, the persecuted, turned

persecutor and relied on the sword of the State to crash dissent.¹⁸ The State in its Christian form could assume control of the Church's government, destroy its independence, and reduce it to the level of a department of the State.¹⁹

The Church-State relationship during the first centuries of the Eastern Roman Empire has been described as Caesaro-papism and I will concur with this view. Justinian in his *Code* (A.D.534) christianized Roman law in some degree and made it full member of the household of faith²⁰ but the law was still Roman and it was still written in Latin. In the reign of Justinian the *canons* of the Eastern Oecumenical Councils were combined with the *constitutions* of the *Code* relating to ecclesiastical matters in the *Collectio XXV capitulorum*. In the sixth century there appeared the *Synagoge canonum*; an appendix of this work called the *Collectio LXXXVII capitulorum* included extracts from some lost *novels* (*nearai*) of Justinian. Other works in this period included the *Synopsis canonum* and the *Collectio constitutionum ecclesiasticorum tripartite*. The first three *nomocanons* (*nomokanones*) belong to the sixth century; the *Nomocanon titulorum* derived from the *Synagoge canonum*, the *Canonikon of John Nesteutes* and the *Nomocanon XIV titulorum*²¹. It should be noted, however, that one should not be misled with the impression that this initial christianization was rooted in a jurisprudence other than the Roman. At this early stage, Roman legalism and Roman juridical science were still apparent and, therefore, the Eastern spirit was slightly detected. As far as it concerns the Church-State relations during this period a more appropriate term, could characterize it as *Erastian*: the State controlled the policy, the government and even the theology of the Church. It was certainly not a *Theocratic* system and obviously not a *Separatist*.²²

2. THE WEST VERSUS THE ORIENT

In a comparative perspective one should examine by contrast the Western European legal tradition *vis á vis*, its Byzantine counterpart.²³ The real influence of Roman law in Western Europe came through *canon law*. We can trace the elements of canon law in the rules of discipline and government which were adopted by the early Christian community. These rules passed to law and

the Church was given the legal power to enforce them. They were embodied in canons framed by ecclesiastical councils, creeds and lists of sins, which were called *penitentials*. Then the Hildebrandine Papacy put forward the doctrine of "common law" for the Church. The *Concordia discordantium canonum* of Gratian, became the book on which the canonists relied as setting forth this common law.²⁴ The influence of Roman law was unmistakable since Gratian used it primarily, in addition to the canons, the decretals and the Bible. After a long time when Justinian's legislation was forgotten in the West, in the twelfth century, *Irnerius* began his revival of Roman law, and soon afterwards the Western Church, fearing that legal instruction of the laity would imperil its predominance, it separated the civil law more distinctly from the canon law. At the time when the tradition of ancient law and government had been almost obliterated in Europe, the popes retained the elements of a legal system on which they would build. The fundamental order of the medieval and to a large extent of modern Western society owes a great debt to the lawyer popes of the twelfth century. The great movement of reform in the Western Church is indeed a turning point in the history of legal thought and East-West relations. With what has been described by Harold Berman as the "*papal revolution*" we do not only see the birth of the modern Western legal system.²⁵ What is of particular importance is the creation of modern legal systems as a response to the historical change in the Western Church. Furthermore, as an outcome of this change, we see the declaration of political and legal supremacy of the Papacy over the Church in the West and the complete independence of the clergy from secular control.²⁶ What happens in the West as a result of the Hildebrandine reform, is a transformation of the Church into a separate political and legal entity and the establishment of political and secular authorities, separate from the Church. The ecclesiastical polities formed a modern State with its legal system, the canon law, and the secular authorities created their own modern State and legal systems. Thus we observe a dualism of the ecclesiastical and secular authorities.

While the West witnessed a religious, social, and legal revolution, in the East no significant political and social revolutions occurred. Indeed, only a critical and comprehensive survey of the social, juridical, and political conditions in the East will enable one to understand the real significance of the "papal

revolution". One should always bear in mind that initially Christianity was a unit and the closer we examine the times that this unity existed, the social, political and theological thought in both East and West appears identical. This thesis - which I consider to be perfectly justifiable - that Byzantium up to the fall of Constantinople preserved its tradition with very few changes, may enable one to understand the situation in the West, which was basically similar for centuries. It is important to comprehend that the closer one is in time to the early Christian era, the more common were these political and social concepts than in the Middle Ages, especially in the latest period. It is unquestionably a fact that in both East and West, there existed important factors related to the Roman tradition on the one hand, and the Hellenistic tradition on the other, that also played a significant role in the whole evaluation of legal thought. In the Middle Ages, however, in spite of the fact that related terms and traditions appear identical, in fact, during the revolutionary times of the papal reform, the substance of the terms and ideas differed more and more. This situation continued until the final breakdown - the *Great Schism* (AD 1054) - which not surprisingly, took place during the same era when the said historical changes occurred in the West.²⁷

It should be stated that the most basic element of the Western legal tradition is revolution. There is no change in legal tradition without some form of revolution. Thus, the tradition is not inherited but it is earned. Before the Western legal tradition we see in the folklaw of the people of Europe, a sociological and traditional background based on the ideas of *blood, soil* and *heraldry*. On these three concepts were created the *tribes, villages* and *lordship*. These three were the basis of operation of the Western legal tradition, because with revolutionary methods this tradition reacted against them. The revolution, which evolved the law and created legal tradition, was dependent upon the pre-existence of the above three factors. Legal evolution presupposes a pre-existing society which is organized with laws and statutes. The ecclesiastical element did not attempt to change the society. The King tried to keep the peace and the faith, and there existed the seed of division and revolutionary change. The Church, like in Byzantium, was challenged by the monastic virtues, such as humility and, therefore, it contributed to the overthrow of legal institutions particularly during the earlier period of the Roman Church.

An examination of the revolution and its consequences is extremely helpful in contrast with its absence in Byzantium. First, revolution, as the most significant element of the Western legal tradition, is manifested in the Hildebrandine reform. It generated macro-historical effects. The "papal revolution" included the tension between the *heroic* and the *sacred*, the *military* and the *monastic*. The papal party and the vicars of Christ denounced the Empire and its authority over the Church. The "papal revolution" was also a moral, disciplinary and administrative revolution, which affected the whole of society. It had as a result not only the centralization of the Papacy, and the monastic revival, but also the rebirth of canon law and of civil law. The former legal system was judged and the legal standards of the Church were also judged. The effects of the "papal revolution" and its political, sociological and legal upheaval had fundamental effects in every aspect of the medieval society. It resulted in the formation of two distinct jurisdictions, to wit, the Church and the State, and a new system of law was created by each. The Church gave up secular jurisdiction to the Empire, after it had claimed supremacy. The secular State emerged immediately after the Church emerged in the form of a State. The reform, however, was not legal only. It had in itself the seed of division between East and West. It was at the same time a theological revolution, which inevitably influenced legal thought and legal tradition. The relation between theology and law, in this period of theological reform, gave the base of the creation of the modern legal concepts in Western Europe. The "papal revolution" established the Church as a corporate legal structure, different from the legal structure of the secular authorities. The independence of the Church meant the centralization of authority within the Church. In England, the martyrdom of *Thomas Becket*, in order to prevent the royal supremacy over the Church, was a result of these new ideas.²⁸ From the "papal revolution" which gave birth to the modern canon law, arose the new idea, that secular matters were to be solved by secular authorities. The kings and the lords created new types of secular law and the old customs were transformed into new secular legal systems.

The law is wholly subordinate to revolution. Revolution overthrows political institutions and replaces them by other ones, which lead to new law. The *Protestant Reformation*, being another type of revolution, caused

substantial changes in all institutions, including the law.²⁹ The ecclesiastical jurisdiction was restricted and the canon law, having been secularized, passed over into the state law. The forms of canon law were transformed into the secular law of the protestant principalities. Revolution challenges and transforms the Western legal tradition. The creation of the democratic and socialistic ideals in the nineteenth century deprived religion of its political, legal and sociological dimensions. The *French* and *American Revolutions* marked the Western legal tradition with their political and sociological concepts. This, of course, does not mean that the old forms were completely vanished. But those which were still kept were filled with the new content. The Western legal tradition has the marks of its origin up to the twentieth century. The same happens with *orientalized Roman law*, in Eastern Europe.

Tracing some of the remnants of the Western legal tradition, one can define the autonomy of the legal profession and the legal institutions. It was said that revolution renewed the law: as an example we can take the law of contracts, which was a product of the *French Revolution* and the *European revolutions* of thought the nineteenth and early twentieth centuries. The attempt to fit types of contract into a separate body of rules, something which happened to property and torts also, was a product of a revolutionary process. The fact that this view is presently disappearing is too a result of another revolution; the "*Technological Revolution*" of the twentieth century. The *Papal Revolution*, the *German Reformation* of the sixteenth century, the *English Revolution* of the seventeenth century, the *French, American and Russian Revolutions*, resulted in the creation of new law. Without the revolutionary element and its sociological, economic and conceptional consequences, there is no legal evolution and legal tradition. The main concept of the ongoingness of law was a religious concept, rooted in the Christian tradition and the ongoing Western legal tradition was interrupted by the great European revolutions.

3. THE *SUI GENERIS* BYZANTINE BIPOLAR INTERACTION OF POLITICS AND THEOLOGY

Turning Eastward, it is very important to point out the unquestionable democratic and decentralized characters of the Orthodox ecclesiastical polity practiced by the Oecumenical Patriarchate. The Orthodox Church was not *clerical* but *congregational*; it was a democratic institution, as was the early Church, and the Western Church in early antiquity. We know from the several novels (*nearaf*), issued by the early Emperors, even from Constantine's period, that the estates of the local Churches were subject to taxation. The Eastern Church in particular was not centralized, or was a unitary Church as the Western Church progressively became, but it was based on a *federal principle*. A federal theory was thus indigenous in the East. Therefore, with such a system it was practically impossible for a patriarch to adjust any of his policies over the other independent Churches. Even if the Patriarch of Constantinople would have ever decided to make a similar revolution in the East, as Pope Hilderbrand did in the West, he would have never been able to impose his policies and ideas, administratively at least, over the other Churches. Because he was, as he still is, a typical head of the Orthodox Church without any particular jurisdiction over the other Patriarchates and autocephalous churches. Ideas and policies in the East were not transferred with administrative and legalistic means, but rather with educational and cultural influence.

It has been stated that the main cause of the creation of the ideas of the modern State and contemporary jurisprudence in the West was the "papal revolution" and therefore, the "divorce" between the divine and secular elements was the crucial outcome of these changes. But in the East there had been no ecclesiastical revolution. The nature of the relationship between Church and State was entirely different from that of the Papacy and the Kingship. A "patriarchal revolution" would have had the meaning of revolting against oneself. There was no need for the Church to complete independence of the clergy from secular control, for the *Basileia* was indeed the *Ecclesia* and both the State and the Church served each other.³⁰

Men's contact is regulated by their habits of mind and by compulsion from outside authority. The land law of the Middle Ages is characterized by a sharp contrast between the customs of the military class and of those of the rest population. The formulation of legal rules and the determination of vested rights in the Middle Ages was connected in the last resort with habits and considerations of business life and social intercourse: judges settled disputes and rulers issued statutes in accordance with their professional training, their political insight and their sense of justice, but all these operations of minds of the leaders had to conform in one way or another to the customs of the folk, the broad indications of every day experiences and practice.³¹

In the West, apart from customary law, canon law was destined to play its role. There is nothing that has remained so unaffected by the change of time as the legal system of the Roman Church. The *Code* published in 1234 by order of Pope Gregory IX, the latest addition to which dates from 1317, was itself in force until 1918, while the substance of it may be found incorporated in that by which it was then replaced. From the earliest times the Church had found it necessary to draw up the rules of government and to define the obligations of its members in order to preserve its unity, to maintain its worship, to ensure the exercise of charity and the practical application of the evangelical virtues. Holy Scripture and Apostolic tradition formed the basis of its law. Custom and papal and conciliar decrees added, as need arose, other provisions relating more particularly to matters concerning the hierarchy.³²

In the sixth century the Roman Church adopted a collection made by *Dionysius Exiguus*, which contained, in addition to the canons of the great Councils of the East, a series of decretals. This collection gained considerable authority in the West. Shortly after the year 1140, *Gratian*, a Bolognese monk, applied a new dialectic to the whole mass of texts handed down by the collections, conciliar canons, decretals and fragments from patristic writings and excerpts of the Justinianean law. Gratian had almost succeeded in separating theology and ecclesiastical law, something that had never happened in the East, and he had collected and classified all the important texts.³³ In the thirteenth century the canons provided all the elements of a perfect system of organization for the Church. They reduced the laity to a condition of passive

obedience and regulated in every detail the life and position in the hierarchy of the clerks.

In contrast to the East, the Pope ruled over the whole Church. He was the universal legislator, his power only limited by natural and positive *divine* law. He summoned general councils, presided over them, and his confirmation was necessary for the putting into force of their decisions. He put an end to controversies by means of decretals, he was the interpreter of the law and granted privileges and dispensations. Among the most important of those treasures of the mind handed down by the Middle Ages to modern times must be reckoned the law of Rome. A world so well performed and so lasting that the Roman system remained the common law of Germany down to the promulgation of the *German Civil Code of 1900*. It also governed the South of France until the *French Civil Code of 1804* and inspired elsewhere almost every legal system in the West.

The return to an organized and peaceful state of society made possible a renewed understanding of the value of ancient discipline. The *Corpus juris of civilis* of Justinian (AD 535), seemed likely to submerge Italy, France, even England, and to wipe out all the trace of the customs which the narrow simplicity of the folk lawyers had laboriously and often clumsily raised. The renaissance of Roman law came about first in Italy at the beginning of the twelfth century at the *University of Bologna* under a jurisconsult named *Irnerius*. He left equally famous disciples, known as the "four doctors", *Bulgarus*, *Martinus*, *Ugo*, and *Jacobus*, who were summoned as imperial counsel to sit in the diet of Roncaglia by the Emperor *Frederic Barbarossa*. Each man found in the law of Justinian his varying needs and aspirations satisfied without altering the solidity of its organization or the fair hierarchy of social orders which establishes. The abundant wealth of literature followed of juristic glosses.

Moreover, from the middle of the twelfth century alongside the civil law and teaching in the same schools, the Church has worked out the new jurisprudence, whose purpose was to commend on and expand the new compilations of its confessors and pontiffs and to provide for the action of its

special courts. This was the *canon law*, sprang like the *civil law* from the Roman sources, but from Biblical and sacred origins as well. Its legislation extended in part over the same ground as the system of Justinian, it was inspired by the purest Christianity, and made the same unvarying and universal claim to the allegiance of all Western Christendom. The reciprocal influence of the two systems on one another was inevitable, but they did not cease to remain separate systems, whereas in the East they fused with each other.

In England, the school of dialecticians, as a school of law, had no appreciable influence. It is from *Azo* and the school of Bologna that *Bracton* and his successors drew their inspiration. The fourteenth century was an unpropitious time for juristic speculation; and the England of the fifteenth century turned its thoughts inward and became more and more estranged from the continent and from Roman law. What Germany followed was not only the original sources of the law of Justinian but also its interpretation by the *Bartolists*. The main conceptions of public and private law which the Middle Ages borrowed from Rome were (a) the idea of the State, (b) the idea of national sovereignty and (c) the aspiration towards an international polity. Passing from public to private law, we find Roman influence on the legal systems of Western Europe still more marked. On the other hand the absence of systematization in Byzantine law, its multiplicity of sources, and its dependence upon a system of government and administration which was subject to ever changing conditions, made the legal institutions in Eastern Europe both *conservative* and *fragile*. The progress of the law had to evolve side by side by this development and the interaction between the *State*, the *Church* and the *Custom*. It could again only be radically changed by revolutionary means. Nevertheless, the socio-political conditions in the East could hardly allow a smooth transition towards a more modern democratic system similar to that born out of renaissance Europe.³⁴

NOTES

1. Circa A.D.320 when Constantine I founded the "Royal City."
See H. St. L.B. Moss, "The Foundation of the East Roman Empire, 330-717",
Cambridge Medieval History, 8 vols., vol.IV: *The Byzantine Empire*, pt.I: *Byzantium*

- and Its Neighbours*, eds. J.M.Hussey, D.M.Nicol and G.Cowan, 2nd ed. (Cambridge, 1966), pp.2-10.
2. E.Barker, *Social and Political Thought in Byzantium* (Oxford, 1957), p.84. *Circa* A.D. 740 seems to be an appropriate year, coinciding with the promulgation (by Leo III, the Isaurian) of the *Ecloga*, the first Christian Law-book.
 3. *Ibid.*, p.35.
 4. S.Runciman., *Byzantine Civilization* (London, 1933), p.128.
 5. To wit, the five Patriarchates: Alexandria, Antioch, Constantinople, Jerusalem, and Rome. See F.Dvornik, "Constantinople and Rome," *Cambridge Medieval History*, vol.IV, pt. I, *supra* note 1, pp. 456-57.
 6. E.Barker, *From Alexander to Constantine* (Oxford, 1958), pp.356-57.
 7. G.Ostrogorsky, *Geschichte des byzantinischen Staates*, 2nd ed. (Munich, 1942), p.47.
 8. Eusebius Pamphili *Historia Ecclesiastica* VIII. 17; E.Schwartz, ed., *Eusebius Kirchengeschichte* (Leipzig, 1908). English translation by K.Lake, 2 vols. (Cambridge, Mass., 1953-57); Loeb Classical Library.
 9. Theodosius Code XVI.2.1(A.D.313); *Ibid.*, XVI.2.2(A.D.319) .*Codex Theodosianus*, eds. T. Mommsen, P.M. Meyer *et al.* Citations are made with the name of the Code and the numbers of book, title and constitution. Constitutions of some length are also subdivided in modern editions into paragraphs, the numbers of which are given at the end of the citation. In the endnotes I cite the books with Roman numerals.
 10. Theodosius Code XVI. 2.4 = Justinian Code I.2.1 (A.D.321).
 11. Theodosius Code I.27.1 (A.D.333).
 12. Theodosius Code II.8.1. = Justinian Code III. 12.2 (A.D.321).
 13. Theodosius Code XVI. 7.1 (A.D. 381); *ibid.*, XVI.7.2 (A.D.383); *ibid.*, XVI.10.6 (A.D.356).
 14. Theodosius Code XVI. 10.10(A.D.391); *ibid.*,XVI. 11.11 (A.D.391); *ibid.*, XVI. 10.12 (A.D.392).

15. Theodosius Code XVI.10.16 (A.D.399); *ibid.*, XVI. 10.25 (A.D.435); Justinian Code I. 11.7 (A.D.451).
16. Justinian Code I. 11. 9-10.
17. See E.Jonkers, "Einige Bemerkungen über das Verhältnis der christlichen Kirche zum Judentum von vierten bis auf das siebente Jahrhundert," *Mnemosyne. Bibliotheca Classica Batava*, 3rd series, vol. II (Leipzig, 1943), pp 304-20.
18. S.Ehler and J.Morall, eds and trans., *Church and State through the Centuries* (London, 1954), pp.1-2.
19. *Ibid.*, p. 3.
20. F.Gravin, *Seven Centuries of the Problem of Church and State* (Princeton, N.J., 1938), p.6.
21. H.J.Scheltema, "Byzantine Law", *Cambridge Medieval History*, *supra* note 1, vol.IV, pt. II: "Government, Church and Civilization," pp.61-62.
22. J.Wood, B.Thompson and R.Miker, *Church and State in Scripture, History and Constitutional Law* (Texas, 1958), p.54. Justinian may be cited as the best example of just such an Emperor. Imperial claims to decide ecclesiastical questions by the authority of the State, that is by the personal intervention of the Emperor, were particularly prominent during the Iconoclastic controversy. This autocracy, which expressed itself in both lay and ecclesiastical matters has been described as a "Christian Caliphate" (*J.B.Bury, History of the Later Roman Empire* (London 1923) 2 vols., vol. I. p.33), or as the rule of "priest-kings". (O.Treitinger, *Die ostromische Kaiser-und Reichsidee nach ihrer Gestaltung im hofischen Zeremoniell* (Darmstadt, 1956), p.124ff.). It is still more frequently known under the designation Caesaropapism. During the early period of the Eastern Roman Empire the Emperor was described as "Priest and King" (*Hiereus kai Basileus*) and Marcian was even acclaimed as *Archiereus*. (Cf. L. Brehier, *Hiereus kai Basileus*, Memorial L. Petit, *Archives de l'Orient Chretien*, vol I (Bucharest, 1948), pp.41ff.). Although Justinian in his Novel VI made a distinction between the *sacerdotium* and the *imperium* as two separate gifts of God's grace to mankind, moreover he claimed in the same Novel that it was the right of the Emperor to supervise the affairs of the *sacerdotium*. In addition, Patriarch Menas, in the time of Justinian could indeed express the ordering of the Church within the State-or indeed the subordination of the Church to the State-by saying that "nothing should be done within Holy Church which was contrary to the mind and will of the Emperor". (E.Schwartz, "Zur Kirchenpolitik Justinians", *Sitzungsberichte der bayerischen Akademie der Wissenschaften*, vol. II (Munich,

1940), pp.43-44). But this tendency seemed to be abandoned once the Empire was orientalized. And if, in the heat of the Iconoclastic struggle, Leo III described himself as Emperor and Priest, (P.Jaffe, *Regesta Pontificum Romanorum ab condita ecclesia ad annum post Christum natum 1198* (Berlin, 1851); 2nd ed. by W.Wattenbach, S.Loewenfeld, P.Kutenbrunner and P.Ewald (Leipzig, 1885-88), 2 vols., p.2182.), such claims were counterbalanced by equally vigorous statements made by the champions of the independence of the Church (for example, John of Damascus or Theodore the Studite) concerning the lay character of imperial power. John of Damascus *De imaginibus oratio* II. 12., J.P. Migne, *Patrologiae cursus completus. Series graeco-latina*, 161 vols. in 166 (Paris, 1857-66). This is the series containing Greek texts with Latin translations in parallel columns. The so-called *series graeca*, 81 vols. in 85 (Paris, 1856-66) contains the Latin translations only. See vol. XCIV, p.1296.

23. In an attempt to identify the elements of the Western legal tradition one should always bear in mind that the dissimilarity of law is an obstacle to such a united study. It seems that a general study of the Western legal tradition, as a common basis of the European and American legal systems is difficult, if not impossible. Indeed, today we are still faced with a dissimilarity between the common law and the European continental law. Some scholars, however, underestimate the significance of the fact that even the English legal system was deeply affected by the legal, political, economic and religious aspects (See G.A. Tsangaras, "The Reformation in England and the Roman Law in the Prerogative Courts", (in Greek), in the *Athens Law Tribune (Nomikon Bema)*, vol. 33, pt. 11 (Athens, November 1985), pp. 1650-1660, *passim*). Since law is the object of "Western legal tradition," one should first examine its nature and therefore evaluate the elements of this tradition. It is true that from the thirteenth century, there appeared in the English world a legal development which was entirely different from the development of the continental European legal systems. Both systems, however, are sufficiently cognate, despite their fundamental division. The Western legal tradition has several characteristics that are common to both legal systems, because it is marked by legal evolution. The law is entirely distinguished from all other social sciences. It is entirely "autonomous" and has its own evolutionary methods and traditional sources. The legal institutions, the legislation and legal concepts are different from the other social, political, economic and religious institutions. This distinction between legal institutions is an element of the Western legal tradition. The law is a distinct set of institutions, of which the administration is entrusted to the professionals, lawyers and jurists. This distinction between legal institutions and other social sciences continues in our days as a basic element of the Western legal tradition, which has survived the passing of the time. The law is a "profession" and especially a "learning" profession. The law is the achievement of a professional body. Without such a professional body there is little or no legal evolution. The development of law cannot be an abstract and impersonal work. This

professional body does not constitute only the judges, barristers and attorneys, but the law makers also. The law comprises not only what the judges and law makers command but also what these law makers, judges or generally legal scholars, say about these decisions. The law maker is undoubtedly necessary for those legal systems that are based on codes. On the other hand, judges are needed for the common law. The first professionals are the glossators, but the professional element changed its form and structure through the centuries of the Western history. In the common law the profession was separated into branches and the "Inns" were created. The choice was made among the best members of the Bar. The barrister took direct part in the creation of the English common law. The law is a learning profession and it has its own schools and institutions where the lawyers, the judges and the law makers are educated and trained to the law. Through this learning knowledge of law comes the legal evolution and legal development. There is no legal development without institutional knowledge. The origins of legal systems are traced back to institutional shapes of knowledge. If there is no specific legal institution there is no legal evolution. The ancient Greek philosophy never achieved systematic legal science with the apodictic and dialectical reasoning as it had been manifested in its philosophy. The same stoic form, the Greek dialectics, were inserted in Rome and the professional element, that is the jurists, applied it for the first time, to prevailing legal institutions. With such a practical approach the Romans managed to achieve a legal education. The same practice would be established in the Middle-Ages and then the Roman law would revive and the law would evolve. The Greek philosophical approach would remain in the East, integrated with the Christian Orthodox ideal, and would have its consequences in the legal aspect. The law offices and the Inns of Courts had been the first legal institutions and gradually the legal science was introduced to University education. The cultivation of law is still entrusted to the professional legal scholars and the legal training is still maintained in law schools. The legal learning is "structured" the law is a "whole", that is, a *corpus juris*, a systematized body. But it is obvious that the law is becoming to be less of a *corpus juris* nowadays than before. It is rather treated as a process of conflicting rules. Older structured elements of the law, do not rule any more. This is a significant fact that shows the crisis of the Western legal tradition in our times. The organic development of law is losing its significance. Another element is the "conceptualization" of the law. The law is principled and scientific. The legal learning systematizes and conceptualizes legal institutions. The legal concepts which are expressed by the law makers, the judges, and legal scholars, are part of the law. The legal learning is part of the law and the special class of the legal professionals are specially trained in a discreet body of legal learning which has special and professional literature and professional schools. See generally and compare, H.J.Berman, *The Interaction of Law and Religion* (Nashville, 1974), pp.11-20, pp. 49-77ff.

24. See generally, H.J.Berman, "The Origins of Western Legal Science," *Harvard Law Review*, vol. XC (Cambridge, Mass., 1977), pp.921-930.

25. D.Knowles and D.Obolensky, *The Christian Centuries*, 2 vols. (New York, 1968), vol. II: *The Middle Ages*, p. 169. For a detailed account of the "papal revolution" and its legal ramifications see H.J.Berman, *Law and Revolution: The Formation of the Western Legal Tradition* (Cambridge, Mass, 1983), *passim*.
26. B.Tierney, *The Crisis of Church and State, 1050-1300 with Selected Documents* (Englewood Cliffs, N.J., 1964), p.45; also R.Southern, *Western Society and the Church in the Middle Ages* (Middlesex, 1970), pp.181-83.
27. W.Ullmann, *The Growth of Papal Government* (London, 1955), p.262. See also George H. Williams, *The Norman Anonymous of 1100 AD*, Harvard Theological Studies, vol. 18 (Cambridge, Mass., 1951), pp. 173ff.
28. H.J.Berman, "The Crisis of the Western Legal Tradition," *Creighton Law Review*, vol. IX (Omaha, Neb., 1975), pp.255-56.
29. *Ibid.*, p.258. ff. Cf. J.P. Dawson *The Oracles of Law* (Ann Arbor, Mich., 1968), pp. 432-479. Also see G. H. Williams, *Anselm: Communion and Atonement* (St. Louis, 1960) pp. 18, 24, 25.
30. In Byzantium the *Basileus* was the legislature, the judicature and the executive. The Church and clergy grew in importance and power only during the last centuries of Byzantium and at last the Patriarch of Constantinople became the bearer and vehicle of the Eastern cause. Despite the secularization and division in the West, the Eastern Empire became more of a Church. And the Church in Byzantium never lived under a system of *Caesarism*. It was a creature of the Empire but it was independently based on its tradition. But even if it never lived under the system of *Caesarism*, it neither lived under *clericalism*. In contrary to its sister Church in the West, it was not a sacerdotal Church. The Byzantine Church never tried, as the Western Church did to the local Churches in the West, to govern all Orthodox Christians from Constantinople. It acted on the principle of federalism. The spirit of *Caesarism* was inevitable in the early centuries of the Orthodox Church. Constantine was something of a *Caesar-pope*, who was God's viceregent in the Church. Justinian continues this tradition and even Leo III, in the eighth century can still claim, "*I am emperor and I am priest*". Then we have as a reaction to the iconoclastic policies of Leo III the protests of John of Damascus, to set bounds to the secular power and to press the distinction between the things of God and the things of Caesar (*Ta Kaisaros to Kaisari, ta tou Theou to Theo*). Thus, the surviving vestiges of *Caesaro-papism* failed and henceforth the ideas of the *Epanagoge* (a lawbook promulgated by Basil I (A.D. 879-886) prevailed. The Patriarch stands by the side of the Emperor, but there was an ecclesiastical law influence. I argue that Leo III, coming from Syria and therefore much more closer to the Islamic influences, brought Islamic customs within the

empire. His iconoclastic policy can easily be traced in the Islamic views about relics and icons and the legal influences of the *Koran* can be found in the various penalties concerning mutilation. The practicing lawyers were abandoning more and more the Justinian legislation and Basil I, although aspiring to purify the law, he used the *Ecloga* of Leo III also. The *Epanagoge* fixed the special position of the Emperor within the Church. The introduction of the *Epanagoge* which is rightly supposed to have been composed on Patriarch Photius's initiative, speaks about the definition of the duties of the Emperor and of the Patriarch. It demonstrates the tendency to limit imperial intervention in religious matters, purely to the defence of accepted definitions of faith, and it stresses the exclusive right of the Church to define and to interpret the Christian doctrine. From the time of the *Epanagoge*, there was no chance for independent authority to accrue to the Byzantine Patriarch in the manner of the Roman Pope. It should be noted, however, that the *Epanagoge* did not completely subordinate the Patriarch to the Emperor. Therefore, the Byzantine and Slavic political history do not contain the fateful tensions between Empire and a politicalized Church, which characterized the history of the West and the origins of the "papal revolution" and the Western legal tradition. Later on, the codification of the *Basilica* by the Macedonians, which formed the greatest and fullest collection of law, was a codification of secular law, private and public, and also the law of the Church and its canons. The same system of laws includes both secular and ecclesiastical regulations. With the addition of the *Tipoukeitos* (*Ti pou Keitai* – where everything is to be found, inter A.D. 1100-1200) Byzantium could face the West with a record of legal progress which was unique in Europe. In spite of this legal progress, however, there was little study of jurisprudence, and no serious attempt, such as was made in the West by the glossators, to attain a philosophy of law. Meanwhile the study of ecclesiastical law was developed and the commentaries and treatises of Theodore Balsamon, were parallel in their measure to the *Concordantia discordantium canonum* of Gratian, but the legal norms of the Orthodox Church were mustered along with the state ecclesiastical laws into the collection of the *nomocanones*, which differed widely in the various other Orthodox Churches. No one collection was accepted by all Orthodox Churches, as a *Codex Juris Canonici*. It is interesting to see how the ecclesiastical law and the Byzantine social and political thought influenced the legal systems of the countries which were directly or indirectly under the Byzantine tradition. This influence was important to Italian law and in Sicily, community of property between husband and wife, or between them and their children, may have arisen from the development of vulgar law, or by contamination from Franco-Norman law, as from the direct influence of the *Ecloga*. The same applies to certain regulations on *protimesis*, common alike to Sicilian sources and to Byzantine, such as the *Epanagoge*, the novels of Leo III the Wise, or those of Constantine Porphyrogenetus and Romanus Lecapenus. These regulations in Sicily were derived from customs already existing there in the Byzantine period and confirmed in the East by legislative texts, rather than from these texts themselves. Furthermore, the Byzantine legislation deeply influenced Eastern Europe and Asia,

especially the Russian, Bulgarian, Serbian, Georgian and Roumanian Civil Codes. Thus, before the socio-economic revolutions and occupations of the twentieth century, these countries had Orthodoxy as their State religion and lived in the Byzantine tradition inherited by the Orthodox Churches. In the early modern Greek society, which was at the time the only modern State still under this peculiar influence, we can realize the importance of Byzantine Christendom, to the legal evolution in the Eastern countries. As a result of the absence of legal institutions and organized and viable legal systems adjusted to the modern idea of State, early modern Greek society, as most of the Eastern states, "borrowed" already evolved legal systems from the West: i.e., Commercial Codes from France, and most important, Civil Codes from Germany, Austria, Prussia, etc. It is crucial to note that these Codes were based on Roman law and Roman legal thought, as it was expressed not only in the early Roman law but also in the early Byzantine legislation, especially that of Justinian. This is an irony and shows the negative role which late Byzantine tradition played upon the systematization of law in the East. The law returned back to where it had been planted and grown, having acquired its new modern shape. Nevertheless, in spite of the fact that the new legal systems, which had been adopted by these countries had the seeds of ancient Justinian tradition, they had to be adjusted to Orthodox ethics and the Byzantine tradition. Especially in Greece, the Byzantine *Ecclesia* still retained much power, despite the hard attempts of the German regent, *Maurer*, to secularize the Greek society and its laws. When the last *Palaeologus* fell in battle, and the *Basileia* at last disappeared, the *Ecclesia* remained unshaken and the Patriarch of Constantinople bore on his shoulders the honour and burden of the Byzantine inheritance. It was the Greek Church that carried on Greek tradition, inspired the revival of Greek independence, and likewise the Orthodox Churches in Bulgaria, Roumania and Serbia. During the four hundred years of Ottoman rule, the only legal representative of the nations under the Turkish occupation, was the Orthodox Church and the internal relations of these people were regulated by the law of the Church, whenever the Ottoman law was not applicable. The essence of the Byzantine *Basileia* was Christianity in its Greek form of Orthodoxy, and that essence survived even when the secular vehicle which had been its bearer and support was swept away. The legal cadre of its action was the law of Rome, a law which came to be expressed in Greek, and was modified into closer accordance with the principles of Greek Christianity. The Byzantine Christendom belonged to the life and tradition of the West. Byzantium gave and received from the West. In spite of its peculiar type, it is inseparable part of the Western civilization. For Byzantium's heart, lies in the Hellesponte, and the wings of its culture and wisdom extend to the Nordic seas and to the Caucasian Steppes; it nests on the shores of Africa and it sustains the great lake of the middle world, both in latitude and in longitude. See generally, G.A. Tsangaras, *The Orientalization and Diffusion of Eastern Roman Law* (unpublished doctoral dissertation), (Harvard Law School, Cambridge, Mass. 1984). See also, by the same author *Civil and Ecclesiastical Interaction as a*

Constitutive Element of the Eastern-European Legal Tradition" (unpublished LL.M.thesis), (Harvard Law School, Cambridge, Mass. 1980).

31. G.Le Bras and P.Fournier, *Histoire des collections canoniques en Occident depuis les fausses decretales jusqu' au Decret de Gratien*, 2 vols. (Paris, 1931-32), vol. I, pp. 321-61.
32. G.C.Crump and E.F.Jacob, eds., *The Legacy of the Middle Ages* (Oxford, 1948), p.322. See also Williams, *op.cit*, *supra* note 29, p.24.
33. *Ibid.*, p.326. Cf. Berman, *op. cit*; *supra* note 24, pp. 921-930, *passim*. See also John P. Dawson, *A History of Lay Judges* (Cambridge, Mass. 1960), p. 194 and also *id.* "The Codification of the French Customs," *Michigan Law Review*, vol. 38 (1940), p. 765.
34. To George H. Williams
and John P. Dawson.
In memoriam.

A BRANCH AND BOUND ALGORITHM FOR ODD MAGIC SQUARES AND CUBES

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ABSTRACT

The well-known magic square puzzle involves arranging numbers into a square matrix such that the sum of the numbers along the rows, columns and diagonals are the same. There are different algorithms for constructing the magic squares depending upon whether the order of the matrix is odd or even. In this article we provide a step-by-step algorithm for implementing the odd magic squares in any programming language. A branch-and-bound algorithm to construct a magic cube of odd order is also developed.

Key words: magic number, Ramanujan's square.

1. INTRODUCTION

A magic square is an arrangement of numbers like integers, primes, arithmetic progressions etc. into a square matrix in such a way that the sum of the numbers along the rows, columns and the two diagonals are the same (called the *magic number*). The numbers that are put in various cells may be either unique or can be repeated (see for example [2]). In this article, we consider only the case where the numbers are all unique. In section 2, we present a branch and bound algorithm for generating the magic squares. An extension of the magic square to three dimensions is known as the magic cube, in which each row and column sums are equal. In addition, the sums of the elements along the four (3-dimensional) diagonals are also equal. Section 3 presents a branch-and-bound algorithm for generating odd magic cubes.

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Throughout the paper, the order of the magic square or cube will be denoted by an 'n' and the magic number by an 'S'.

2. MAGIC SQUARES

Magic squares of odd order are generated as follows. The algorithm starts by placing a '1' in the middle of the first row. We then calculate a $JUMP = n-1$ and 'branch' to the cell diagonally down to the left of this cell and place the $(1+JUMP)^{th}$ element there. For example in the 5x5 square the JUMP is 4 and next element to be placed is '5'. Immediately below this element we place the next element (namely '6' in a 5x5 square). This is called the branching step. As can easily be seen, this procedure creates a break in the sequence of numbers ('2', '3' and '4' in the case of 5x5 square). These missing numbers will be placed at proper positions in the bounding step. After this bounding step is complete, we restart the algorithm at the previous branching step (at element '6' in 5x5 square) and repeat the whole branching step followed by another bounding step. In the very last iteration of the algorithm, only one element is placed in the branching step.

Whenever we go outside of the square, we will wrap around it and come back to the square through the opposite side of the square. The magic number of the magic square is seen to be $S = n(n^2+1)/2$.

TABLE 1: MAGIC SQUARES OF ORDER 3, 5 AND 7 WITH OUR ALGORITHM

8	1	6
3	5	7
4	9	2

17	24	1	8	15
23	5	7	14	16
4	6	13	20	22
10	12	19	21	3
11	18	25	2	9

30	39	48	1	10	19	28
38	47	7	9	18	27	29
46	6	8	17	26	35	37
5	14	16	25	34	36	45
13	15	24	33	42	44	4
21	23	32	41	43	3	12
22	31	40	49	2	11	20

Because of the wrap-around property of the square, we will loop around to the same column only after placing n more elements. Hence $n-1$ of the n elements in any column when sorted in ascending order must be in arithmetic progression (AP) with common difference (CD) equal to $(n+1)$. For example in a 5×5 square we have either a single AP as 1,7,13,19,25 (with all $n=5$ elements) or as two APs (4,10)(11,17,23). Also note that if the starting position is the middle cell in first column or last column, at least $(n-1)$ numbers in various rows (when sorted) will belong to an arithmetic progression. For the 3×3 magic square, there are two APs in which a row or column elements are all odd (namely, the second column 1,5,9 and second row 3,5,7. For $n \geq 3$ there is just one AP in which all elements (along the rows or the columns) are odd, although for $n=5$ the principal diagonal when sorted results in an AP with $CD=4$.

If the numbers that are put in the square are not consecutive, the AP is hidden among the numbers (and the CD need not be $(n+1)$). For example, in the magic square presented in Ramanujan's notebook [1, p17] (which is not in standard form as the numbers are not consecutive integers),

28	1	31
23	20	17
9	39	12

it is found that the middle column is in AP with $CD = 19$, whereas two elements in the first column (9,28) and two elements in last column (12,31) have the same CD.

2.1. Branch and Bound Algorithm for Magic squares

Step 0: Input an odd integer (n).

Initialize $E = 1$, $i = 1$, $j = (n+1)/2$, $MAX = n*n$, $JUMP = n-1$.

Place E in the middle cell of the first row.

Step 1: (Branching Step)

(* two numbers will be placed in each branching step except the last step *)

$E = E + JUMP$

$i = i + 1$

if ($i > n$) then $i = 1$

$iSave = i$

$j = j - 1$

if ($j < 1$) then $j = n$

Place E in (i,j) then cell

$i = i + 1$

if ($i > n$) then $i = 1$

$iNext = i$, $jNext = j$

if ($E < MAX$) Place $E + 1$ in (i,j)th cell

$i = iSave$

Step 2: (Bounding Step)

(* Fill the gap between $E-JUMP+1$, ..., $E-1$ *)

for $h = E-1$ downto $E-JUMP+1$ step -1 do begin

$i = i + 1$

if ($i > n$) then $i = 1$

$j = j - 1$

if ($j < 1$) then $j = n$

Place h in (i,j)th cell

end (* for *)

If ($E \geq MAX$) goto Finish

Step 3: (Updating Step)

$E = E + 1$

$i = iNext$

$j = jNext$

go to Step 1

Finish: Print magic square

3. MAGIC CUBES

Magic cubes are a natural extension of the magic squares to three dimensions. The task is to fill a three dimensional matrix having n^3 cells with numbers between 1 and n^3 such that the sum of the rows, columns and the 4 diagonals are the same and is equal to $S = n(n^3+1)/2$. Hence they may be considered as n magic squares stacked together.

The algorithm for generating magic cubes is as follows. We start by placing a '1' at the middle row and the middle column of the first level ($k=1$). The JUMP is calculated as n^2 . In the first branching step we place the numbers n^2 through n^2+n+1 in different levels. For each of these numbers, we start a backward filling bounding loop in which numbers are placed in steps of $-(n-1)$ such that the missing numbers get filled as the outer loop is completed. After these steps, the algorithm is restarted at n^2 with another branching loop followed by the corresponding bounding loops.

3.1. Branch and Bound Algorithm for Magic cubes

Step 0: Input an odd integer (n).

Initialize $E=0$, $i=(n+1)/2$, $j=(n+1)/2$, $k=1$

JUMP = $n*n$, MAX = JUMP* n .

Place 1 in the middle row and middle column of first level.

$ePrev = 1$

$k = n$ (* we will start iterating from last level *)

Step 1:

$E = E + \text{JUMP}$

$eSave = E$

$i = i - 1$

if ($i < 1$) then $i = n$

$j = j - 1$

if ($j < 1$) then $j = n$

if ($E < \text{MAX}$) then Place $E+1$ in ($i, j, kPrev$)th cell

$iNext = i$

$jNext = j$

$kNext = k$

```

    For v = 1 To n - 1 do begin (* Branching Step *)
    (* n-1 numbers will be placed in each branching step except the last step *)
        Place E in (i, j, k)th cell
        iSave = i
        jSave = j
        kSave = k

Step 2: (* Bounding Step *)
    (* Fill the gap between E-n+1, ..., ePrev+1 *)
    For h = E-n+1 downTo ePrev + 1 Step -n+1 do begin
        i = i + 1
        if (i > n) then i = 1

        If ((h+n-1) is not divisible by n) Then
            k = k + n - 3
            if (k > n) then k = k - n
            j = j - 1
            if (j < 1) then j = n
        Else
            k = k - 1
            if (k < 1) then k = n
        End If
        Place h in (i, j, k)th cell
    end (* Next h *)
    i = iSave - 1
    if (i < 1) then i = n
    j = jSave
    k = kSave + 1
    if (k > n) then k = 1
    E = E - 1
end (* Next v *)

E = eSave
ePrev = eSave + 1

If (e >= MAX) Then
    go to Finish
End If

Step 3: (* Updating step *)
i = iNext

```

j = jNext
k = kNext
go to Step 1

Finish: Print magic cube

TABLE 2: A MAGIC CUBE OF ORDER 3 WITH OUR ALGORITHM

10	26	6
24	1	17
8	15	19

23	3	16
7	14	21
12	25	5

9	13	20
11	27	4
22	2	18

TABLE 3: A MAGIC CUBE OF ORDER 5 WITH OUR ALGORITHM

51	24	92	40	108
83	26	124	67	15
115	58	1	99	42
17	90	33	101	74
49	117	65	8	76

82	30	123	66	14
114	57	5	98	41
16	89	32	105	73
48	116	64	7	80
55	23	91	39	107

113	56	4	97	45
20	88	31	104	72
47	120	63	6	79
54	22	95	38	106
81	29	122	70	13

19	87	35	103	71
46	119	62	10	78
53	21	94	37	110
85	28	121	69	12
112	60	3	96	44

50	118	61	9	77
52	25	93	36	69
84	27	125	68	11
111	59	2	100	43
18	86	34	102	75

The magic cubes shown above are printed with respect to (w.r.t) various levels in the Z direction. However we could also print the various squares w.r.t other levels. For example, the 3x3x3 cube when printed w.r.t. the Y axis gives the following squares.

10	23	9
26	3	13
6	16	20

24	7	11
1	14	27
17	21	4

8	12	22
15	25	2
19	5	18

4. CONCLUSION

The magic squares generated using the above methods are just one among the many others that are available for a fixed n. For example, by rotating the squares through 90, 180 and 270 degrees respectively, we get three more magic squares. By reflecting the squares about the middle row, the middle column or one of the diagonals, we get other magic squares. Changing the direction of the branching steps (mentioned in our algorithm) or placing the first element at other symmetric positions in the matrix also gives new magic squares.

In the case of magic cubes, there exist six rotations about the middle row and column of XY, YZ and XZ planes and 4 rotations about the diagonals of the cube. In addition, we can also reflect through an imaginary plane cutting the diagonals of the opposite faces to generate other magic cubes.

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REACTOR DOSIMETRY IN REACTOR PRESSURE VESSELS LIFETIME MANAGEMENT

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ABSTRACT

Assessment of the current state and residual lifetime of the reactor pressure vessels (RPV) of Kozloduy NPP Units 1 to 6 has been carried out by monitoring the irradiation conditions of RPV and metal surveillance specimens irradiated during the reactor operation. Calculative methodology has been developed for the evaluation of the RPV neutron fluence of VVER-1000 and VVER-440. Verification of calculated neutron fluence on the vessel has been performed by the use of the experimental data of induced activity of ex-vessel detectors that have been installed on all units of Kozloduy NPP. Various loading patterns of the reactor core have been investigated in order to achieve neutron fluence reduction, which is an important requirement for managing and extension of the RPV lifetime.

1. INTRODUCTION

The reactor pressure vessel (RPV) integrity of VVER-type reactors is a topical problem because of the need for substantiation of their safety and service lifetime. Two reactors of type VVER-440/230 (Units 3 and 4) and two reactors of later generation of type VVER-1000/320 (Units 5 and 6) are in operation in Kozloduy NPP. Other two reactors of type VVER-440/230 (Units 1 and 2) were in operation till December 2002.

The steel embrittlement of a reactor pressure vessel caused by the neutron irradiation during the operation of NPP could be the reason for a break of the vessel integrity when accident shutdown of the unit is performed. The assessment of the fast neutron fluence onto the RPV is therefore required for evaluation of vessel steel degradation and for revision

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of the safety margins limits. These limits determine the lifetime of the reactor relevant to the irradiation embrittlement.

Following the requirements for safety operation a Reactor Pressure Vessels a Surveillance Program is being carried out on Kozloduy NPP. According to this program assessment of the current state and residual lifetime of RPV has been carried out by monitoring the irradiation conditions of RPV and metal surveillance specimens (SS) from the same vessel metal irradiated during the reactor operation. The RPV neutron fluence evaluation methodology has been developed and applied on Units 1 to 6 of Kozloduy NPP since 1989. The evaluation of neutron fluence is used for determining the current state of RPV metal embrittlement and the RPV residual lifetime, and for selecting the fuel-loading scheme, which warrants reducing the RPV neutron fluence rate.

2. EVALUATION OF THE METAL EMBRITTLEMENT UNDER NEUTRON IRRADIATION

The Russian standard (Gasatomenergondzor, 1989), for VVER reactors uses the following relation for determination of the temperature of neutron embrittlement:

$$T_k = T_{k0}^B + \Delta T_F, \quad (1)$$

Where T_{k0}^B , $^{\circ}\text{C}$, is the initial temperature of neutron embrittlement after annealing, and ΔT_F , $^{\circ}\text{C}$, is the shift of the temperature of neutron embrittlement. The non-destructive method for evaluation of the metal embrittlement under neutron irradiation is based on the relation between ΔT_F and the fluence F , cm^{-2} , of neutrons with energy above 0.5 MeV:

$$\Delta T_F = A_F (F/F_0)^{1/3}, \quad (2)$$

Where A_F , $^{\circ}\text{C}$, is a chemical coefficient of neutron embrittlement, and $F_0 = 10^{18}$, cm^{-2} .

3. NEUTRON FLUENCE CALCULATION METHODOLOGY

A calculative methodology has been developed for the evaluation of the RPV neutron fluence of VVER-1000 and VVER-440 (Ilieva, Apostolov and Belousov, 1994). The software package used is presented by the flowchart in Figure 1.

The distribution of the neutron flux and its responses on the RPV and adjacent zones of VVER are obtained as a solution of the kinetic equation of neutron transport. Because of the complexity of neutron production and transport from the core to the RPV the task is divided into two parts. The first part describes the generation of fission neutrons and their distribution in the reactor core, and the second part describes the neutron transport with fixed sources. These sources are determined by the fission neutrons generated in the core, and are appropriate for neutron fluence and induced activity calculation (Ilieva, Antonov and Belousov, 1996).

The determination of the power distribution and the fuel burnup distribution in the core taking into account the operational history has been carried out using the three-dimensional codes PYTHIA (Thomas, 1996), for VVER-440, and TRAPEZ (Schulz, 1997), for VVER-1000. These codes use libraries of effective diffusion cross sections generated by the spectral code NESSEL (Schulz, 1994).

The ASYNT method (Belousov and Ilieva, 1997) has been developed for calculations of neutron fluence on the vessel. The evaluation of flux responses is reduced to the space and energy integration of the product of three-dimensional adjoint solution and the appropriate source, determined by the loading patterns and operational regime realized. The three-dimensional adjoint solution is synthesized using the two- and one-dimensional solutions of adjoint neutron transport equation obtained by code DORT (Rhoades and Childs, 1988). The three-dimensional code TORT (Rhoades and Childs, 1987) is applied for calculations of neutron fluence on SS.

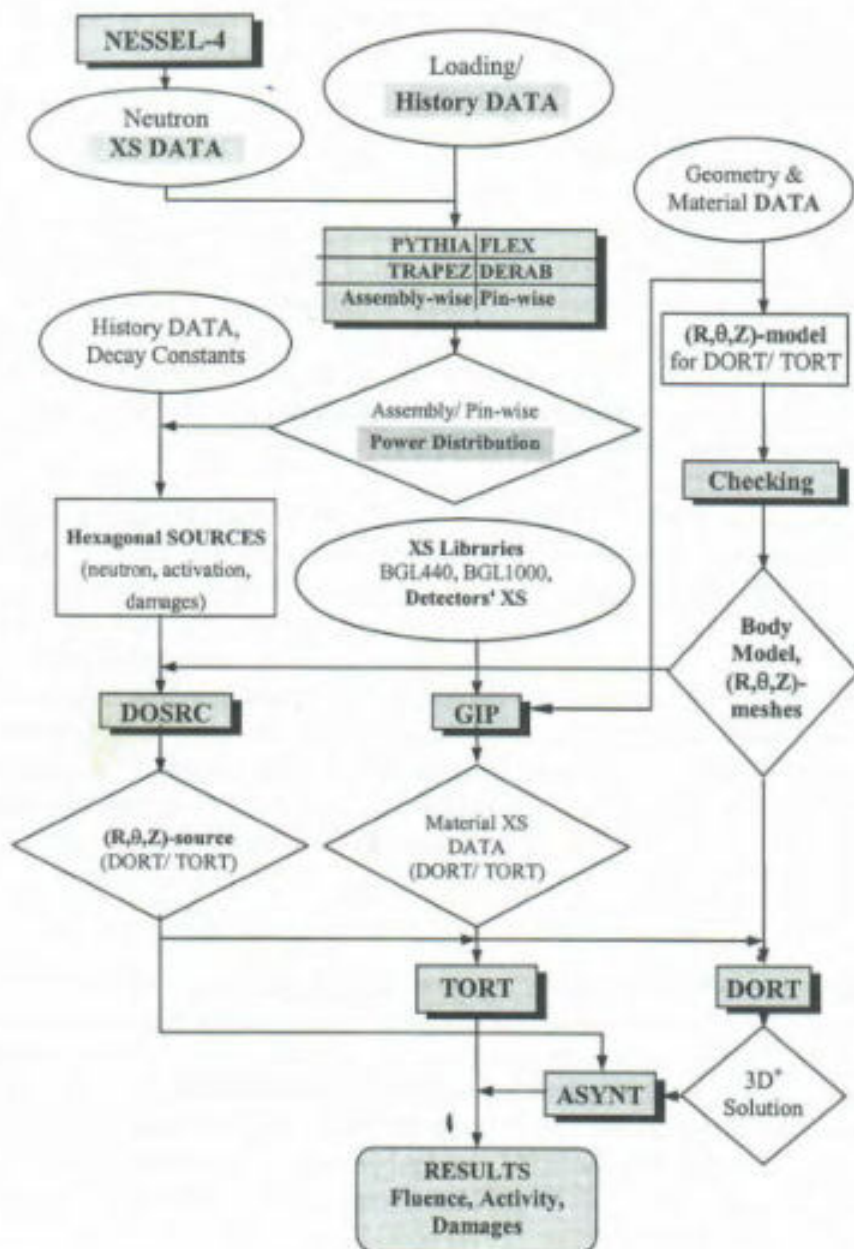
The DOSRC software package (Antonov and others, 1998) has been used to transform the assembly-wise and pin-wise output data of PYTHIA and TRAPEZ codes for power and burnup distribution in hexagonal three-

dimensional geometry to neutron source input data in (r,θ,z) -geometry format appropriate for neutron transport calculation by the discrete-ordinates codes DORT and TORT. The neutron fixed source is generated in multigroup presentation accounting for the burnup-dependent neutron production and energy distribution. There are two branches of the package for VVER-440 and VVER-1000.

For both types of reactors, VVER-440 and VVER-1000, two problem-oriented libraries have been created (Bucholz and others, 1996): BGL440 and BGL1000 respectively, by collapsing the fine-group library VITAMIN-B6 (199 neutron and 42 gamma groups) to 67-group structure (47 neutron and 20 gamma groups). The libraries consider the features (detailed one-dimensional geometry and material compositions) of the respective reactor and contain upscattering data for the five thermal-energy groups. The order of scattering of the Legendre expansion is P5.

Input data sensitivity analyses for choice of spatial coordinates' meshes, order of velocity angle quadratures S_n , polynomial neutron scattering anisotropy approximation P_n , convergence constant value, and neutron constants libraries have been carried out to reduce the calculational method errors [2, 3, 5, 6, 8].

FIGURE 1: FLOWCHART OF THE SOFTWARE PACKAGE FOR NEUTRON FLUENCE RESPONSES CALCULATION



4. VERIFICATION OF THE NEUTRON FLUENCE

The reliable calculation of the neutron fluence is limited by the data (nuclear and structural) used in the neutron transport calculations. That is why it is always advisable to compare calculational with measured values. Since the neutron flux is not directly measurable, flux-related values, such as radioactivity of an isotope generated by the neutron interaction, are measured and compared.

4.1. Neutron fluence on RPV

The neutron fluence is evaluated by calculations at the surveyed places of VVER-1000 RPV (the seam welds 3 and 4, and base metal, on 8 deg, which is the direction of maximal neutron exposure) and VVER-440 RPV (the seam weld 4 and base metal, on 30 deg for standard core loading, and on 13 deg for loading with dummy cassettes in the periphery). The developed RPV neutron fluence evaluation methodology has been applied since 1989 on Units 1 to 6 of Kozloduy NPP.

Following the RPV Surveillance Program verification/validation of the calculated neutron fluence on the vessel for each operated cycle is being carried out by the use of the experimental data of induced activity of ex-vessel detectors. For this purpose, racks' device with iron, niobium, and copper wire detectors is being disposed in the air cavity behind the vessel on each unit of Kozloduy NPP. The horizontal wire detectors comprise a 60-deg sector, and the vertical ones are situated along the core height (Ilieva, Apostolov, Belousov, Penev and Popova, 1996). The calculated ex-vessel detector activities of ^{54}Mn are in good consistency with the measured ones. The calculated ^{60}Co and $^{93\text{m}}\text{Nb}$ activity data overestimate the measured ones. For example, the mean overestimation for Unit 5 is about 10% and 26%, respectively.

The verification of calculated neutron fluence onto the VVER-440/230 pressure vessels is a very topical task in particular referring that some of the reactors of this type have been operated for the major part of their design lifetime. There are no surveillance assemblies in VVER-440/230, but other activities have been carried out in order to assess experimentally the RPV metal embrittlement and the RPV residual lifetime. Templates have been taken out from the inner wall of the Unit 2 vessel (1992), and scraps (1995)

and templates (1996) of the Unit 1 vessel for embrittlement study. The verification of neutron fluence calculation based on measured ^{54}Mn activity of scraps demonstrated a good consistency between calculated and measured results (within 9%) (Apostolov and others, 1998).

4.2. Neutron fluence on surveillance specimens

There are six sets of surveillance assemblies in the VVER-1000/320 type of reactors. Each set is placed within 60-deg sector of symmetry of the reactor core, and contains five cylindrical assemblies located at different azimuth positions on the baffle, about 30 cm over the reactor core upper edge. Each assembly contains six cylindrical containers with SS and neutron detectors. The containers are arranged at two axial levels, symmetrically around the axial axis of the assembly (Belousov and others, 1998).

Detailed calculational modeling of the neutron fluence onto the surveillance specimens of VVER-1000/320 was performed, taking into account the spatial and time power distribution in the reactor core. The three-dimensional code TORT, the neutron cross sections library BGL1000, and activation data from the IRDF-90 file were used for these calculations.

The strong neutron flux radial and axial gradients through each surveillance assembly do not allow to obtain a set of specimens with close neutron irradiation needed for metallurgical analysis. The neutron fluence at the middle of the specimens varies around the axis of each assembly within 15% for the upper level and 35% for the lower level.

The measured ^{54}Mn activity of some specimens was applied to determine the experimental neutron fluence values according to the fluence/activity relation.

The results obtained (Belousov, Ilieva and Popova, 1998) for the neutron fluence of metal specimens from surveillance assemblies' sets of Kozloduy NPP Units 5 and 6 have been used for assessment of the current embrittlement and prognosis for upcoming years in accordance with the Surveillance Program.

5. RPV LIFETIME PROGNOZIS

The RPV residual lifetime relevant to the neutron irradiation is limited by the maximal neutron fluence F_{\max} and depends on the fluence of the operation time. The residual lifetime (RLT) in cycles is determined as

$$\text{RLT} = (F_{\max} - F)/F_{\text{avr}}, \quad (3)$$

Where, F_{avr} is the prognostic fluence of standard cycle of 290 FPD. The maximal neutron fluence is determined by the maximal critical temperature T_{ka} which is a characteristic of the vessel:

$$F_{\max} = (T_{\text{ka}}/A_F)^3. \quad (4)$$

The results obtained for the residual lifetime relevant to the RPV neutron embrittlement of Kozloduy NPP Units 1 to 6 are presented in Table 1.

**TABLE 1: RESIDUAL LIFETIME RELEVANT TO THE RPV
NEUTRON EMBRITTLEMENT**

Unit / Reactor Type	Start Year	Operated Cycles to 2002	Residual Lifetime	
			Cycles	Until Year
1 / VVER-440	1974	21	7	2008
2 / VVER-440	1975	21	11	2012
3 / VVER-440	1980	16	26	2027
4 / VVER-440	1982	16	> 26	> 2027
5 / VVER-1000	1987	7	> 40	> 2041
6 / VVER-1000	1991	6	> 40	> 2041

6. CONTROL APPLICATION AND MANAGEMENT DECISIONS

On the basis of the RPV neutron fluence results obtained taking into account the local power distribution history, the operation of the 16th cycle of Unit 2 reactor, the 17th and the 18th cycle of Unit 1 reactor were substantiated. The RPV fluence results were used in licensing procedure of Units 3 and 4 by the Bulgarian Nuclear Regulatory Agency.

The calculative and experimental data obtained for metal specimens and neutron detectors of the Units 5 and 6 surveillance sets have been used for modification and improvement of the Surveillance Program of Kozloduy NPP Units 5 and 6.

Various loading patterns of the reactor core have been investigated in order to achieve neutron fluence reduction, which is an important requirement for managing and planning RPV lifetime.

Diverse low-leakage loading schemes with burned-up assemblies in the periphery of the reactor core are applicable. Low-fluence loading (LFL) is the scheme when burned-up assemblies are put only in direction of maximal exposure. In this case the reduction of the neutron fluence is about 20 to 30% toward the standard core loading (Table 2). Low-leakage-and-fluence loading (LLFL) is the scheme with 36 burned-up assemblies. It reduces the neutron fluence with about 30 to 40% toward the standard loading.

Another way to reduce the neutron fluence is to put 36 dummy cassettes in the reactor core periphery instead of fuel assemblies. In this case the direction of maximal azimuth neutron exposure is shifted from 30 deg to 13 deg and 47 deg (for 60-deg sector of symmetry), and the neutron fluence decreases with about 70% toward the standard loading. The combination of dummy and low-fluence loading additionally diminishes the neutron fluence. This scheme is being applied on Units 1 to 3 of Kozloduy NPP.

TABLE 2: NEUTRON FLUENCE REDUCTION

Loading Scheme	Description	Reduction Effect
LLL (low leakage)	IN-IN-OUT* & max OUT-IN-IN	Insignificant
LFL (low fluence)	OUT-IN-IN** & max IN-IN-OUT	~ 20 - 30%
LLFL (LL & LF)	IN-IN-OUT	~ 30 - 40%
Dummy	Dummy cassettes in the periphery of the reactor core	Shift max ~ 70%
Dummy & LFL	Dummy & LFL	≥ 80%

* IN-IN-OUT - the assembly is in the periphery during its third or fourth cycle in the core

** OUT-IN-IN - the assembly is in the periphery during its first cycle in the core

7. CONCLUSION

Calculative methodology for the evaluation of the RPV neutron fluence of VVER-1000 and VVER-440, and based on advanced methods, codes, neutron constants libraries and experimental verification by induced activity measurements has been developed.

The neutron fluence validated data had been used for assessment of the vessel metal degradation and the residual lifetime relevant to the RPV neutron embrittlement of Kozloduy NPP Units 1 to 6.

The applying of loading patterns with burned-up assemblies in the periphery of the reactor core leads to maximal reduction of the neutron fluence, which is an important requirement for managing and extension of the RPV lifetime.

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EMPIRICAL MODELLING AS A GENERAL APPLIED TOOL IN RESEARCH WORK

LIVIJA TUSAR* and MARJAN TUSAR**

ABSTRACT

The modelling procedure for the efficient use of empirical modelling methods is described briefly. Its applicability is shown by one example: an optimisation of grinding colour pigment with pearl mills. In this case we developed neural network and polynomial models. The neural network models are comparable with the polynomial models of higher orders. The inverse models are also calculated and evaluated. The models are used for the explanation of the correlations among selected variables and for the prediction of the optimal values. Some of the problems inherent in the modelling with mentioned models are discussed as well.

1. INTRODUCTION

Modelling is the procedure of selecting the most adequate model for selected factors and responses to investigate their correlations and to determine their wanted optimal values. The modelling procedure is usually very complex and consists of many steps. The usefulness and efficiency of models are rising with the reliability of the selected factors and responses and with the capability of the computers. Recently the models are presenting the tool of growing importance in science.

The methods for modelling can be in general divided into two groups: "black box models" (neural networks: i.e. error back propagation, counter back propagation, and Hopfield neural network) and "defined models" (polynomials and mathematical equations). In general the most efficient is the simultaneous use of both types of models.

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In the next section a short description of general modelling procedure will be presented. Steps of modelling procedure will be described briefly: Selection of factors and responses, Selection of experimental designs, Accurate performing of experiments, Selection of the most adequate models, Qualitative validation and verification of selected models, Optimal values determination, and inverse models determination. Then one example of its use will be given: the optimisation of the colour pigment grinding with pearl mill. The paper ends with the conclusion.

The general strategy for modelling as well as used software has been developed on the basis of literature and practical experiences. The developed programmes and strategy could be used in general.

2. MODELLING PROCEDURE

The general modelling procedure could be as follows:

1. *Selection of factors and responses.*
2. *Selection of the experimental design.*
3. *Accurate performing of experiments.*
4. *Selection of the most adequate models (neural networks, polynomials).*
5. *Qualitative validation and verification of selected models with some statistical methods (ANOVA) and with some additional data for model testing.*
6. *Obtaining inverse neural networks and polynomials.*
7. *Statistical validation of inverse models.*
8. *Comparison among models on the basis of calculated responses/factors and selection of the best ones.*
9. *Optimal values Determination of selected variables.*

2.1. Selection of factors and responses

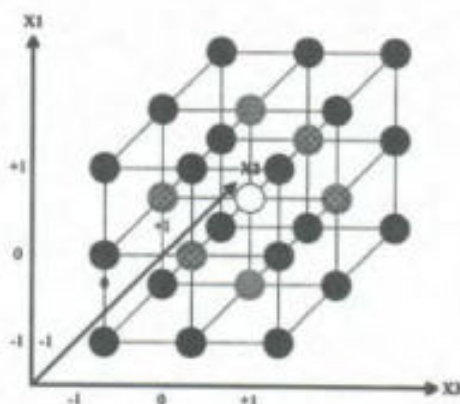
When we are detecting variables in the investigated system, it is important that some characteristics of selected variables are known. For example, variables can have continuous or discrete values, upper and lower limits, different number of levels inside the selected range. If the temperature is determined between 70°C and 90°C, factorial levels can be

set to 70°C, 80°C and 90°C. **Independent variables or factors** (x_{ki}) are variables that could be measured directly or indirectly and it is possible to set their values in advance. **Dependent variables or responses** (y_{kj}) are variables, which could be measured directly or indirectly, but it is impossible to set their values in advance.

2.2. Selection of the experimental design

Selection of the experimental design depends on the chosen objective: determination of correlations among variables or determination of optimal points. The nature of selected variables is also important: mixture designs (the content of the one variable set the content of the other), factorial designs (Figure 1) and response surface designs (variations of full or fractional factorial designs). Full factorial design for three variables x_1 , x_2 , x_3 with three different levels -1, 0, +1 is shown in Figure 1. It has 27 experiments presented as a cube. The experimental points are central points, corner points, and centres of gravity of the cube. The sign of lower limit or level is usually minus (-) or -1, the sign of upper limit or level is usually plus (+) or +1, and the sign of the middle level is zero (0).

FIGURE 1: A FULL FACTORIAL DESIGN FOR THREE FACTORS WITH THREE LEVELS



2.3. Accurate performing of experiments

The implementation of experiments must be very precisely done. The good repeatability of the measurements is essential for the modelling procedure. As long as good repeatability of the measurements is not achieved, the modelling is questionable. If the repeatability of experiments is not achieved, sometimes some additional variables must be introduced or some of them must be changed or even released.

2.4. Selection of the most adequate models

2.4.1. Polynomials

The main purpose of the modelling is the determination of a proper model: $y=f(x)$. The model can be some mathematical function (polynomials, some exponent equations, etc.) or neural network and must fit the values of selected variables (i.e. measurements) as well as possible.

Usually a lot of models are tested before the adequate ones are selected. In our case with linear regression we calculated parameters of polynomial equations. The procedure of *automatic gradually extending of selected polynom (usually linear polynom) to polynoms of higher orders* has been used to determine the incomplete polynoms of higher orders. This method is useful in the case when linear polynom is statistically not acceptable, some additional experiments for calculating higher orders of polynomial models are too expensive or the experimental work is not possible to implement any more (for example irreversible change in experimental conditions, needed instruments are not available any more).

The procedure for determination of incomplete polynoms of higher orders is as follows:

1. Selection of basic polynom with nn terms (usually linear polynom).
2. Determination of mm polynomial terms for extending procedure (usually terms of quadratic polynom).
3. In the first step/iteration each term of mm terms is added to basic polynom with nn terms. So mm models is calculated with $nn+kk$ terms (first iteration: $kk=1$). The most adequate model from the

first step/iteration is then the basic model for the second step/iteration with $nn+kk$ terms ($kk=2, kk=kk+1$).

4. In the second step/iteration $mm-kk$ terms are available for adding to the basic model $nn+kk$. The most adequate model is then used for the next step where $kk=kk+1$, the number of terms of new basic model is $nn+kk$, the number of available terms for adding is $mm-kk$.
5. The iterations are repeated until $mm-kk=0$ or until $nn+kk+1$ is equal to the number of available experiments.

The most adequate model of the particular iteration is selected on the basis of statistical analysis: deterministic coefficient and RMS of calculated values (the square root of the sum of differences between particular calculated dependent variable and measured dependent variable) and on the basis of the calculation of the RMS for some test experiments when they are available.

2.4.2. Neural networks

From the training point of view, neural networks can be divided into networks with supervised learning and networks with unsupervised learning procedure. We have always used the algorithm for supervised learning or back-propagation algorithm but we add some own modifications and some programs for results' implementation.

2.5. Qualitative validation and verification of selected models with some statistical methods (ANOVA) and with some additional data for model testing

Criteria for adequate models are as follows:

1. Lack-of-fit value F_{lof} should be smaller than critical F value obtained from statistical tables.
2. Deterministic coefficient DK should be as close as possible to value 1, Correlation coefficient KK should be as close as possible to value 1.
3. **P_{RMS} or RMS of measured values** (the square root of the sum of differences between the average of particular dependent variables and the particular measurement dependent variable)

should be the same size as P_{RMS} or RMS of calculated values (the square root of the sum of differences between particular calculated dependent variable and measured dependent variable): see equation 1.

P_{RMS} is the difference between the experimental y_{ij} and calculated \tilde{y}_i dependent variables according to the lowest measured value y_{min} and to the highest measured value y_{max} of the dependent variable (response) in percentages.

$$P_{RMS} = \frac{\sqrt{\frac{\sum_i^k \sum_j^{n_i} (y_{ij} - \tilde{y}_i)^2}{N}}}{(y_{max} - y_{min})} * 100 \quad /1/$$

N is the number of all experiments in the design – together with repetitions. k is the number of different experiments in the design. n_i is the number of repetitions of particular experiment in the design.

2.6. Optimal values determination of selected depended variables

Model can be used to find the optimal combination of values of independent variables to achieve the most advantageous value of dependent variables (lowest price, time consumption etc.). In our case the optimal values of variables were calculated from neural network model with genetic algorithm.

2.7. Inverse models determination

At inverse models the role of independent variables (factors) and dependent variables (responses) are reversed. Usually the transformations of variables within the certain limits are necessary before the performing of modelling procedure. The inverse models simulate the effect of the response on the factor.

3. OPTIMISATION OF PIGMENT GRINDING WITH PEARL MILL

The grinding of the colour pigment with pearl mills is a process of milling pigment particles to a defined size (granulation). The main aim of the optimisation was reducing of the processing time and the energy consumption.

The function of a pearl mill is relatively simple. The agitator disc is rotating in the mill vessel, which fits to the shape of the agitator disc and only a small slot separates them. The slot, where the grinding process takes place, contains mill pearls. The grinding mass flows out from the vessel at the top through the separation slot and then horizontally through the tube. The separation slot is thin enough to prevent the pearls to abandon the mill vessel. Redundant heat produced at the grinding process must be led away. The mill vessel is cooled off by water.

3.1. Selection of variables

Factors or independent variables:

- The viscosity of the grinding mass [s] (x_1),
- The throughput of the cooling water [l/h] (x_2),
- The rotation frequency of the pump [min^{-1}] (x_3),
- The rotation frequency of the mill [min^{-1}] (x_4),
- The amount of the pearls in the mill [%] (x_5).

Responses or dependent variables:

- The time of grinding of one kilogram of grinding mass [s] (y_1),
- The granulation of the particles [mm] (y_2),
- The consumption of energy per 1 kilogram of the grinding mass [Wh] (y_3),
- The temperature of the outflow grinding mass [$^{\circ}\text{C}$] (y_4),
- The throughput of the grinding mass [kg/h] (y_5),
- The pressure in the mill [bar] (y_6),
- The difference between the temperature of the inflow and outflow cooling water [$^{\circ}\text{C}$] (y_7).

3.2. Selection of experimental design

The fractional two level factorial design for five factors with 16 different combinations of their values was selected. 5 replications of the central point were done for checking the repeatability of the experiments. 3 more experiments were done for testing the developed models.

3.3. Planning of measurement system

The pearl mill has been prepared for the experimental work in the pilot laboratory (Figure 2). The main elements of the automatic system for measurement monitoring and acquisition have been as follows:

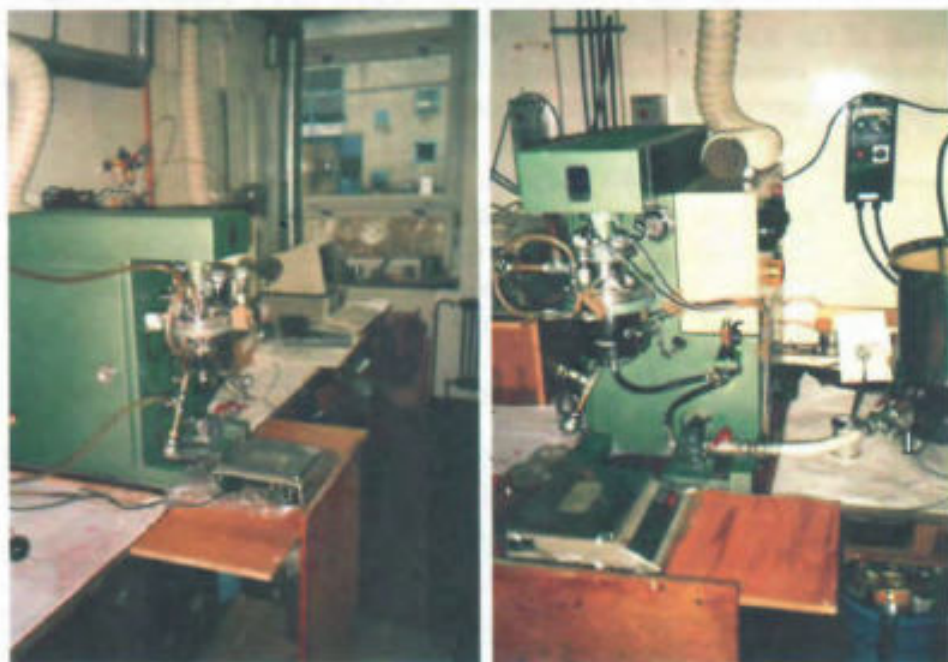
- Personnel computer (PC type);
- Multi-function acquisition board (converter A/D);
- Multiplexer amplifier electronic circuit;
- Sensors and
- Computer programme.

Variables, which are time dependent, were recorded by the automatic system for measurement monitoring and data acquisition. Time dependent variables were: the temperature on different parts of the mill, the pressure in the vessel, the throughput of the cooling water, the mass throughput of the grinding mass and the time spent on the process. Other variables, which were assumed to be constant during the experiment, were measured manually.

3.4. Experimental data and models

From experimental data we developed the models: linear polynoms, higher order polynoms, and neural networks. The measured experimental data are written in Table 1. The higher order polynoms were calculated by the method described in section 2.4.

FIGURE 2: THE PEARL MILL IN THE PILOT LABORATORY



A

B

Figure 2: Fig. 2A shows the pearl mill in the pilot laboratory, the scales for weighting the grinding mass and behind the personnel computer connected across multi-function acquisition board (converter A/D) / multiplexer amplifier electronic circuit with sensors. The sensors have been built in pearl mill on selected places on the basis of special additional parts, which were made for this occasion. Fig. 2B shows pearl mill with sensors: 1- the sensor for measuring the input temperature of grinding mass, 4- the sensor for measuring the output temperature of grinding mass, 2- the sensor for measuring the input temperature of cooling water, 3- the sensor for measuring the output temperature of cooling water, 5- the sensor for measuring the temperature of grinding mass in the mill vessel, 6- the sensor for measuring the pressure in the mill vessel.

The most adequate models were selected on the basis of the statistical coefficients (2.5) and testing experiments (from t_1 to t_3). Table 2 shows the results of the statistical analysis of all developed models. On the basis of developed incomplete polynoms of higher orders we determined correlations among independent and dependent variables.

Table 1: Values of factors and responses (first and second row: signs and units) are presented. Experiments from s_1 to s_5 are repetitions. Experiments from t_1 to t_3 are test experiments. Experiment number 5 was terminated because the critical pressure was exceeded. x_m are factors, $m = 1$ to 5, y_n are responses, $n = 1$ to 7.

TABLE 1: EXPERIMENTAL DATA

No.	x_1	x_2	x_3	x_4	x_5	y_1	y_2	y_3	y_4	y_5	y_6	y_7
exp.	s	l/h	Min ⁻¹	Min ⁻¹	%	s/kg	μm	Wh/kg	O _c	kg/h	bar	K
1	20	232	234	1764	70	44,6	13	37,77	39,9	85,59	1,25	7,8
2	20	795	43	1746	70	220,8	9	208,21	33	17,1	0,08	3,9
3	20	741	236	1046	70	53,1	12	36,29	39,2	72,26	1,42	3
4	20	194	42	1030	70	258,4	8,5	120,03	30,8	13,82	0,08	6,4
5	60	800	230	1800	70	-	-	-	-	-	>3,5	-
6	60	799	40	1020	70	217,4	10	173,74	30,9	16,69	0,56	3,4
7	60	202	40	1750	70	190,2	6,5	200,95	47,7	18,93	0,28	12,8
8	60	212	232	1020	70	47,1	10	54,47	65,6	87,59	3,12	9,5
9	20	187	45	1813	30	258,6	14	127,74	32,1	13,75	0,11	6,1
10	20	794	45	1075	30	254,2	16	83,08	20,8	12,35	0,13	1,6
11	20	188	232	1082	30	59,9	21	13,05	25	70,19	1,42	3,8
12	20	735	232	1750	30	45,7	21	5,92	28,7	80,53	1,4	2,3
13	58	181	40	1060	30	218,2	17	93,05	27,8	16,26	0,52	5,3
14	62	199	232	1791	30	40,2	33	35,88	44,4	95,56	3,14	12
15	62	776	42	1764	30	201,7	11,5	180,84	30,5	17,77	0,25	3,8
16	58	804	235	1060	30	51,8	27	23,17	29,3	81,68	3,14	1,9
S1	43	474	125	1425	50	94,5	15	76,28	38,6	39,88	2,32	5,4
S2	43	464	125	1425	50	88,7	16	66,56	37,2	42,61	2,91	4,2
S3	42	520	133	1405	50	77,8	13	63,42	40	52,49	1,56	4,5
S4	42	525	136	1382	50	68,9	12	58,9	40,6	54,07	1,6	5,2
S5	42	552	139	1377	50	74	11,5	66,24	40,8	53,01	1,59	4,7
T1	58	277	40	1774	30	214,8	12	143,62	35,7	19,23	0,33	7,1
T2	58	807	236	1774	30	40,3	20	30,05	35,9	99,49	2,84	2,1
T3	20	727	236	1030	70	48,6	13	38,75	42,8	75,37	1,87	2,9

The obtained models were as follows:

$$y_1 = 381.404 - 2.914x_3 + 0.007x_3^2 - 0.001x_1^2 + 0.004x_1^2x_3 - 0.008x_1^2x_5 \quad /2/$$

$$y_2 = -10.554 + 0.369x_1 + 0.038x_2 + 0.114x_3 + 0.007x_4 + 0.113x_5 - 0.001x_3 * x_5 - 0.005x_1 * x_5 \quad /3/$$

$$y_3 = -82.02487 + 0.78512x_1 - 0.29260x_2 + 0.38852x_3 + 0.12226x_4 + 2.01616x_5 + 0.00035x_2 * x_2 - 0.00043x_3 * x_4 - 0.00025x_2 * x_3 - 0.00333x_3 * x_5 - 0.00195x_1 * x_3 - 0.00033x_4 * x_5 \quad /4/$$

$$y_4 = -55.41456 - 0.02237x_1 + 0.31438x_5 + 0.00133x_1 * x_3 - 0.00027x_1 * x_2 + 0.09752x_4 + 0.00467x_1 * x_5 + 0.00126x_3 * x_5 - 0.00005x_3 * x_4 - 0.00024x_4 * x_5 - 0.00003x_4 * x_4 \quad /5/$$

$$y_5 = -19.838 + 0.20468x_1 - 0.00255x_2 + 0.35177x_3 + 0.00802x_4 + 0.05511x_5 \quad /6/$$

$$y_6 = -0.76470 + 0.00234x_1 - 0.00004x_2 + 0.02575x_3 - 0.00018x_4 - 0.00040x_5 - 0.00008x_3 * x_3 + 0.00018x_1 * x_3 \quad /7/$$

$$y_7 = 12.14952 - 0.03381x_1 + 0.00150x_2 - 0.00567x_3 - 0.01682x_4 + 0.06066x_5 - 0.00010x_1 * x_2 + 0.00009x_1 * x_4 + 0.00001x_4 * x_4 + 0.00021x_1 * x_3 \quad /8/$$

The parameters of neural networks were as follows: the learning factor was 0.5 and momentum terms 0.9. We found out that two level architecture of the neural network with 5 neurons that consisted the hidden layer was the most appropriate one. The most adequate architecture was determined on the basis of experimental design methods. The results of the two layer neural networks have been compared with higher orders polynoms. We developed also one-layer neural network and their results were comparable with linear polynoms.

Table 2: P_{RMS}^m (Eq. /1/) for measurements, linear polynoms (LP), higher order polynoms (DP), and neural networks

(NN) are written. Determination Coefficient (DC) for linear and higher orders polynoms is written.

TABLE 2: STATISTICAL ANALYSIS OF POLYNOMIAL AND NEURAL NETWORK MODELS

Dependent variables or responses	P_{RMS}^{PM}	P_{RMS}^{LP}	LP DC	DP P_{RMS}	DP DC	NN P_{RMS}
The grinding time of one kilogram of grinding mass [s] (y_1)	4,3	12,4	0,8981	3,7	0,9904	5,7
The granulation of the particles [mm] (y_2)	6,5	11,8	0,7583	5,1	0,9539	5,5
The consumption of energy per 1 kilogram of the grinding mass [Wh] (y_3)	2,8	9,9	0,9154	1,5	0,9974	3,8
The temperature of the outflow grinding mass [$^{\circ}$ C] (y_4)	3,0	10,6	0,7438	2,7	0,9841	7,2
The throughput of the grinding mass [kg/h] (y_5)	7,1	4,4	0,9792	4,4	0,9841	4,2
The pressure in the mill [bar] (y_6)	17,6	17,7	0,7581	9,9	0,9211	11,7
The difference between the temperature of the inflow and outflow cooling water [$^{\circ}$ C] (y_7)	4,0	9,5	0,8837	4,2	0,9821	6,2
All responses (y_{ALL})						6,8

Figures 3 and 4 are showing the comparison of the calculated contours among higher orders polynoms and neural networks regarding dependent variables: A (y_1), B (y_2), C (y_3), D (y_4), E (y_5), F (y_6) and G (y_7) for selected independent variables x_3 and x_5 . The values for other independent variables are constant: $x_1=20$ s, $x_2=200$ l/h, $x_4=1000$ min⁻¹.

On the basis of contours calculated from selected models and from statistical evaluation we could conclude that different models are comparable.

Models were used for calculation of the optimal values. In this case the optimum depends on energy consumption for achieving the required size of particles. From neural network model we determine one set of values independent variables leading to optimal value of dependent variables as it is shown in Table 3 (dependent values were calculated from the model):

Table 3: Determination of one set of optimal values from neural network model and by using the genetic algorithm.

TABLE 3: OPTIMAL VALUES FOR SELECTED DEPENDENT VARIABLES

Input data – the independent variables:	Output data – the dependent variables
$x_1=20$ s	$y_1=95$ s/kg
$x_2=200$ l/h	$y_2=10,7$ μ m
$x_3=150$ min ⁻¹	$y_3=47$ Wh/kg
$x_4=1000$ min ⁻¹	$y_4=37^\circ$ C
$x_5=70\%$	$y_5=57$ kg/h
	$y_6=0,9$ bar
	$y_7=5,2$ K

The inverse models were developed for linear polynoms and neural networks (Table 4). We found out that the inverse models are not always logical even in the case when they are statistically acceptable.

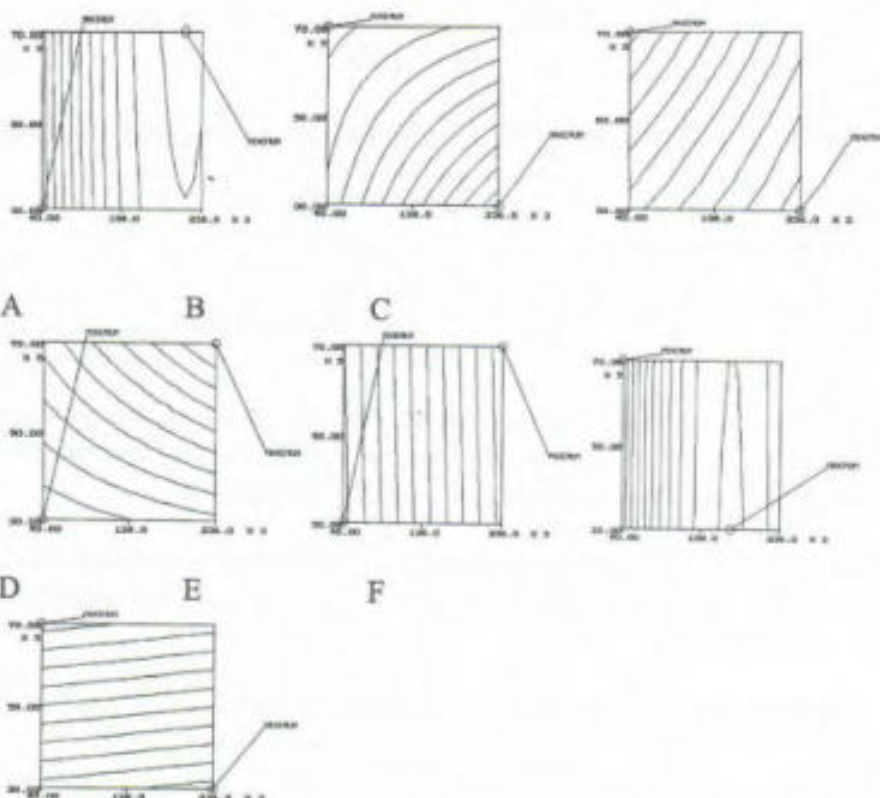
Table 4: Results of statistical analysis of inverse linear polynomial models. DC is determination coefficient and P_{RMS} is calculated by equation /1/.

TABLE 4: STATISTICAL ANALYSIS OF INVERSE LINEAR POLYNOMIAL MODELS

Independent variable	DC	P_{RMS}
The viscosity of the grinding mass [s] (x_1)	0,5842	26,69
The throughput of the cooling water [l/h] (x_2)	0,8142	17,41
The rotation frequency of the pump [min ⁻¹] (x_3)	0,9817	5,71
The rotation frequency of the mill [min ⁻¹] (x_4)	0,4896	28,07
The amount of the pearls in the mill [%] (x_5)	0,8057	19,06

For example, from inverse linear model we could conclude that granulation of pigment particles (y_2) is decreasing with increased rotation frequency of the pump (x_3). By using of models (not inverse models), it can be seen that granulation of pigment particles is in fact increasing with increased rotation frequency of the pump.

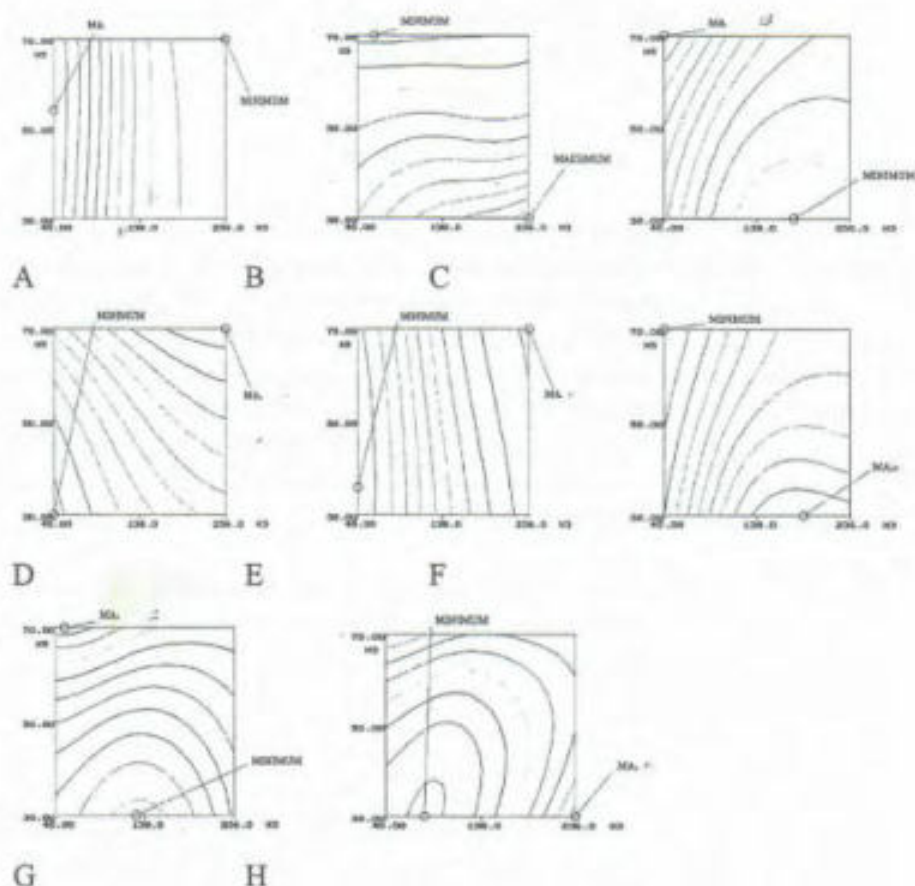
**FIGURE 3: CONTOURS CALCULATED FROM HIGHER ORDE
INCOMPLETE POLYNOMS (Equations 2-8)**



- G
- A: $Y_{\max} = 239.417$ ($x_5=30, x_3=40$), $Y_{\min} = 50.924$ ($x_5=70, x_3=215.368$).
 B: $Y_{\max} = 22.194$ ($x_5=30, x_3=236$), $Y_{\min} = 8.042$ ($x_5=70, x_3=40$).
 C: $Y_{\max} = 111.875$ ($x_5=70, x_3=40$), $Y_{\min} = 10.002$ ($x_5=30, x_3=236$).
 D: $Y_{\max} = 41.980$ ($x_5=70, x_3=236$), $Y_{\min} = 21.183$ ($x_5=30, x_3=40$).
 E: $Y_{\max} = 78.673$ ($x_5=70, x_3=236$), $Y_{\min} = 11.043$ ($x_5=30, x_3=40$).
 F: $Y_{\max} = 1.698$ ($x_5=30, x_3=174.105$), $Y_{\min} = 0.319$ ($x_5=70, x_3=40$).
 G: $Y_{\max} = 6.36$ ($x_5=30, x_3=236$), $Y_{\min} = 3.793$ ($x_5=70, x_3=40$).

Figure 3: Contours calculated from higher order incomplete polynomials /eq. from 2 to 8/ showed the dependence of particular dependent variable: A (y_1), B (y_2), C (y_3), D (y_4), E (y_5), F (y_6) and G (y_7) from x_3 and x_5 . The values for other independent variables were constant: $x_1=20$ s, $x_2=200$ l/h, $x_4=1000$ min⁻¹.

FIGURE 4: CONTOURS CALCULATED FROM NEURAL NETWORK MODELS



A: $Y_{\max}=243.291$ ($x_5=54$, $x_3=40$), $Y_{\min}=55.935$ ($x_5=70$, $x_3=236$).

B: $Y_{\max}=21.827$ ($x_5=30$, $x_3=236$), $Y_{\min}=11.769$ ($x_5=70$, $x_3=59.6$).

C: $Y_{\max}=121.024$ ($x_5=70$, $x_3=40$), $Y_{\min}=-11.574$ ($x_5=30$, $x_3=177.2$).

- D: $Y_{\max}=37.48$ ($x_5=70$, $x_3=236$), $Y_{\min}=22.235$ ($x_5=30$, $x_3=40$).
E: $Y_{\max}=77.207$ ($x_5=70$, $x_3=236$), $Y_{\min}=7.965$ ($x_5=36$, $x_3=40$).
F: $Y_{\max}=1.793$ ($x_5=30$, $x_3=187$), $Y_{\min}=0.003$ ($x_5=70$, $x_3=40$).
G: $Y_{\max}=6.127$ ($x_5=70$, $x_3=49.8$), $Y_{\min}=2.471$ ($x_5=30$, $x_3=128.2$).
H: $Y_{\max}=0.325$ ($x_5=30$, $x_3=236$), $Y_{\min}=0.249$ ($x_5=30$, $x_3=79.2$).

Figure 4: Contours calculated from neural network models showed the dependence of particular dependent variable: A (y_1), B (y_2), C (y_3), D (y_4), E (y_5), F (y_6), G (y_7) in H (y_8) from x_3 and x_5 . The values for other independent variables were constant: $x_1=20$ s, $x_2=200$ l/h, $x_4=1000$ min⁻¹.

4. CONCLUSION

The modelling procedure in general and for optimisation of pigment grinding with pearl mills has been presented. In the case of the optimisation we have developed polynomial and neural network models and their inverse models. While studying the inverse linear models it was found out that the inverse models could give wrong and misleading results. The inverse neural network models would give relatively good results if the values of responses were logically selected. Due to the fact that repetitions of the experiments cannot be determined for the inverse models, the statistical validation of the inverse models was not complete.

The calculated incomplete higher orders polynomial models and neural network models were comparable. Models were afterwards used for optimisation purposes at the daily routine work in pilot laboratory.

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THE IMPORTANCE OF TRANSACTION COSTS IN EQUITY MARKETS: AN OVERVIEW OF THE LITERATURE

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1. INTRODUCTION

Transactions costs have immediate practical value for investors, portfolio managers, exchange officials, and regulators. These groups have considerable interest in the relationship between the structure of security markets and transactions costs.¹ Indeed the growth of alternative trading systems may be linked to efforts by large traders to reduce their transactions costs.

The increased interest in these issues has stimulated rapid growth in the literature on transactions costs, over the past ten years. The problem with transactions costs literature is that the data sets required to analyze many points of interest are difficult to obtain. In particular, publicly available databases do not indicate whether a trade was a buy or sell or whether a trade represented all or part of the desired order quantity. Furthermore, identifying the trades of institutional investors is difficult to impossible with publicly available data.

Recently however, detailed trading data from institutional traders has become available, which greatly expands researchers' understanding of the trading process and costs. The objective of this literature review is to summarize the findings of the recent literature on equity transactions costs.

2. MEASURING TRANSACTION COSTS

Evidence shows that execution costs can be large, often enough to substantially reduce or even eliminate the notional return on an investment strategy.² This means that it is important to measure, analyze and control

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transactions costs. The key is to distinguish between the major components of transactions costs. There are two major components of transactions costs, explicit and implicit transactions costs.

Explicit costs mainly comprise of commissions charged by brokers. However, they do also include fees, stamp duties and so on, for which there is an explicit accounting charge. Commissions vary, averaging 0.2% of trade value overall, and have been declining. They vary by price, market mechanism and broker type. For example, crossing networks (where natural buyers and sellers are matched at predetermined prices without intervention by a market maker) charge as little as 2% per share, whereas commissions on difficult trades executed by specialist brokers may be as high as 10-15% per share.³ Trades are also liable to implicit costs, which are more difficult to measure. They consist of three major components, price impacts, opportunity costs and the bid-ask spread. We will now briefly look at each of them in turn.

2.1. Price Impacts

Institutions make large trades and demand increasing liquidity from markets. As a result, their trades often move prices in the direction of the trade, resulting in "market impact" or "price impact". The price impact of large trades varies with trade size and market capitalisation. Madhavan and Chang (1997) examine US data and find that the market impact of large (block) transactions for illiquid stocks in the smallest 20% of market capitalisation range from 3.04% for the smallest blocks to 6.21% for the largest blocks.

In contrast, Keim and Madhavan (1996) produce a study of block trades in very liquid Dow Jones Industrial stocks and over an average of 30 stocks they find relatively small price impacts, ranging from 0.15% to 0.18%. Finally, costs vary by time of day. Some studies document systematically higher costs at the close, a period when imbalances are often large and dealers are reluctant to carry inventories overnight.

2.2. Opportunity Costs

Opportunity costs are associated with missed trading opportunities. Trades are often motivated by information whose value decays over time.

Opportunity cost is incurred when an order is only partially filled or is not executed at all, as well as when an order is executed with a delay, during which the price moves against the trader.

These costs are difficult to measure and depend on the discretion that a trader has to execute orders. One accepted method computes opportunity cost by measuring the difference in performance between a portfolio based on actual trades and a hypothetical portfolio whose returns are computed with the assumption that transactions were executed at prices observed at the time of the trading decision. The difference is called "performance shortfall".

2.3. Bid-Ask Spreads

One of the most important characteristics that investors look for in an organized financial market is liquidity. Liquidity is the ability to buy or sell significant quantities of a security quickly, anonymously, and with relatively little price impact. To maintain liquidity, many organized exchanges use market makers, which are individuals who stand ready to buy or sell whenever the public wishes to buy or sell. In return for providing liquidity, market makers are granted monopoly rights by the exchange to post different prices for purchases and sales. They buy at the bid price, P_b , and sells at a higher ask price P_a . This ability to buy low and sell high is the market makers' primary source of compensation for providing liquidity. Their compensation is defined as $P_a - P_b$, which is often defined as the bid-ask spread.

The bid-ask spread varies depending on the stocks' liquidity. Quoted spreads vary widely, from less than 0.3% for the most liquid (largest market capitalization) stocks to 4-6% for the least liquid (smallest market capitalization) stocks.⁴

There is however a problem with quoted spreads in that they often overstate true bid-ask spreads because trades are often executed inside the quoted spread, especially for exchange-listed stocks, by traders on the exchange floor. Also, bid and ask prices tend to rise after a buy order (or fall after a sell order). To eliminate the effect of these biases, researchers study actual transaction prices to measure effective bid-ask spreads that

approximate the true spread more closely. Studies such as Lee (1993) confirm that effective spreads are, on average, lower than quoted spreads.

Demsetz (1968) provides the first formal definition of the bid-ask spread. He says that transaction costs may be defined as the cost of exchanging ownership titles. In the specific case of the FTSE, it is the cost of exchanging titles to money and to shares of stock. It is possible to increase or decrease this cost by a more or less inclusive definition of which activities are to be counted as transaction activities. From one viewpoint the cost of producing assets is necessary to the exchange of assets, whereas, from another viewpoint, only titles to assets need be produced for exchange to take place, the production of the assets themselves can be postponed indefinitely. One could also include in transaction cost the cost of being informed about the general nature of the market, the cost of making phone calls to one's broker or of reading the financial pages. Transaction cost is defined narrowly as the cost of using the FTSE to accomplish a quick exchange of stock for money. Broader interpretations lead to extremely difficult empirical and conceptual problems.

Given that titles to assets exist, given that decisions to exchange these titles have been made, and given that brokers or sales representatives have been informed of these decisions, what are the costs to buyers and sellers of using the FTSE to contract with each other. These remaining costs comprise transaction cost as the term that is used in this literature review. On the FTSE, two elements comprise almost all of transaction costs, brokerage fees and bid-ask spreads. Transfer taxes could be included, but it is expedient to concentrate our attention on the two major components.

The inclusion of the bid-ask spread in transaction costs can be understood best by considering the neglected problem of "immediacy" in supply and demand analysis. Predictable immediacy is a rarity in human actions, and to approximate it requires that costs be borne by persons who specialize in standing ready and waiting to trade with the incoming orders of those who demand immediate servicing of their orders.

The bid-ask spread is the markup that is paid for predictable immediacy of exchange in organized markets; in other markets, it is the inventory markup of retailer or wholesaler.

A person who plays an important role in these submarkets in the FTSE is the specialist. The specialist earns his income in two ways: by managing orders and by assuming risk. The former role is to manage orders left with him by traders who desire to move to other positions on the floor of the exchange. In this role, the specialist acts as a broker; he matches buy and sell orders. If he matches an order left to his care with an order that is subsequently presented to him by another floor trader, the specialist shares in the commission charged to the customer by the floor trader. This is the specialist's first source of income and in earning this income he serves as an information repository.

In his second role, the specialist may step in to match the order left with him by trading for his own account. If he does so, he acts as a trader and receives no part of the commission charged to the customer. Thus, if the first trader presents an order to sell (or buy) and the specialist buys (or sells) for his own account to match the trader's order, he does not earn any share of commissions on the exchange. However, such an operation can generate income for the specialist from other sources. He can engage in an opposite trading action at a preferential price differential later. If he buys for his own account, he can hope to resell later at a higher price than he paid; if he sells for his own account, he can expect to repurchase later at a lower price than he paid.

The specialist earns income through buying and selling for his own account by standing ready to step in during periods when bid-ask quotations, submitted by outsiders are too far apart to keep trade active without wide jumps in price. The specialist can increase the rapidity of exchange with narrower price movements during such periods by offering a narrower bid-ask spread than outsiders are currently submitting.

This role of the specialist involves judgment, investment, and risk-taking; it is a role that is difficult to computerize completely, although computer programs conceivably could aid the specialist in playing this role. The investment involved is common to that made by other inventory specialists such as retailers and wholesalers of commodities. It is the willingness to invest in inventory and to stand ready to exchange in order to offer quicker exchange at given cost to ultimate buyers and sellers. What makes the specialist important in this process is that he is obligated to fellow members of the exchange to make a market for the securities in which he

specializes. If there exists no quotation from outsiders that is "reasonably" narrow, he must offer one of his own to facilitate trading. The specialist hopes, of course, to realize a profit on inventory turnover. Specialists in all types of markets perform essentially these same functions. All would like to acquire inventory at low prices and resell at high prices and to do so very rapidly, but competitive forces, to be discussed later, are at work in varying degrees in these markets and the stronger are these forces the closer will these markups be to the cost of waiting and carrying inventory.

It is apparent from the discussion that under competitive conditions the bid-ask spread, or markup will measure the cost of making transactions without delay. A person who has just purchased a security and who desires immediately to resell it will, on the average, be forced to suffer a markdown equal to the spread found in the market place. This markdown (plus brokerage commissions) measures the cost of an immediate round-trip exchange. Under less competitive conditions, this spread may somewhat exaggerate the underlying cost to those who stand ready and waiting of quick round-trip transactions, but, for any given degree of competition (since brokerage commissions do not vary with the time taken to complete a transaction), differences in spread will indicate differences in the cost of quick exchange. The typical spread for one security may be twice the percentage of price that it is for another; this can be taken to indicate that the cost of quick exchange per dollar invested in the first security is greater than it is for the second, and, perhaps, approximately twice as great. The spread, of course, can be thought of as measuring twice the cost of a one-way transaction; the last transaction price may be \$40 and the currently quoted spread may ask \$40.5 and bid \$39.5, so that a market order pays a half point penalty relative to the last transaction price.

If the cost of quick exchange is higher for one asset than it is for another, we may assume that the cost of exchanging with any given time delay will be higher also, although not necessarily proportionately higher. The forces at work in determining the cost of quick exchange, we shall see, are not such that they can be expected to work in opposite directions if we increase the time interval during which an exchange is concluded. Hence, the analysis, which follows can be, expected to determine the identity of variables and to measure the direction of their effect on the cost of making transactions in highly organized markets whatever the time allowed to

conclude an exchange. The magnitude of the effects measured, however, can be associated with quick exchange only.

The bid-ask spread and the commission brokerage are determined by different procedures and institutional arrangements. Generally, commission brokerage depends only on the price of a share and is independent of whether or not the executed order is a market or limit order. The relationship of commissions to prices is established collectively by members of the FTSE. The spread is determined by persons acting individually, by specialists, by floor-traders or by outsiders submitting market or limit orders. The spread component of transaction cost will vary according to several aspects of the market for a security. The structural requirements for competition are more clearly in evidence in determining the spread than they are in determining brokerage commissions.

3. THE IMPORTANCE OF TRANSACTION COSTS IN EQUITY MARKETS

The diminutive size of typical spreads also belies their potential importance in determining the time-series properties of asset returns. For example, Phillips and Smith (1980) show that most of the abnormal returns associated with particular options trading strategies are eliminated when the costs associated with the bid-ask spread are included. Blume and Stambaugh (1983) argue that the bid-ask spread creates a significant upward bias in mean returns calculated with transaction prices. More recently, Keim (1989) shows that a significant portion of the January effect (the fact that smaller capitalisation stocks seem to outperform larger capitalisation stocks over the few days surrounding the turn of the year), may be attributable to closing prices recorded at the bid price at the end of December and closing prices recorded at the ask price at the beginning of January.

Even if the bid-ask spread remains unchanged during this period, the movement from bid to ask is enough to yield large portfolio returns, especially for lower-priced stocks for which the percentage bid-ask spread is larger. Since low-priced stocks also tend to be low-capitalisation stocks, Keim's (1989) results do offer a partial explanation for the January effect. Empirically, Atkins and Dyl (1990) discover that stocks that exhibit a large price decline (losers) subsequently earn significant abnormal returns. They

also find evidence that stocks that exhibit a large price increase (winners) subsequently earn negative abnormal returns. However when they incorporate the bid ask spread in their analysis, they conclude that traders could not profit from the price reversals that they observe. This implies that the Efficient Market Hypothesis remains intact once transactions costs have been accounted for.

Demsetz (1968) presents statistical evidence, which suggests that the bid-ask spread and the price of a security are positively related. This implies that when transaction costs increase the price of a security increases and vice versa. This is logical and intuitive. This gives strong empirical evidence that transactions costs are important with respect to security valuation.

Constantinides (1986) took the Demsetz (1968) analysis a step further by developing a two-asset intertemporal model to assess the importance of transactions costs. Initially in the model there were no transactions costs and the investor resulted in an isoelastic utility of consumption. The implication of this is that the optimal investment policy is the ratio of the two asset values in the portfolio. When the model is modified to introduce proportional transactions costs a simple investment policy is determined by a region of no transactions, which is an interval on the real line: an investor refrains from transacting as long as the ratio of asset values lies in this interval. The region of no transactions is wide, and, therefore, an investor's demand for the assets is sensitive to the current composition of the portfolio.

Constantinides (1986) also discovers that the demand for one of the two assets over time, which is subject to transactions costs, is substantially reduced. This is due to the fact that investors accommodate large transactions costs by drastically reducing the frequency and volume of trade. In addition he finds that transactions costs have only a second-order effect on equilibrium asset returns. This is because investors' expected utility of the future consumption stream is insensitive to deviations of the asset proportions that are optimal in the absence of transactions costs. This suggests that a small liquidity premium is sufficient to compensate an investor for deviating significantly from the target portfolio proportions.

Two very important conclusions arise from the Constantinides (1986) study. First, transactions costs have only a second-order effect on equilibrium asset returns. This means that they can be ignored in the real

asset pricing theory since they have only second-order effects on the theory's empirically testable implications.

Second, transactions costs have a first-order effect on the assets' demand, which implies that they affect the trading strategy of an investor.⁵ This is because if they affect assets' demand then they directly effect the holding period of the asset. Therefore, from this analysis we can conclude that transactions costs are a relevant factor in explaining the holding period of a common stock, but are irrelevant in asset pricing.

The presence of the bid-ask spread complicates matters in several ways. Instead of one price for each security, there are now three: the bid price, the ask price and the transaction price which need not be either the bid or the asked (although in some cases it is), nor need it lie in between the two (although in most cases it does). How should returns be calculated, from bid-to-bid, ask-to-bid, etc.? Moreover, as random buys and sells arrive at the market, prices can bounce back and forth between the asked and the bid prices, creating spurious volatility and serial correlation in returns, even if the economic value of the security is unchanged.

3.1. The Bid-Ask Bounce

To account for the impact of the bid-ask spread on the time-series properties of asset returns, Roll (1984) proposes the following simple model. Denote by P_t^* the fundamental value of a security in a frictionless economy at time t , and denote by S the bid-ask spread (see Glosten and Milgrom [1985], for example). Then the observed market price P_t can be written as:

$$P_t = P_t^* + I_t \frac{S}{2} \quad (1.1)$$

$$I_t \text{ IID} \quad \begin{cases} = +1 \text{ with probability } \frac{1}{2} \text{ (buyer-initiated)} \\ = -1 \text{ with probability } \frac{1}{2} \text{ (seller-initiated)} \end{cases} \quad (1.2)$$

Where I_t is an order-type indicator variable, indicating whether the transaction at time t is at the asked (buyer-initiated) or at the bid (seller-initiated) price. The assumption that P_t^* is the fundamental value of the security implies that $E[I_t] = 0$, hence $\Pr(I_t = 1) = \Pr(I_t = -1) = \frac{1}{2}$. Assume for the moment that there are no changes in the fundamentals of the security; hence $P_t^* = P^*$ is fixed through time. Then the process for price changes ΔP_t is given by

$$\Delta P_t = \Delta P_t^* + (I_t - I_{t-1}) \frac{S}{2} = (I_t - I_{t-1}) \frac{S}{2}, \quad (1.3)$$

Given that I_t is assumed to be *IID* the variance, covariance, and autocorrelation of ΔP_t can be easily computed as follows:

$$\text{Var}[\Delta P_t] = \frac{S^2}{2} \quad (1.4)$$

$$\text{Cov}[\Delta P_{t-1}, \Delta P_t] = -\frac{S^2}{4} \quad (1.5)$$

$$\text{Cov}[\Delta P_{t-k}, \Delta P_t] = 0 \quad k > 1 \quad (1.6)$$

$$\text{Corr}[\Delta P_{t-1}, \Delta P_t] = -\frac{1}{2}. \quad (1.7)$$

Despite the fact that fundamental value P_t^* is fixed, ΔP_t exhibits volatility and negative serial correlation as the result of bid-ask bounce. The intuition behind this is the following: If P^* is fixed so that prices take on only two values, the bid and the ask, and if the current price is the ask, then the price change between the current price and the previous price must be either 0 or S and the price change between the next price and the current price must be either 0 or $-S$. The same argument applies if the current price is the bid; hence the serial correlation between adjacent price changes is non-positive. From the above equations we can see that the larger the spread S , the higher the volatility and the first-order autocovariance, both increasing proportionally so that the first-order autocorrelation remains

constant at -2. We can see from (1.6) that the bid-ask spread does not induce any higher-order serial correlation.

Now let the fundamental value P_t^* change through time, but suppose that its increments are serially uncorrelated and independent of I_t .⁶ Then (1.5) still applies, but the first-order autocorrelation (1.7) is no longer $-\frac{1}{2}$ because of the additional variance of ΔP_t^* , in the denominator. Specifically if $\sigma^2(\Delta P^*)$ is the variance of ΔP_t^* , then

$$\text{Corr}[\Delta P_{t-1}, \Delta P_t] = \frac{S^2/4}{(S^2/2) + \sigma^2(\Delta P^*)} \leq 0. \quad (1.8)$$

Although (1.5) shows that a given spread S implies a first-order autocovariance of $-S^2/4$, the logic may be reversed so that a given autocovariance coefficient and value of p imply a particular value for S . Solving for S in (1.5) gives the following solution

$$S = 2\sqrt{-\text{Cov}[\Delta P_{t-1}, \Delta P_t]}, \quad (1.9)$$

Hence S may be easily estimated from the sample autocovariances of price changes.

Estimating the bid-ask spread may seem meaningless given the fact that bid-ask quotes are observable. However, Roll (1984) argues that the quoted spread may often differ from the effective spread, i.e., the spread between the actual market prices of a sell order and a buy order. In many instances, transactions occur at prices within the bid-ask spread, perhaps because market makers do not always update their quotes in a timely fashion, or because they wish to rebalance their own inventory and are willing to "better" their quotes momentarily to achieve this goal, or because they are willing to provide discounts to customers that are trading for reasons other than private information.⁷ Roll's (1984) model is one measure of this effective spread, and is also a means for accounting the effects of the bid-ask spread on the time-series properties of asset returns.

4. COMPONENTS OF THE BID-ASK SPREAD

Although Roll's (1984) model of the bid-ask spread captures one important aspect of its effect on transaction prices, it is by no means a complete theory of the economic determinants and the dynamics of the bid-ask spread. In particular, Roll (1984) takes S as given, but in practice the size of the spread is the single most important quantity that market makers control in their strategic interactions with other market participants. In fact, Glosten and Milgrom (1985) argue convincingly that S is determined endogenously and is unlikely to be independent of P^* as we have assumed so far in our literature review.

Other theories of the market making process have decomposed the spread into more fundamental components, and these components often behave in different ways through time and across securities. Estimating the separate components of the bid-ask spread is critical for properly implementing these theories with transactions data. In this section of the literature review we shall turn to some of the econometric issues surrounding this task.

There are three primary economic sources for the bid-ask spread: order processing costs, inventory costs, and adverse-selection costs. The first two consist of the basic setup and operating costs of trading and recordkeeping, and the carrying of undesired inventory subject to risk.

4.1. Inventory and Order Processing Cost Component of the Bid-Ask Spread

Garman (1976) was the first study to review Inventory and Order Processing costs of the bid-ask spread. In Garman's (1976) model there is a single, monopolistic market maker that sets prices, receives all orders, and clears trades. The dealer's objective is to maximise expected profit per unit of time, subject to the avoidance of bankruptcy or failure. Failure arises in this model whenever the dealer runs out of inventory or cash. The market maker's only decision is to set the ask price, P_a , at which he will fill orders wishing to buy the stock, and a bid price, P_b , at which he will fill the orders wishing to sell the stock.

The dealer has an infinite horizon, but only selects the bid and ask prices once, at the beginning of time. The uncertainty in this model arises from the arrival of the buy and sell orders. These orders are represented as independent stochastic processes, where the arrivals of buy and sell orders are assumed to be Poisson distributed, with stationarity arrival rate functions $\lambda_a(p)$ and $\lambda_b(p)$. Buy (or sell) orders follow a Poisson process if the waiting time between arrivals of buy (sell) orders is exponentially distributed. More formally, letting t be the time of the last buy order, the probability of a buy order arriving in the interval $[t, t + \Delta t]$ is approximately $\lambda_a \Delta t$ for small Δt . Representing orders as Poisson processes allows the model to capture the randomness of the order arrival over time in a tractable manner.

At time period 0, the market maker is assumed to hold $I_c(0)$ units of cash and $I_s(0)$ units of stock. Let $I_c(t)$ and $I_s(t)$ be the units of cash and the stock at time period t . Let $N_a(t)$ be the cumulative number of shares that have been sold to traders up to time period t (these are the executed buy orders), and let $N_b(t)$ be the cumulative number of shares that have been bought from traders at time period t (these are executed sell orders). Then inventories are governed by,

$$I_c(t) = I_c(0) + P_a N_a(t) - P_b N_b(t) \quad (1.10)$$

and

$$I_s(t) = I_s(0) + N_b(t) - N_a(t). \quad (1.11)$$

The model states that no matter what price the dealer sets, there is no guarantee that he will not fail. Of perhaps more interest is that under certain conditions the dealer fails with probability one. In order for the market maker to avoid certain failure, he must set P_a and P_b so that they simultaneously satisfy,

$$P_a \lambda_a(P_a) > P_b \lambda_b(P_b) \quad (1.12)$$

and

$$\lambda_b(P_b) > \lambda_a(P_a), \quad (1.13)$$

provided that this is possible.

These conditions dictate that a single market maker sets a lower price when he buys stock and a higher price when he sells. This results in a spread developing, and it implies the spread has an inherent property of this exchange market structure. This spread protects the market maker from certain failure. What determines the size and placement of this spread is not obvious. Since both the market maker's inventory and cash positions have positive drift, characterizing price behaviour or the market maker's inventory position is complex. To investigate the problem further requires limiting the scope of uncertainty. Garman (1976) first simplifies the problem by assuming that the dealer pursues a zero-drift inventory policy.

Given this assumption, the dealer's pricing strategy has some interesting properties. First, by assumption, the dealer sets prices to equate the order arrival rates. There are multiple pricing strategies that satisfy this condition, however where the dealer sets his prices depends on factors other than inventory. Given the dealer's objective, the exact prices he sets are those which maximize the dealer's expected profit. An important property of these prices is that the dealer does not set a single market clearing price p^* but rather sets different buying and selling prices, P_a and P_b , respectively. This allows the dealer to extract large rents while still maintaining the zero-drift inventory requirement. As is typically optimal for a monopolist, this pricing strategy results in volume at the optimal prices being less than would occur in competitive prices.

This pricing strategy is reminiscent of that suggested by Demsetz (1968). Where the analyses differ is that the Demsetz (1968) model did not incorporate the intertemporal nature of the dealer's problem; nor, for that matter, did it include a dealer. To address the dealer's intertemporal inventory problem, Garman (1976) considers a second simplification in which the profit maximization assumption is relaxed. Here, the dealer is assumed to set a single market-clearing price p^* . With the dealer's pricing strategy specified, the effect of inventory on the dealer can be isolated. The problem is that if we pursue this simple pricing strategy, there will come a

point when the dealer will fail with certainty. The reason for this is that the market maker fails if he runs out of inventory or cash. Since inventories follow a random walk, sooner or latter a sequence of trades will force either his stock position or his cash position to their boundary. When this happens, the process meets an "absorbing barrier" and failure occurs.

Garman's (1976) model of the market-making process is simplistic but provocative. While the behaviour of prices and inventories in this model is too mechanistic to be realistic, the demonstration of the dual complexity the dealer faces and its implications for market viability is insightful. As his analysis demonstrates, inventory determines the dealer's viability. Yet in his model, inventory plays no role in the dealer's decision problem since by assumption the dealer is allowed to set prices only at the beginning of trading. This restriction severely limits the applicability of this model to actual market settings in which prices continually evolve, and so the model's influence lies largely in its initial contribution.

A more realistic approach to the underlying problem is to consider how the dealer's price changes as his inventory position varies over time. This is the approach taken by Amihud and Mendelson (1980), who reformulate Garman's (1976) analysis to explicitly incorporate inventory into the dealer's pricing problem. Amihud and Mendelson (1980) show that the dealer's position can be viewed as a Semi-Markov process in which the inventory is the state variable. The dealer's decision variables, again his bid and ask prices, depend on the level of the state variable and thus change over time depending on the level of the dealer's inventory position. The Amihud and Mendelson (1980) model yields three main results.

First, the optimal bid and ask prices are monotone decreasing functions of the dealer's inventory position. As the dealer's inventory position increases, he lowers both bid and ask prices, and conversely he raises both prices as inventory falls. Second, the model implies that the dealer has a preferred inventory position. As the dealer finds his inventory departing from his preferred position, he moves his prices to bring his position back. Third, as was also the case in Garman (1976), the optimal bid and ask prices exhibit a positive spread.

Results two and three raise interesting questions about the behaviour of security prices and, by, extension, about the appropriateness of the model.

Whereas in Garman (1976) the spread arose partially because of the need to reduce failure probabilities, the spread here reflects the dealer's efforts to maximize profit. Since the dealer is assumed to be risk neutral and a monopolist, the spread reflects the dealer's market power. In this model, however, if the dealer faces competition, then the spread falls to zero. Consequently, the spread plays no role in the viability of the market but acts essentially as a transaction cost.

Similarly, the dealer's preferred inventory position arises because of the nature of the order arrival processes. The underlying asset value is irrelevant. Hence, regardless of what is expected to happen to the value of the stock, the dealer holds the same preferred position. This may be an accurate depiction of the dealer's problem, but it seems likely that the preferred inventory position depends on factors other than the order arrival rates.

Analysing the dealer's decision problem requires specifying the dealer's objectives and constraints in more detail. Of paramount importance is the need to delineate the risks the dealer faces and how these risks affects his decision making. One way to characterize this approach is to recognize that the dealer must be rewarded for providing specialist's services, in the same way that any intermediary must be compensated. By focusing on the supply of intermediary services, the dealer's decision problem reduces to determining the appropriate compensation to offset the costs the dealer faces in providing such services. This is the notion of the dealer as a supplier of immediacy. Stoll (1978) first undertook a formal analysis of this dimension of the dealer's problem. Stoll (1978) considers a two-date model in which the dealer maximizes the expected utility of terminal wealth, where this wealth is a function of the dealer's initial wealth and his subsequent market-making positions.

The dealer's problem is to set prices for one transaction in which he will buy or sell the asset at time 1, with liquidation of the asset occurring at time 2. The dealer finances his inventory by borrowing at the risk free rate, R_f , and conversely can lend excess funds at R_f . As the time period considered is short and his borrowing ability is unlimited, the market maker's risk of bankruptcy is zero. Stoll (1978) then goes on to derive the optimal bid price

P_b , and the optimal ask price P_a that maximise his wealth. There are several interesting features of these prices to consider. The model documents a linear positive relationship between the spread and trade size. Also the spread does not change in response to the dealer's trades. Where the dealer's inventory matters is in affecting the placement of the bid and ask prices. A large (positive) inventory causes the dealer to face a higher cost for absorbing more inventory, and this increased cost lowers both bid and ask prices by the same amount. A negative inventory moves prices in the opposite direction.

While this analysis characterizes the effects of the dealer's portfolio exposure on trading prices, there can be other costs affecting prices as well. Stoll (1978) extends the analysis to include order-processing costs, which are assumed to be a fixed fee per transaction. Such a fee structure results in a decreasing cost function with respect to order size. With portfolio costs increasing in trade size while processing costs decrease in trade size, the total dealer cost function becomes U shaped. This has the implication that there is an optimal cost minimizing scale, or preferred trade size, for the dealer. In this model, inventory matters largely because of the dealer's inability to hedge his inventory exposure. This risk aversion based spread contrasts with the market power role of the spread developed by Amihud and Mendelson (1980) or the defence against bankruptcy role described by Garman (1976). The simplicity of the Stoll (1978) model however raises concerns about its generality. The fundamental difficulty is that the model minimizes the intertemporal dimension of the dealer's problem by assuming that the stock is liquidated at time 2. In this sense, it is a one trade one period model because the dealer faces no uncertainty over how long he must hold his inventory position. If the order flow is random however, this length of exposure may be an important dimension to the problem. The other problem with the model is the assumed exogeneity of variables such as the stock's true price and the portfolio's return which further restricts the risk the dealer faces, because his ultimate return is not a random variable. Therefore, the generality of the results of the Stoll (1978) model are not apparent.

Ho and Stoll (1981) extend the Stoll (1978) model to a multiperiod framework in which both order flow and portfolio returns are stochastic. As in Garman (1976), buy and sell orders are represented by stochastic

processes, whose order arrival rates depend on the dealer's pricing strategy. In this model, however, a monopolistic dealer is assumed to maximize the expected utility of terminal wealth, and consequently the dealer's attitude towards risk will affect the solution. This establishes a significant difference from the risk neutral intertemporal models of Garman (1976) and Amihud and Mendelson (1980). The model employs a finite horizon (T period) dynamic programming approach to characterize the dealer's optimal pricing policy. The dealer's optimal pricing strategy is actually a function that specifies bid and ask prices, P_b and P_a , given the level of those variables which affect the dealer's future utility. In this model, these state variables are the dealer's cash, inventory, and base wealth positions. Since this is a finite horizon model, the time period itself also affects the dealer's choice.

The Ho and Stoll (1981) model demonstrates three important properties of the dealer's optimal pricing behaviour. First, the spread depends on the time horizon of the dealer. As the dealer nears the end of trading, the risks in acting as a dealer decrease since there is less time in which the dealer must bear any inventory or portfolio risk. For the limiting case where the time remaining is essentially zero, the dealer sets the risk neutral monopolistic spread. This spread depends on the elasticities of the supply and demand curves, with greater elasticity reducing the dealer's spread. As the time horizon lengthens, the spread increases to compensate the risk averse dealer for bearing inventory and portfolio risks. This demonstration that the spread can be decomposed into a risk neutral spread plus an adjustment for uncertainty. This is an important feature of this analysis.

This risk adjustment depends on the dealer's coefficient of relative risk aversion, the size of the transaction, and the risk of the stock as measured by its instantaneous variance. These factors are the same as those determined by Stoll (1978) in the one period model. One interesting finding in this model is that transactions uncertainty does not effect the spread. Although such uncertainty enters indirectly into the time horizon effects noted above, one might have expected a direct risk adjustment based on the variability of the order arrival processes.

Ho and Stoll (1981) argue that this does not occur because transactions variability has no direct effect on the dealer but rather works indirectly through its effect on the dealer's overall portfolio position. Such a direct effect would arise for example, if the dealer faced operating cost, so that

having fewer transactions would pose cash flow problems for the dealer. As there is no such assumed cost, transaction uncertainty does not enter the spread.

The third property of this optimal pricing policy is that the spread is independent of the inventory level. This property, which was also a feature of Stoll's (1978) one period model, means that the spread is not affected by the dealer's inventory position or even his expected change in inventory (since transaction uncertainty also does not matter). Although individual prices depend on inventory, the dealer affects the order arrival processes by moving the placement of the spread relative to the true price rather than increasing or decreasing the spread itself. Thus if the true price is \$40, the dealer may set first period prices of \$38 and \$42. If the next order is at the bid, then the dealer increases his inventory, and he shifts both prices down say to \$37 and \$41. How much the dealer shifts the prices is a function of his relative risk aversion, the risk of the stock, and his wealth.

4.2. Adverse Selection Component of the Bid-Ask Spread

Adverse selection costs arise because some investors are better informed about a security's value than the market maker, and trading with such investors will, on average, be a losing proposition for the market maker. Since market makers have no way to distinguish the informed from the uninformed, they are forced to engage in these losing trades and must be rewarded accordingly. Therefore, a portion of the market maker's bid-ask spread may be viewed as compensation for taking the other side of potential information-based trades. Because this information component can have very different statistical properties from the order-processing and inventory components, it is critical to distinguish between them in empirical applications. To do so, Glosten (1987) provides a simple asymmetric-information model that captures the salient features of adverse selection for the components of the bid-ask spread, and we shall present an abbreviated version of his elegant analysis here.⁸

4.2.1. Glosten's Decomposition

Denote by P_b and P_a the bid and ask prices, respectively, and let P be the "true" or common-information market price, the price that all investors

without private information (uninformed investors) agree upon. Under risk-neutrality the common-information price is given by $P = E[P^*/\Omega]$ where Ω represents the common or public information set and P^* represents the price that would result if everyone had access to all information. The bid and ask prices may then be expressed as the following sums:

$$P_b = P - A_b - C_b \quad (1.14)$$

$$P_a = P + A_a + C_a \quad (1.15)$$

$$S = P_a - P_b = (A_a - A_b) + (C_a + C_b), \quad (1.16)$$

Where $A_a + A_b$ is the adverse-selection component of the spread, to be determined below, and $C_a + C_b$ includes the order-processing and inventory components which Glosten (1987) calls the gross profit component and takes as exogenous. If uninformed investors observe a purchase at the ask, then they will revise their valuation of the asset from P to $P + A_a$ to account for the possibility that the trade was information-motivated, and similarly, if a sale at the bid is observed, then P will be revised to $P - A_b$. But how are A_a and A_b determined?

Glosten (1987) assumes that all potential market makers have access to common information only, and he defines their updating rule in response to transactions at various possible bid and ask prices as

$$a(x) = E[P^*/\Omega \cup \{\text{investor buys at } x\}] \quad (1.17)$$

$$b(y) = E[P^*/\Omega \cup \{\text{investor sells at } y\}]. \quad (1.18)$$

A_a and A_b are then given by the following relations:

$$A_a = a(P_a) - P, \quad A_b = P - b(P_b). \quad (1.19)$$

Under suitable restrictions for $a(\cdot)$ and $b(\cdot)$, an equilibrium among competing market makers will determine bid and ask prices so that the expected profits from market making activities will cover all costs, including $C_a + C_b$ and $A_a + A_b$; hence

$$P_a = a(P_a) + C_a = P + (a(P_a) - P) + C_a = P + A_a + C_a \quad (1.20)$$

$$P_b = b(P_b) - C_b = P - (P - b(P_b)) - C_b = P - A_b - C_b. \quad (1.21)$$

An immediate implication of (1.20) and (1.21) is that only a portion of the total spread, $C_a + C_b$, covers the basic costs of market making, so that the quoted spread $A_a + A_b + C_a + C_b$ can be larger than Stoll's (1989) "effective" spread (the spread between purchase and sale prices that occur strictly within the quoted bid-ask spread) the difference being the adverse-selection component $A_a + A_b$. This links in well with the common practice of market makers giving certain customers a better price than the quoted bid or ask on certain occasions, presumably because these customers are perceived to be trading for reasons other than private information, e.g., liquidity needs, index-portfolio rebalancing, etc.

4.2.2. Implications for Transaction Prices

To derive the impact of these two components on transaction prices, denote by \hat{P}_n the price at which the n th transaction is consummated, and let

$$\hat{P}_n = P_a I_a + P_b I_b, \quad (1.22)$$

where $I_a(I_b)$ is an indicator function that takes on the value one if the transaction occurs at the ask (bid) and zero otherwise. Substituting (1.20) and (1.21) into (1.22) then yields the following

$$\hat{P}_n = E[P^*/\Omega \cup A] I_a + E[P^*/\Omega \cup B] I_b + C_a I_a + C_b I_b \quad (1.23)$$

$$= P_n + C_n Q_n \quad (1.24)$$

$$P_n = E[P^*/\Omega \cup A]I_a + E[P^*/\Omega \cup B]I_b \quad (1.25)$$

$$C_n = \begin{cases} C_a & \text{if buyer-initiated trade} \\ C_b & \text{if seller-initiated trade} \end{cases} \quad (1.26)$$

$$Q_n = \begin{cases} +1 & \text{if buyer-initiated trade} \\ -1 & \text{if seller-initiated trade} \end{cases} \quad (1.27)$$

Where A is the event in which the transaction occurs at the ask and B is the event in which the transaction occurs at the bid. P_n is the common information price after the n th transaction.

Although (1.24) is a decomposition that is frequently used in this literature, Glosten's (1987) model adds an important new feature: correlation between P_n and Q_n . If P is the common information price before the n th transaction and P_n is the common information price afterwards, Glosten (1987) shows that

$$\text{Cov}[p_n, Q_n / P] = E[A / P] \quad \text{where} \quad A = \begin{cases} A_a & \text{if } Q_n = +1 \\ A_b & \text{if } Q_n = -1. \end{cases} \quad (1.28)$$

P_n and Q_n must be correlated due to the existence of adverse selection. If $Q_n = +1$, the possibility that the buyer-initiated trade is information-based will cause an upward revision in P , and for the same reason, $Q_n = -1$ will cause a downward revision in P . There is only one case in which P_n and Q_n are uncorrelated: when the adverse-selection component of the spread is zero.

To derive implications for the dynamics of transaction prices, denote by ε_n the revisions in P_{n-1} due to the arrival of new public information between trades $n-1$ and n . If this is the case the n th transaction may be written as

$$P_n = P_{n-1} + \varepsilon_n + A_n Q_n \quad (1.29)$$

Taking the first differences of (1.24) then gives us the following solution

$$\hat{P}_n - \hat{P}_{n-1} = (P_n - P_{n-1}) + (C_n Q_n - C_{n-1} Q_{n-1}) \quad (1.30)$$

$$= A_n Q_n + \varepsilon_n + (C_n Q_n - C_{n-1} Q_{n-1}), \quad (1.31)$$

Which shows that the transaction price changes are comprised of a gross-profit component which, exhibits reversals,⁹ and an adverse-selection component that tends to be permanent. This leads us to conclude that Glosten's (1987) attribution of the effective spread to the gross-profits component is not coincidental, but well-motivated by the fact that it is this component that induces negative serial correlation in returns, not the adverse-selection component.

Glosten (1987) provides alternative relations between spreads and return covariances, which incorporate this distinction between the adverse-selection and gross-profits components. In particular, under certain simplifying assumptions Glosten (1987) shows that¹⁰

$$E[\bar{R}_k] = R(1 + \gamma\beta), \quad \text{Cov}[\hat{r}_{k-1}, r_k] = -\frac{\gamma S_p^2}{4}, \quad (1.32)$$

Where,

$$S_p = \frac{P_a - P_b}{(P_a + P_b)/2}, \quad \gamma = \frac{C}{C + A}, \quad \beta = \frac{S_p^2/4}{1 - (S_p^2/4)}, \quad (1.33)$$

And where \bar{R}_k , R , are the per-period market and true returns, respectively, and \hat{r}_k is the continuously compounded per-period market return. These relations show that the presence of adverse-selection ($\gamma < 1$) has an additional impact on means and covariances of returns that is not captured by other models of the bid-ask spread. Therefore, the Glosten (1987) model shows that adverse selection can have very different implications for those statistical properties of transactions data than other components of the bid-ask spread.

In spite of this theoretical and analytical literature, a number of empirical studies tend to estimate only two components of the spread. Glosten and Harris (1988), Hasbrouck (1988), George et al (1991) and Kim and Ogden (1996) use models which decompose spreads into a combined

inventory and order processing cost component – transitory costs, and an asymmetric information cost component. George et al (1991) and Kim and Ogden (1996), additionally argue that their estimate of the transitory cost should be interpreted as an estimate of order processing costs thus excluding inventory related costs.¹¹

The only UK study to attempt a decomposition of realised spreads into asymmetric information and inventory costs components by Neuberger (1992) was unsuccessful, because his estimates were based on the Glosten and Harris (1988) model which implicitly assumes a zero inventory cost. Stoll (1989) on the other hand, decomposes the quoted spread into its three components.

This is accomplished by using a covariance model to estimate the realised spread attributable to order processing and inventory holding cost from transaction and quote data. He then develops an analytical and empirical model for separating the order processing and inventory cost components. The asymmetric cost component is then calculated as one minus the realised spread. This approach is consistent with the theoretical model of Garman (1976) which demonstrates that spreads should be inventory-dependant if the market maker is to avoid failure.

George et al (1991) criticised the Stoll (1989) estimator on the grounds that time variation in expected returns induces positive autocorrelation that leads to a downward bias in the estimation of the realised spread. They correct for this bias by using in their analysis, the difference between transaction returns and returns based on the bid-to-bid quotes which are unaffected by positive covariance generated by time varying expected returns. Kim and Ogden (1996), however, show that the George et al (1991) estimators are also biased because they assume that the spread is constant over time. They propose estimators that allow individual security spreads to vary over time. These modifications, therefore, relax the restrictive assumptions made in Stoll (1989). However, their estimates of the magnitude of asymmetric information costs are more in line with Stoll (1989) than the estimates of George et al (1991). This suggests that Stoll's (1989) assumptions only have a marginal impact on his empirical estimates and is consistent with the finding of Affleck-Graves et al (1994), that the magnitude of bias (about 4%) is small. Additionally, Brooks and Mason (1996) through simulations also conclude that the bias is only present in

short time series and small sample cross-section estimates; it is immaterial in large cross-section and unbiased in a long time series.

Taking into account the above literature the cost components of the quoted spread should be estimated using the model proposed by Stoll (1989). Stoll's (1989) model which is based on the serial covariance of quoted prices (bid or ask) and transaction prices identifies all the three cost components in three steps. Firstly, the constants (α_0 and β_0) and the slope coefficients (α_1 and β_1) are estimated from equations (1.34) and (1.35):

$$\text{cov}_T = \alpha_0 + \alpha_1 S^2 + \mu, \quad (1.34)$$

and

$$\text{cov}_Q = \beta_0 + \beta_1 S^2 + \nu, \quad (1.35)$$

where S is the quoted proportional spread, cov_T is the covariance of transaction price changes, cov_Q is the serial covariance changes in ask (or bid) quotes, μ and ν are random error terms.

Under the assumption of an efficient market, one expects $\alpha_0 = \beta_0 = 0$. Stoll (1989) then goes on to estimate π , the probability of reversal in transaction (for instance, an ask transaction followed by a bid transaction), and δ , the size of the continuation in price as a fraction of the spread.¹² These parameters are calculated from equations (1.36) and (1.37) with the use of α_1 and β_1 estimated from equations (1.34) and (1.35):

$$\alpha_1 = \delta^2 (1 - 2\pi) - \pi^2 (1 - 2\delta) \quad (1.36)$$

and

$$\beta_1 = \delta^2 (1 - 2\pi). \quad (1.37)$$

Under this model the realised spread is given by $2(\pi - \delta)S$, which is the expected profit per trade (as a percentage of stock price) and covers only the order processing and inventory holding cost components. Finally, the cost components of the quoted spread could be estimated as:

- Order processing costs: $(1 - 2\delta)$.
- Inventory holding costs: $2(\pi - 0.5)$.
- Asymmetric information costs: $(1 - 2(\pi - \delta))$.

In order to provide robustness of estimates with respect to model selection, we should re-estimate the components using the model proposed by George et al (1991) and improved by Kim and Ogden (1996). Their procedure for estimating the covariance overcomes the assumption of price independence implicit in Stoll's (1989) method. George et al's (1991) procedure estimates the realised spread as in equation (1.38)

$$S_{it} = 2\sqrt{-\text{cov}(RD_{i,t}, RD_{i,t-1})}, \quad (1.38)$$

Where $RD_{i,t}$ is the difference between transaction returns $R_{T,i,t}$ and returns based on unobservable true prices $R_{M,i,t}$ for security i at time t . The bid price subsequent to a transaction was used in the empirical estimates of the unobservable true price ($R_{M,i,t}$). The spread components are then estimated as:

$$S_{it} = \beta_0 + \beta_1 S_{Qit} + \varepsilon_i, \quad (1.39)$$

Where β_1 is the cross-sectional estimate of order processing cost and $1 - \beta_1$ is the unbiased estimator of the asymmetric information cost component.

However, Kim and Ogden (1996) have pointed out that if the bid-ask spread changes over time, the bid returns would include a variable element which could affect the estimate of the unobservable component of the spread due to order processing. They address the problem by using the average of bid and offer quotes as a proxy for the unobservable true price in equation (1.38) to measure S_{it} . The spread components (order processing and the asymmetric information) are then estimated in equation (1.40):

$$S_{it} = \beta_0 + \beta_1 S_{Qit} + \varepsilon_i. \quad (1.40)$$

Since the George et al (1991) and the Kim and Ogden (1996) estimators address some of the restrictive assumptions of Stoll (1989) in the calculation of realised spread, they should be applied to assess whether there are any qualitative changes to the components when alternative estimators are used. Although these methods do not split the spread into three components and assume that the inventory component is zero, they provide an opportunity to compare the estimates of asymmetric information costs with those obtained from the Stoll (1989) model.

5. INFORMATION ASYMMETRY AND TRADING VOLUME

In general, empirical research has identified a strong link between volume and the absolute value of price changes.¹³ Empirical researchers have also established some asymmetric patterns to volume and the direction of price changes.¹⁴ While the empirical link between price movements and volume appears strong, it is not obvious why this should be so. In the accounting literature, numerous researchers (for example Verrecchia (1981) and Kim and Verrecchia (1991) have modelled the link between public information announcements and volume. The concern here is to explain why volume appears to increase around the announcement of public information. In the Kim and Verrecchia (1991) analysis, this change in volume is proportional to the precision of the public information signal and is decreasing in the amount of preannouncement public and private information.

In the microstructure literature in which private information is the concern, the price-volume link is less clear. In the Kyle (1985) model, for example, trading volume is not a factor in the price adjustment process. The reason is that the informed trader always adjusts his order amount to keep his relative fraction of trades the same. Consequently, the price path is independent of the scale of trading volume, and the empirical link between price movements and volume is not present. One reason as to why it is difficult to evaluate the link of price and volume is that it is not obvious what information volume, in itself, provides to the market. Just as traders can learn by watching prices, it seems likely they could learn by watching volume. In the extreme case, it is possible that volume alone could reveal underlying information, with prices playing a redundant information role. A

more likely scenario is that the combination of price and volume could provide information to the market.

Wang (1994) examines how factors such as dividend information and private investment opportunities affect the price-volume relation. In his model, some traders are better informed of a risky asset's dividend process and the returns on private investment opportunities. These latter opportunities allow trading for liquidity-based reasons, while the former capture the familiar information based motive. There are also the uninformed traders who receive a noisy signal of the dividend process and who are not allowed access to private investment opportunities. This latter restriction means that only the informed traders face hedging needs, and it is these hedging-related trades that allow uninformed investors to trade without a certain loss.

In this model, volume is decreasing in the amount of the informational asymmetry. If the risk of information-based trading is too high, then uninformed traders opt not to trade given that there is little chance of not losing to the informed traders. This risk of information-based trading also dictates that volume and the absolute value of excess returns are positively correlated, reflecting the price movement necessary to induce uninformed traders to take the other side of the trade. An interesting feature of this model is that volume is also positively correlated with the arrival of public information.

Thus, as in Kim and Verrecchia (1991), public information stimulates trading. In the Wang (1994) model, this occurs because public information affects different investors in different ways. The greater the asymmetry between traders' information, the greater the trading volume. This provides one explanation for the puzzling increase in volume around predictable events such as earnings announcements.

6. ESTIMATES OF THE EFFECTIVE BID-ASK SPREAD IN EQUITY MARKETS

Roll (1984) estimates the effective spreads of NYSE and AMEX stocks year by year using daily returns data from 1963 to 1982, and finds the overall effective spread to be 0.298% for NYSE stocks and 1.74% for

AMEX stocks.¹⁵ However, these figures should be interpreted with caution since 24,358 of the 47,414 estimated effective spreads were negative, suggesting that there are substantial specification errors. Additional evidence of these specification errors comes from the fact that estimates of the effective spread based on weekly data differ significantly from those based on a daily data. Nevertheless, the magnitudes of these effects are clearly important for empirical applications of research into transactions costs.

Glosten and Harris (1988) refine and estimate Glosten's (1987) decomposition of the bid-ask spread using transactions data for 250 NYSE stocks and conclude that the permanent adverse-selection component is present in the data. Stoll (1989) develops a similar decomposition of the spread, and using transactions data for National Market System securities on the NASDAQ from October to December of 1984, he concludes that 43% of the quoted spread is due to adverse selection, 10% is due to inventory-holding costs, and the remaining 47% is due to order-processing costs. Menjah and Paudyal (2000) replicate the Stoll (1989) model for the UK stock market. They look at transaction data on the London Stock Exchange between the time period of January 1995 to December 1995. They conclude that 47% of the quoted spread is due to adverse selection, 23% is due to inventory-holding costs, and the remaining 30% is due to order-processing costs.

They go on to say that the high London Stock Exchange normal market size at which dealers have to offer firm quotes together with the practice of preferencing and internalisation generate relatively higher inventory costs and risks than the NASDAQ.

George et al (1991) allow the expected return of the unobservable true price to vary through time and, using both daily and weekly data for NYSE and AMEX stocks from 1963 to 1985 and NASDAQ stocks from 1983 to 1987, they obtain a much smaller estimate for the portion of the spread attributable to adverse selection, from 8% to 13% with the remainder due to the order-processing costs, and no evidence of inventory costs. Huang and Stoll (1996) propose a more general model that contains these other specifications as special cases and estimate the components of the spread to be 21% adverse-selection costs, 14% inventory-holding costs, and

65% order-processing costs using 1992 transactions data for 19 of the 20 stocks in the Major Market Index.

Trade costs are influenced by such factors as trade difficulty, or the availability of a particular stock and investment styles. Trade difficulty relates to how liquid a stock is and, consequently, how difficult it is to find ready buyers or sellers. At a basic level, trade difficulty can be represented by trade size and the market capitalisation of the stock being traded. Large orders demand more liquidity and so have higher trade costs than small orders. Averaged over all market capitalisation levels, the round-trip (purchase and sale) trade costs of exchange-listed shares were 2.32% for the largest trades and 0.64% for the smallest.¹⁶ Trade costs are inversely related to market capitalisation, a proxy for liquidity. Keim and Madhavan (1998) found the average round-trip cost for the smallest market-cap quintile of exchange-listed stocks to be 3.81%. The same cost for the largest market-cap quintile was 0.57%. Transactions costs tend to be larger for NASDAQ stocks than for exchange-listed stocks, but differences have narrowed because of regulatory changes and competition from electronic communications networks. Allowing for trade difficulty is vital in assessing broker performance. For example, a full-service broker, who slowly "works" an order for an illiquid stock, may incur explicit costs of 0.9% and implicit costs of 2%. Compare this with a discount broker dealing with a highly liquid stock, who may incur explicit costs of 0.2% and implicit costs of 0.4%.

Without allowing for trade difficulty, one cannot conclude that the broker with the higher total costs is a worse performer. What if the assignments were reversed? Using a full-service broker for a liquid stock might be as bad as using a discount broker for an illiquid stock. Investment style (such as active or passive, index or momentum) also affects transactions costs because it proxies for unobservable factors, such as the trader's time horizon or aggressiveness. Aggressive traders, such as those who chase short-run price movements and some indexers, have high expected costs because they demand (and pay for) immediacy. Less-aggressive traders, such as value managers whose strategies are based on fundamental analysis, have lower turnover and lower costs because their longer investment horizon allows them to trade patiently.

Keim and Madhavan (1998) estimated round-trip costs of 0.45% for value traders, 1.09% for index traders and 2.04% for momentum (or technical) traders. Even within a particular investment style, differences in order-submission strategy may affect costs. For example, two traders, both using value-based strategies, may have significant differences in the number of trades needed to fill an order, which may translate into cost differences. A study of 22,000 block trades in DJIA stocks found strong evidence that traders' reputation also affects transactions costs.¹⁷ Traders who have a reputation for liquidity trading may be able to obtain better prices because the adverse-selection costs associated with their trades are likely to be minimal. This advantage is especially likely for trades that are negotiated away from the exchange floor, because this "upstairs" market is less anonymous than the exchange floors or NASDAQ.

The fact that these estimates vary so much across studies makes it difficult to regard any single study as conclusive. The difference comes from two sources. First, different specifications for the dynamics of the bid-ask spread and secondly, the use of different datasets.

There is clearly a need for a more detailed and comprehensive analysis in which all of these specifications are applied to a variety of datasets to test the explanatory power and the stability of each model.

NOTES

¹ Christie and Schultz (1994) found evidence that NASDAQ dealers engage in "implicit collusion" to keep spreads above competitive levels.

² For more details see Keim and Madhavan (1998).

³ We provide evidence of commission charges from the New York Stock Exchange (NYSE).

⁴ See Loeb (1983), Keim (1989) and Hong and Stoll (1996) for further details.

⁵ Trading strategy is defined as the holding period of a common stock.

⁶ Roll (1984) argues that price changes must not be serially correlated in an informationally efficient market. However, Leroy (1973) and Lucas (1978) show that this need not be the case.

⁷ See Eikeboom (1993), Glosten and Milgrom (1985) and Goldstein (1993) for further details.

⁸ See, also, Glosten and Harris (1988) and Stoll (1989).

⁹ The reversals discussed are very similar to the Roll (1984) model.

¹⁰ He makes the following three main assumptions. (1) True returns are independent of all past history. (2) The spread is symmetric about the true price. (3) The gross-profit component does not cause conditional drift in prices.

¹¹ George et al's (1991, p 649) argument is based on their finding of a positive first order autocorrelation in bid-to-bid returns rather than the expected negative autocorrelation implied by the analytics of the problem. Kim and Ogden's (1996, p144, footnote 2) conclusion is based on their claim of the empirical difficulty of separating order processing and inventory costs.

¹² For instance, if a transaction at the ask price is followed by another transaction at the ask price (a continuation) the price change is given by $-\delta s$, where the value of δ remains between 0 and 1.

¹³ For further details on the link between trading volume and the absolute value of price changes see Karpoff (1987) and Stickel and Verrecchia (1993).

¹⁴ Karpoff (1987) finds that trading volume is larger when prices move up than when they move down.

¹⁵ AMEX stocks tend to be lower-priced; which means that they should have larger percentage spreads.

¹⁶ The figures quoted are from the NYSE.

¹⁷ See Madhavan and Chang (1997).

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MANAGING CULTURAL DIVERSITY

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ABSTRACT

In public debate cultural pluralism within the borders of the nation state is seen as threatening societal sustainability. Consequently cultural assimilation of cultural and ethnic minorities is propagated.

In this contribution we criticize this point of view. We advocate the acceptance – and appreciation – of cultural variety. We start our argument by presenting a view on social life. Next, we relate this view to the organization of our present day multicultural society. We focus on the issue of social cohesion, addressing the question which perspective is to be preferred: commonality or compatibility of cultural values, norms and practices.

1. INTRODUCTION

Nowadays the link between multiculturalism and social integration figures high on the agenda of politicians, public administrators and researchers. This is not surprising, as present-day societies and nation-states face rising cultural complexity and diversity. This trend coincides with growing pressure on economic exploitation and social exclusion, which in turn affect social integration.

The integration issue emerges from the ongoing dialectics of social life: cooperation and competition. Every society is built up of a multitude of social links between agents that differ from one other. Each of these links has its own history, its own routines, its own domain, and thus its own specific attributes. Each – institutionalized – link implies functional connection as well as separation, as classical thinkers such as Marx, Simmel, and Weber have already taught us. As such, integration or cohesion

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is a double-edged sword. Internal solidarity stimulates co-operation and reciprocity as well as social control. At the same time strong internal solidarity leads to animosity towards the external, resulting in xenophobia in extreme cases. The spectrum ranges from feelings of identification (in which the distinction from the other is eliminated) through tolerance to indifference, ostracism, and violence. No wonder that the integration issue, associated with this 'diabolic dynamism of homogenization and heterogenization' (Schuyt, 1997), is both classic and current and possibly even urgent.

2. CATEGORIZATION: THE INTERPLAY OF COOPERATION AND COMPETITION

Living together must be viewed as a series of processes in which a distinction is constantly made, consciously or subconsciously, between within and without, between we and they, between the self and the other. This filtering and classification underlies every construction of meaning, communication, and action. The social effects of this categorization are significant. Drawing boundaries and setting standards always entail the creation, institutionalization, legalization and regulation of difference.

The classification, that is the construction of social categories with the aid of principles like analogy, complementarity, opposition and hierarchy, is never just a psychological and sociological game. At stake is the control and exploitation of limited resources. Culture – or the model of and for reality (Geertz, 1973) – can be used as a strategic weapon here. Bourdieu, (1991:221) put it succinctly: "What is at stake here is the power of imposing a *vision* of the symbolic world through principles of *division*". In doing so, an indication is given of what reality consists of, why certain parts of this reality are related in certain ways and how they should be treated (Sackman, 1991). That is to say, definitions of reality are intrinsically bound up with power. The various majority and minority relations that manifest themselves in a society are directly tied up with categorization of others and themselves. This is one of the reasons why orderings are never only cognitive by nature, they are also socially and emotionally charged. That is why they provoke strong reactions, especially when the established order comes under pressure. In such situations the arena character of society becomes pronounced. It then turns out that society is not a market where free and

equal participants freely exchange goods, services and ideas, but mainly an arena. The configuration of an arena has been built up from a network of relationships and practices between institutions and actors. As such, an arena is an amalgam of different interests and social categories interacting in a 'negotiated order' (Strauss, 1978). This order is the issue and the result of competition in which earlier engagements, or meetings, have been accounted for in the position, the status and also the structure of the arena itself (Verweel, 1987: 97).

3. GLOBALIZATION AND ITS COUNTERFORCE: LOCALIZATION

This dialectic of competitive cooperation is of all time. However, it is apparently becoming more problematic nowadays. This has everything to do with the modern organization and formation of (global) society. Revolutionary developments in information and transport technology have changed the world. Our daily lives are governed by products and images originating from all the corners of the world. Political, religious, cultural or economic trends emerging in a particular region, group or period are now being echoed in large parts of the world. New styles of consumption, as well as standardized systems of time, money and expertise are introduced, produced, and distributed everywhere by transnational companies. Mutual relationships of dependence between actors are growing (Appadurai, 1990). Increasingly, countries and regions have become involved in networks that span the globe.¹ We are bound together more and more into global networks, partly composed of long distance migrants. This migration promotes transnationalism: "the processes by which immigrants forge and sustain multistranded social relations that link together their societies of origin and settlement" (Basch, Schiller & Blanc, 1994: 7). There are good reasons for speaking of 'time-space compression' (Giddens, 1994: 64). Beside rapid growth, another feature of long-distance migration is greater distribution: an increasing number of countries and regions are being linked by worldwide networks. Increased mobility, tourism and labor migration have brought others very close to us. These 'others' no longer live in some distant country but right in our own town or neighborhood: the world is transforming into a global village.

Although this process has been going on at least since the end of the Middle-Ages, we feel that the current wave of globalization is unique in scope and impact (see i.a. Giddens, 2003). The most obvious reasons for this are "the growing capital-intensity of manufacture, the accelerating momentum of technologies, the emergence of a growing body of universal users, and the spreading of neo-protectionist pressures" (Brenner, 1996: 19). In short, a system has emerged which functions more and more as a global unit. The world as a whole is adopting systemic properties characterized and structured by a dominant technological culture focusing on the development of new information and communication technology.

Although the rhetoric of the information society promises mountains of gold for everyone, we see that in everyday life this type of society tends both toward growing social inequality and toward polarization. On the one hand, the 'new capitalism' links everything and everyone; on the other hand whole areas and groups are marginalized because they are irrelevant from the perspective of the dominant interests (Castells, 2000b: 1). While there are more opportunities than there used to be, this economy has not yet created more equality. Instead, there is a global electronic casino that decides the fate of whole organizations right down to families' private savings, and in all cases the end result is that 'the losers pay for the winners' (Castells, 2000a: 472).

Small wonder that since the mid -1970s, we have witnessed the rise of movements to challenge the globalization of the economy. Groups of people all over the globe want to transform the world. Although they depend heavily on the new information technology, the common objective of all 'protestors' is to retain their culture and to obtain more control over their own lives (see e.g. Keane, 2003; Singer, 2002). The rise of a global system is thus accompanied by a rebirth of nationalism, regionalism and ethnicity (Anderson, 1992; Roosens, 1989). The rapid increase in the mobility of human beings themselves and the mobility of meanings and meaningful forms through the media give rise to the conditions for and parallel all sorts of localization. 'The paradox of the current world conjuncture is the increased production of cultural and political boundaries at the very same time when the world has become tightly bound together in a single economic system with instantaneous communication between different sectors of the globe' (Basch, Schiller, and Blanc, 1994: 29). The conclusion seems unavoidable that the global and the local are two faces of the same

trend (Hall, 1991; Robertson, 1995). Globalization and localization constitute and fuel each other (Featherstone, 1990; Friedman, 1995; Hannerz, 1992), resulting in a state of in-betweenness with the accompanying processes of hybridization (Latour, 1994), glocalization (Robertson, 1995) or creolization (Hannerz, 1992). Distant localities are linked in such a way that local happenings are shaped by events occurring many miles away and *vice versa*. In a sense, social relations are increasingly 'lifted out' of the context of local interaction, while remaining an integral part of it (Giddens, 1990: 64). As a result of the interaction between local and global elements and mechanisms, new multiple and varying identities emerge. These identities are no longer confined to a specific area: they are deterritorialized (Malkki, 1992). Production and distribution of mass culture are controlled largely by transnational companies not bound to specific locations. People construct their identities partly in this transnational mass culture. 'Our' culture is increasingly permeated by aspects from other cultures. In this process, some boundaries and categories become blurred while others are highlighted, talked about, reaffirmed, externally imposed and adapted in relation to one another. "There is much empirical evidence to support the fact that people's awareness of being involved in open-ended global flows seems to trigger a search for fixed orientation points and action frames, as well as determined efforts to affirm old and construct new boundaries" (Geschiere & Meyer, 1998: 602). Migrants are a good example of this. As a result of the rapid technological changes of recent years, such as the Internet, fax, mobile telephones, and extensive and inexpensive air travel, today's migrants are more able to maintain links with their home countries, for example through temporary remigration. They establish economic, social, organizational, religious, political, and personal relationships that transcend geographic, cultural and political boundaries. They act, make decisions, and form identities, while embedded in networks of relations that bind them to two or more nation-states. They develop new spheres of experience and new types of social relationships. Migrants maintain contact not only with those left behind in their country of origin but also with other migrants who have ended up in other countries. Their social network is not limited to a single host country but often covers several countries, at times even several continents. They are 'between and betwixt' (Turner, 1977). The traditional image of migrants who start a new life in a new country, leaving their past far behind, is thus no longer current. This produces hybrid phenomena, which in turn frequently leads to conflict. We see culture being used as a weapon in this conflict at the same time that

traditions and sense of community are evaporating and cease to be taken for granted. Claims about common heritage and shared values are made in an effort to gain visibility and a place on the global stage. The appeal to culture is primarily an attempt to put the problem of collective identities on the 'political-social' agenda – that is, to demand recognition in a rapidly changing world (Taylor, 1994).

4. PLURALITY: A THREAT TO SOCIAL SUSTAINABILITY

The resulting plurality of 'representations' and 'voices' gives rise to attempts to live peacefully together, to coordinate activities and to balance interests but also to conflicts, controversies and variations. This implies that we have to envisage a world in which variety of and diversity in core-institutions of society will probably increase. These will partly follow classic boundaries of socio-economic class, region, age, gender and religion, but will also run along new lines of ethnicity and lifestyle.

Because disadvantages of this growing differentiation, in particular lack of consensus and increasing strife over scarce resources, can often rely on more public interest than the advantages, increasing demands for integration and decreasing tolerance for variety will become significant social powers. This creates a paradox: the growing diversity calls up powers that hinder the pursuit of integration, leading sometimes to the complete marginalization of certain groups in society. The related risks of racism, religious fundamentalism and ethnocentrism with all the disastrous consequences that entails, as ethnic violence in so many parts of the world clearly demonstrates, converge in our metropolises. Global cities reflect the contradictions of industrial capitalism, among them spatial and class polarization. Here the concept of the dual city comes to mind, the city where a part of the population benefits from the age of information, while other parts experience the disadvantages or are even excluded from the fruits of 'progress' (Sassen, 1991). The global cities now have a variegated population showing great variety of social participation and cultural orientation in people living together, or rather alongside each other, in a very small area. The result is not so much a melting pot, but an archipelago of adjacent and isolated islands.

This puts social cohesion, to be defined as efficient and effective bonds between the various actors in the system, under pressure. Efficient and effective bonds between actors in the system depend, on one hand, on social coordination mechanisms, and on the other on what may be called 'trust'. Trust as a form of 'bonding and bridging social capital' (Putnam, 2000) promotes predictability, behavioral adjustment and involvement of actors. These are basic conditions for a sustainable community. Trust as the basis of social cohesion presupposes, in addition to the psychological condition of emotional and affective binding, or solidarity, three social preconditions. The first is stability in relations. This requires continuity and routines. The second concerns transparency of social arrangements: the members of the community must know and understand its mechanisms, structures and basic processes. Knowledge and understanding are not sufficient however they must also be able to approve these aspects. That brings us to the third condition: the existing distribution of rights, obligations and positions must be morally acceptable, must be accepted as fair and just.

Nowadays, there are looming dangers in the context of the interaction between globalization and localization that put traditional forms of social cohesion under pressure. Instances that spring to mind are (1) the transnationalization of government, economy, business and culture, (2) flexibilization of the course of life, (3) ongoing technological development, but also (4) the credibility crisis involving local, regional, national and international authorities. This has resulted in a 'risk society' that is ambiguous, chaotic and confusing since the various social and cultural systems of logic exist side-by-side. This causes problems concerning, among other things, the legitimacy, activity and effectiveness of institutions that are responsible for societal coordination (i.e., Beck, 1992 Breuer, 1992 and Giddens, 1994). There is an increasing awareness that society is subject to various paradoxical and contradictory forces. It is ever more important that people learn to cope with insecurities arising out of human activities. For in the present-day, post-traditional society it is no longer the viewpoints from the past and the guidelines for action linked to them that are at the basis of an order that can be taken for granted. Not only do people and institutions increasingly forge – different - bonds with far-away actors and institutions, they are also re-ordering and reflecting on these bonds.

The predetermined, prescribed life of past times has vanished with individualization, and in return we have been given an indefinite future, an

uncertain environment and a fragmented identity.² Many people are now searching for their roots, as we live in an uprooted world where institutions and social conventions have lost their apparent naturalness and stability. Life in a post-traditional society in which standardized patterns of behaviour and stable institutions are declining means that we all have to contemplate and reflect on our own specific situation in order to be able to give it meaning. As a result of this reflexivity, the relations – and the concomitant routines and institutions – are made explicit, called into question and adjusted. This naturally leads in turn to a further growth of reflexive knowledge in particular. Actors learn to anticipate the demands of the system. The problem is that it is often only a superficial adjustment. People behave in accordance with the rules but this does not mean that they believe in the purpose, effectiveness or legitimacy of the rules, let alone internalizing the rules as a compass for future action. Does this not all lead to a drop in the effectiveness of policy with an increase in the complexity and the rapid accumulation of waves of policy? Do we not see more and more partial adjustments within the system, which can almost without exception be characterized as detailed elaborations, additional rules, intensified control and so on? Are we not bound to conclude that this 'involution' as this imprisonment within the same body of principles and procedures can also be called, no longer works today and that a review and reassessment of our reality is called for? Is it not better to realize that we have to operate in various settings with diverse structural arrangements and cultural orientations? Should we not aim at plurality, at a palette of combinations in which existing and historically conditioned boundaries are transgressed? We have to admit that the possibility of a process of homogenization is becoming ever more doubtful. Moreover, the resistance against uniform solutions and rules is also growing, mainly based on an appeal to the necessity of taking into account specific embedding in certain contexts. In short, it would appear that reality has become too complex, too multiform, too open, too unpredictable, and is now beyond control from the point of view on the Enlightenment notion of control on the basis of functional rationality. Decentralization and deregulation, however, certainly do not always have the desired effect. There are often – even always – unintended, unexpected and undesired effects. All this leads to questions concerning responsibility, effectivity, efficiency, feasibility and legitimacy of policies. Not everyone is led to the same conclusion, however, that makeable society is an illusion or a myth. There are advocates of stronger control. The supporters of this strategy thus confirm the proposition that

decreasing effectivity of policy leads to increasing accumulation of policy. Others who maintain their belief in the necessity of 'strong' government increasingly deploy the concept of culture in the struggle against 'limited control' of modern, open, multiform society. They maintain that the government should put a brake on growing diversity through a targeted 'cultural policy'.

The basic question underpinning this cultural policy is: in a social situation characterised by big differences in resources, norms, lifestyles and identities, how is it still possible to bring about solidarity, co-operation and trust, or in other words: how can social institutions under such conditions succeed in binding individual actors. The issue, however, is not only social relations 'under pressure' or in transition. Cohesion addresses a more fundamental question. Cohesion brings home to us the fact that, humans as social beings are dependent on others. The others are both a means and a hindrance to self-realization. The others are also the object of care, compassion and involvement. Reciprocal affection and dependence require sustained co-operation and sustainable structures. In their turn, they raise questions concerning the conditions of their genesis, the differing interests, views and positions of those involved. Dependence also entails risks. Each of the parties involved can, of course, take a cooperative or a competitive attitude. Generally speaking, the question we are concerned with probes the mechanisms and conditions that generate, maintain, promote or undermine solidarity, trust and bonding between social actors (Lucassen & De Ruijter, 2002:2).

Until the middle of the 1990s, these mechanisms and conditions were sought mainly in the area of social structure, especially in the field of social and economic relations. Policies were specifically aimed at the improvement of the labor market position of groups, so that their social participation and emancipation would be promoted by these means (including supporting arrangements such as social security systems and educational programs). Over the last few years there has been a shift in the approach. Increasingly, culture has been promoted as the basis of social cohesion and social participation. Two main schools of thought can be distinguished: the integration and the coordination viewpoint. Although both the viewpoints concur in regarding multicultural society as an adequate description of the present-day social situation - in which culture is taken in the meaning of '*model of reality*' - there is a fundamental difference in the

evaluation of cultural variation. From the point of view of integration, multiculturalism is defined as a threat to sustainable relationships. In other words, multiculturalism certainly is not a *model for* reality, not a desirable aim. The adherents of the coordination viewpoint, on the other hand, take a much more positive view of cultural variation. They welcome it as a source of freedom of choice in the organization of society. In fact, they advocate multiculturalism: the 'ideology' of the promotion of cultural variation. They view this, among other reasons, in the light of processes such as individualization and flexibilization of the course of life.

5. PERSPECTIVES AND POLICIES: COMMONALITY OR COMPATIBILITY

This difference in the appreciation of multiculturalism by the two schools of thought does not only emanate from a different appreciation of modern-day processes, it is also connected to the different interpretation of the concept of culture.

On the basis of the viewpoint of integration, a common culture is seen as a necessary condition for sustainable community: society or the nation state will disintegrate when the members of the society are not strung together like beads on a string of shared cognitions, motives and norms. Certain politicians, leaders of opinion and policy makers have increasingly succeeded, on the basis of this viewpoint, in defining 'cultural identity' of (ethnic) groups as a problem. According to them, a pluralist society can only function when there is a consensus between different groups in the nation state on fundamental values and norms concerning certain behavior in the public space. They have pointed to the threatening moral disintegration of society involving risks of disorientation, de-institutionalization and informalization. They have stressed the necessity for adaptation to the culture of the dominant majority. In this way they have taken their place in a classic tradition: in the nation state, territory, culture and identity are united. During the nineteenth century newly formed national states tried through nationalistic programs to homogenize their entire territory culturally and linguistically, as well as economically and socially (Gellner, 1983; Brubaker, 1992). The state and the political community came to be increasingly equated with 'the national culture.' The three elements of territory, people, and culture are combined to form 'the country.'³

Significantly, this view of human beings, culture, people, and territory, which holds that people do not merely live somewhere but also belong there, asserts that the description of the 'natural' order also establishes a standard, namely a moral justification of the existing situation (Gupta and Ferguson, 1992; (Dijkstra, Geuijen & de Ruijter, 2001: 59). In this view, each person naturally belongs to a certain place and possesses a national identity. Almost everyone takes the central elements of this idea for granted. A map of the world thus depicts areas with clear boundaries without any overlap. The concepts of *ethnos* and *ethnicity* assume the existence of this intrinsic link (i.a. Malkki, 1992; Stolcke, 1993; Clifford, 1994). Although theories about what constitutes a nation differed between countries, the common view was that each nation possessed – or should possess – a single specific culture. This opinion was also attributable to the growing means for joint communication. People read the same newspapers and books in the same language; in the twentieth century, radio and television became available as well. All these facilities enabled depiction of the contemporaneous existence of fellow-nationals, thereby giving rise to so-called 'imagined communities'⁴ (Anderson, 1991). Culture was thus cast in a national context and turned into a political tool. "It is for this reason that words such as 'autochthonous' and in relation to certain cultures, 'native' and 'indigenous' are used. It expresses the relationship between being born somewhere and the territory. They also convey a "we", "they" distinction: 'we' belong here, 'they' do not. Migrants may be here, but they do not come from here. In this view, each person naturally belongs to a certain place and possesses a national identity. Almost everyone takes the central elements of this idea for granted. A map of the world thus depicts areas with clear boundaries without any overlap. The concepts of *ethnos* and *ethnicity* assume the existence of this intrinsic link (i.a. Malkki, 1992; Stolcke, 1993; Clifford, 1994).

This viewpoint reflects the attempt by a part of society to define others in a monopolistic way, as 'alien', and so in the literal sense of the word, misplaced. Above all, it is a confirmation and reinforcement of social hierarchy. The offer of changing allegiance to the 'enlightened', usually the natives, is presented as tolerance, and in fact confirms the rigidity and socially constructed hierarchy of the distinguishing norms and values (Baumann, 1990). Culture is thus presented as a modern solution for the classic social problem: the resolution of the tension between the individual and the group. This makes 'culture' into one of the most important power

formation concepts available to political actors in local, national and worldwide arenas today (Van Binsbergen, 1999). To function as such, culture must be used in a classic, anthropological meaning as a combination of a number of characteristics (Hannerz, 1996: 8). First, a culture is acquired in the process of growing up as a member of a community. Second, culture is not just a loose collection of elements. They are connected in accordance, with certain 'logic', so that a pattern is formed. Third, a culture is connected to a certain group. Fourth, in this way and by these means culture is also connected to a certain territory. A culture is the common possession of a single, locally circumscribed and socially identifiable group.

We do not underwrite this integration viewpoint, as it is based on a concept of culture that is entirely out of date. It should be clear that in the light of social reality with its waves of migration of people, goods and ideas, a call for a sense of community on the basis of a 'national culture' must be regarded as obsolete. A national state is composed of a large number of differing groups, and the differences between those groups are important, so that a common culture is an illusion, as is the makeability of culture and community. People will have to learn to live with diversity. As such, that is not a problem. Participants in a stable social and cultural system do not need to have the same 'map' of the system in order to behave in the required fashion, or in ways expected by others. Culture does not exist in the holistic, totalising and essentialist meaning that many politicians and citizens give to it. There are only cultural orientations, separate combinations of opinions and practices, changing from situation to situation. In the course of our lives we are all faced with many of them, and we familiarize ourselves with many of them. That is why the 'culture' of one person or collective is always a hybrid, always in flux, always ambiguous. That is why we adhere to the coordination approach.

On the basis of the coordination viewpoint, a culture is not a system of common codes but an implicit contract, at totality of expectations concerning the different ways in which people behave. In principle, living together is the performance of actions in mutual relationship between at least two interacting parties. The chains of actions can be the result of different viewpoints and action strategies of the participants. The issue is whether the actions of the other party can be anticipated, no more and no less. It is unimportant whether these expectations are based on a correct or incorrect understanding of the cognitions on which the other party bases his

actions. In this option, culture is not much more than an information processing mechanism that functions through practices. These practices are controlled by rules, but the nature and the operation of the rules have not been determined beforehand. They are constituted in practice. Moreover, this process of solidification is infinite. The rules are forming constantly. In addition, the rules - often learnt through participation and not through explicit instruction - are recursive. This entails the individual's capability to generate and interpret an infinite system of 'cultural actions' on the basis of only a limited number of rules. This characteristic of rules also enables a person to anticipate behavior by other people, even if previously unknown. In other words, a person is an active agent, continually engaged in the making of meaning. The actions undertaken by a person in the process of generating meaning are not very often unambiguous, circumscribed, or stable. Often they only draw attention, they are only signaling, focalising, mobilizing, implying (i.a. Sperber & Wilson, 1986). For the organization and management of all this 'variety and relative indefiniteness' there is no need for basic communal factors. People and groups with different values, norms and backgrounds are very well able to co-operate, and in the course of their actions develop the necessary forms in daily practice that enable them to do so. That is not to say that a certain degree of commonality is not beneficial for the organization of plurality. But to make it into the norm, or attempt to enforce it where it is lacking, is contrary to autonomy as a principle of citizenship. A call or even a demand for commonality where it is lacking is to solve the problem by the problem itself! The issue is not to abolish differences but to regulate, recognise and appreciate them. Since differences nearly always also imply inequality, this should include the organization of power effects (Van Rinsum, 2003).

Here a core problem remains. Incompatibilities should be banned. Choices are inevitable when it concerns conflicting views, for example with reference to the granting of equal rights of men and women, the integrity of the human body and the relation between the citizen and the state. But who shall have the authority of making choices? Who decides on the criteria for 'intercultural' dialogue?

The promotion of compatibility - and that is not a given fact either - cannot just be left to the free interchange of powers. There is a role to play for 'authorities' of all levels and varieties. They should cultivate compatibility. The problem, - or if preferred the mission of modern, open,

democratic and thus multicultural society, is the development of the ability of citizens, to deal with ever changing surroundings. This may well have as a result that the 'other' is not denied, excluded or banned, but is treated and respected precisely as the 'other' (Van Gunsteren, 1992). In short, the authorities - and, of course, this also holds true for other important actors - should promote the development of competencies that enable all parties to deal with difference more adequately. The authorities are not the guardians of a specific moral in which the tenets of a certain group with regard to truth, morality and beauty are propagated. For that would involve the marginalisation or even ostracism of other groups and their tenets. Nor does it imply that we can and must completely pass over a situation that has developed over time in which a reality has already been defined and organised. After all, this situation is the result of existing social structures, processes and discourses defended by stake holders. It only implies the willingness to discuss the diverse worldviews, and so to recognise that the situation in 21st-century society can no longer be adequately represented by institutions and values from times gone by.

For this management of diversity it is essential that authorities do not take up a position beforehand. It also implies that the development of new viewpoints and perspectives with regard to society, its morals and attempts at coordination, by definition leads to a struggle for defining power. Integration of new groups means that they will not only have to emancipate socially and economically (labor market position, income, housing), but also culturally and politically. The struggle for the redefinition of what exists will logically lead to discomfort for older stakeholders. Such discomfort is not the expression of the crisis and disintegration of the community; it only marks the process of redefinition with new vitality as a (potential) result. Authorities have the task of making room for this social vitality by the good management of diversity in the community. National governments and local authorities who do not realize this have their backs to the future. In that respect they are neither modern nor postmodern: they are focused on the restoration of what no longer is.

NOTES

1. See for a review of conceptual frameworks of globalization: Benessaïeh 2003.

2. Bauman (1996) describes the transition from destiny to uncertainty as the shift from the modern identity to the postmodern identity. He illustrates his argument with five metaphors. The image of the pilgrim is for him a symbol of the modern individual who spends his or her whole life building up a permanent, solid and stable identity. The other four metaphors – the flaneur, the drifter, the tourist and the game player – stand for the postmodern person, who is working continuously to keep all options open, not allowing or daring to let his/her identity become fixed. According to Bauman, this person wants to enjoy life, and is unwilling or unable to permit himself any moral responsibilities in the process. Bauman depicts this life as a game with no rules and no laws. There are simply movements by isolated, unlinked individuals who seek compensation through human contacts, but at the same time are neither able nor willing to enter into ties with other people. As a result of the new lifestyles, individual autonomy has been set directly at odds with moral responsibility for others. Anyone following the moral impulse becomes responsible for the other person, and that is an unwanted tie.
3. The natural place of people and cultures is often described in images derived from nature. Roots are an especially popular metaphor; people and cultures are rooted in the soil, just like trees; a nation is like a great family tree that is rooted in the ground, you can belong to only one tree and thus to only one culture. In this view people should continue to live in the place where they were born and raised, where their people and their culture reside. Displacements only cause problems for those involved. Should they be loyal to the nation and the state they have left or to the one in which they have arrived?
4. Paradoxically, however, the latest developments of these media lead to a fragmentation of communality. The ever-increasing supply of television channels, for example, results in fellow-countrymen watching ever fewer of the same programmes. Without shared experiences, an imagined community is impossible. Instead everyone seems to be forming his or her own community. While television was originally a gateway to the entire world, it is now used to shut oneself off from certain parts of that world. The television button appears to be changing from a gateway into a barrier. The window to the world is increasingly degenerating into a means to reduce the world. This development can also be found in relation to the Internet.

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ENTERPRISING UNIVERSITIES: A TYPICAL CASE?

DAVID COOPER*

ABSTRACT

This paper outlines Academic Enterprise (AE) from the perspective of a UK University. It provides description and details from conception through to its current status. It offers a general overview as to the way AE has been formed, normed, stormed and performed at Salford. The theme captured and running through each element will be that of managing and partnering knowledge and learning through the interlocking mechanism of teaching, research and academic enterprise. Case studies will be used to illustrate advantages, constraints and learning. The 3 elements will be:

'The Vision', what existed before, why it was needed, potential and mutual benefits, identifying and overcoming initial problems.

'From Vision to Reality' The structure and operation of AE, evolving process and procedures, links with teaching and research, the growing AE products and services portfolio, working to build relationships, partnerships and long-term relationships, tangible and intangible benefits, and the current stage of development.

'Pointing the Way Ahead'. What of the future, ideas in the pipeline, problems still to overcome.

The paper should be of interest to other potential stakeholders external to higher education institutes who are wishing to utilise the knowledge contained within universities with the purpose of mutually beneficial outcomes, including the need to gain strategic and operational competitive advantage.

Keywords: Enterprise, structure and operation, partnership, cooperation, mutual benefit.

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1. INTRODUCTION

This paper outlines Academic Enterprise in the University of Salford. It provides details from conception through to its current status, and offers a general overview as to the way academic enterprise has been formed, normed, stormed and performed at Salford. The text of the paper is divided into four parts, the vision, from vision to reality, constraints, and pointing the way ahead. However, the theme captured and running through each element is that of managing and partnering knowledge and learning through the interlocking mechanism of teaching, research and academic enterprise. It is hoped that by offering this information and 'reaching out' to organisations representing all sectors, industries, markets and countries, that they might be enthused to work with academic institutions with the intention of mutual benefit.

2. THE VISION

The notion of higher education institutes becoming outwardly focussed, market-led and entrepreneurial is somewhat ambiguous and not necessarily inherent. Nevertheless, the Government's Competitiveness White Paper 'Building the Knowledge Driven Economy' outlined that the success of the UK depended on how well higher education's most valuable assets, its academic staff's knowledge, skills, creativity and expertise could be exploited. Moreover, the Higher Education Funding Council (HEFCE) has a strategic aim to 'Promote and support productive interaction between higher education and industry and commerce in order to encourage the transfer of knowledge and expertise, and enhance the relevance of programmes of teaching and research to the needs of employers and the economy.' The message is clear; funding will follow those HE institutions that can be seen to be responding in an enterprising manner to business needs.

Certain fundamental challenges to higher education establishments have become generally accepted.

1. Universities need to become enterprises that can earn income from diverse sources. They need to develop new products and new

markets, and adopt modern commercial management practices to obtain sound returns.

2. They have to develop processes for applying academic research, teaching and consultancy services.
3. They need to acquire new sets of expertise internally, and exploit links with local communities, with other universities, and with private and public sector partners in ventures and/or strategic alliances.

To enhance and reinforce its core competence, under the direction of the Vice-Chancellor, Salford University established a clear policy for enterprise. To complement teaching and research, it was to be the third major strand of its activities. The initiative was built on Salford University's history, culture, reputation and current strengths, and has led the University to conclude that the concept of 'Salford as an Enterprise University' is one that must be pursued. The enterprising university philosophy might be defined as a higher education institution that is 'Closely attuned to the needs and to the problems generated [or faced] by business, industry and the community and which is proactive in seeking out new ways of fulfilling its socially inclusive and responsive remit' (Academic Enterprise, 2001).

The term 'enterprising university' and the current operation of AE is the brainchild of Professors James Powell, Michael Harloe and Mike Goldsmith. In their case study paper entitled 'Achieving Cultural Change: Embedding Academic Enterprise (2001) they state that 'Burton Clark's (1998) work on entrepreneurial universities identifies some institutions that had adapted to change more successfully than other universities during the 70's and 80's. Clark listed key characteristics related to entrepreneurial universities:

- They are unique in their search for a special identity, a distinctive niche in a differentiating higher education system.
- They focus on growing, not just research and teaching income, but also on support from business and industry.

- They might be characterized by a conscious effort to innovate in how they went about their business.
- They are prepared to enthruse collective effort across their institution that involves the core academic units of the university, as well as administrators and senior management.

Burton Clark asserts that no University has yet developed an integrated entrepreneurial culture. With a view that early pace-setter's will benefit most from the notion, Salford set about its vision.

The University's Strategic Framework suggests that 'academic enterprise will be encouraged and nurtured across all sectors of the University, especially that which improves our teaching and learning provision, and the scale and quality of research. In this respect, the raising of commercial income through the application of university-based knowledge, know-how and expertise...is seen to be complementary to the development of more conventional academic goals.'

Source: University of Salford Strategic Framework, 2001.

Success was seen as the product of combining and intertwining the core elements of teaching and research though enterprising activity. Consequently, in 1998, what was required was a structure and process that could assist the development of School strengths and use the changing context to assist direction.

3. FROM VISION TO REALITY

To turn an agreed vision into reality, structure, process and procedural necessities need to be created and communicated. From the outset, the institution had to ensure direct links with teaching and research. Moreover, in aid of building an enterprise culture, certain worthy time-consuming activities would need to be encouraged:

- There would need to be consistent growth of enterprising products and services portfolios without putting too much strain on current teaching and research resources.

- Behaviour that builds internal networks and cross-school and cross-faculty relationships would have to be carefully encouraged.
- External contacts and partnerships with commercial and other external bodies occupying and involved with differing markets, industries and sectors would need to be enhanced.
- Mechanisms for monitoring and recording tangible and intangible problems and benefits had to be devised.
- A format to discuss and monitor actions related to opportunities, concerns, weaknesses and threats had to be developed and implemented.

A suitable structure supported by the evolution of a totally new process and procedures was essential. Consequently, the role of Pro-Vice Chancellor with responsibility for Enterprise and Regional Affairs was created. A Director of Academic Enterprise was appointed who held responsibility to manage central support services, and each Faculty would have an Associate Dean (Enterprise) and each School an Associate Head (Enterprise). The foci of the structure were aimed at achieving clear strategic objectives:

- To develop pathways for staff to recognise their enterprise potential.
- To establish academic enterprise as an effective interface between the internal academic community and external partners and opportunities.
- To develop a range of enterprising initiatives that enhances the mission of the university, and facilitates the development of Salford as a leading 'University of Enterprise'.
- To ensure the majority of staff engage in enterprising activity.
- To generate income representing a good return on investment.
- To ensure that Governance of enterprising activity is open and transparent, including the ways in which the university shares the benefits from the activity.
- To create a promotion system that recognises Academic Enterprise as of equal importance to teaching and research.

Salford has responded positively to the challenge but there is still a long way to go. The 2002/2002 Strategic Framework highlights key successes. The University has expanded partnerships with business and the community and opened up Higher Education to wider participation with an emphasis on

education for a changing market, and has focused on excellent research in response to 'real world' problems.

Successes include:

- Two thousand enquiries entering the University through academic enterprise in 2 years.
- The development of a strong knowledge base and brokerage.
- A 'One Stop Shop' communication system to provide a friendly face to the outside world.
- New networks, partnerships, and collaborative programmes.
- The development of internal and external workshops, conferences, seminars, presentations and master classes all with excellent feedback/review statistics.
- Centres that can bridge the gap between 'real' problems and current and planned research.

From a faculty perspective, prior to 1998, the Faculty of Business and Informatics held a fair reputation as an institute willing and able to work closely with business. Pockets of best practice could be seen within the Faculty. More recently, several innovative, if not creative initiatives have been negotiated, designed, developed and delivered. Examples include:

- The School of Management's ability to provide successful tailored certificated programmes to 'Blue chip' organisations and to provide meaningful support to the regions small to medium enterprises.
- The School of Leisure, Hospitality and Food Management's innovative asset management, their willingness to exploit new legislation, and their ability to promote high profile public relations events.
- The Information Systems Institute's lead in short course design that ensures the provision of continuing professional development, and the technological, commercial and public relations benefits that have arisen from exploits such as the enterprising Centre for virtual environments.
- The School of Construction and Property Management has consistently demonstrated their ability to make clear, positive and fundamental linkages between research and best practice. The enterprise ethos has been captured within Centres of Excellence. The School now boasts five such centres providing opportunities for industrial partners to

discuss strategic, tactical and operational problems, to enable tailored learning and provide key forums for open debate and innovative learning solutions.

- The Faculty's Accountancy, Economics and Management Science School now manage and promote the internationally renowned Institute of Directors Programme. This enterprise initiative offers a learning environment for Directors to be exposed to current thinking with regard to strategy, marketing, financial issues, people management etc. The continually repeated series of dynamic programmes combine so that Directors might achieve Chartered Director status. Each event is facilitated rather than taught and learning is clearly focused on current 'real' business problems and opportunities. This forum is often extended to include company based and specifically designed consultancy. Key contacts often lead to funded research opportunities such as the provision of market intelligence, competitor analysis, customer relationship management schemes and systems, informing major changes in organisational structure and the forming and building of partnerships through joint funding. For example, working with Government departments and business on initiatives such as teaching company schemes.

Corporate programmes continue to provide cross-school and cross-faculty product development opportunities that combine teaching with specific research and commercial returns. For example, organisations such as Norwich Union, the UK National Health Service, British Aerospace, and global conglomerates such as Alcan have used the newly found knowledge now contained in the heads of staff to inform organisational training needs and re-shape staff competence. Tailored learning events and programmes have been used to support project work, to inform business strategy and to form an integral element of the company human resource strategy. In some cases, certificated programmes have also been designed to assist retention of potential future senior management. Moreover, a traditional teaching method has been augmented to include the use of video conferencing and remote-access of learning materials and real-time tutor contact. The following case material illustrates the faculty's ability to integrate teaching, research and academic enterprise with the intention of providing a unique and tailored solution to an identified business problem.

Case 1:

'Metropolitan Borough Council Housing divisions have and are undergoing major change. For example, housing stock transferred from council to Housing Trust ownership entails restructuring of the new organisation's financing arrangements, management structure and working practices. What might be seen as a simple change as to the source of the capital employed in the organisation has far reaching implications on the new organisation, and especially its culture and human resource practices.

Stock transfer often means that a section of people from a local government body need to work within a pseudo private sector environment. The change pressures the organisation and its staff to adopt a different approach, to acquire new skills and knowledge and be given the opportunity to exercise them. It would be fair to state that most people are adaptable and in time they can perform effectively in any environment. However, what is required under the conditions described above is a quick response and a boost to the process of people and organisational development. This is where higher education institutes can and should help. The Faculty of Business and Informatics is quickly gaining a good reputation for establishing a partnership with several MBC's and Housing Trusts within its Region who are engaged in strategic design, development and implementation of housing stock transfers.

Moving a sizeable proportion of an organisation towards managing and behaving commercially without adversely affecting Political ties and while continuing to focus on the provision of an effective service is not an easy task. A philosophy of balancing key issues and stakeholder interests is the first step. Secondly, the faculty works with the 'movers' of the organisation identifying through gap analysis the distinct and even personalised learning required for the change to occur. Thirdly, a tailored management development process (not necessarily training orientated) is designed to help bridge the gap and importantly provide ongoing support mechanisms for change agents and champions. Throughout the partnership, timely adjustments to organisational structure, processes and systems also occur.'

Case 2:

Contact with Sharp Digital management was enabled through involvement with the Institute of Directors Diploma programme, activities blossomed to include potential flagship Teaching Company Schemes, graduate placements, company presentations, undergraduate visits to the Manufacturing division, research into Health and Safety and production of an H&S video.

The Association of Business Schools commented, "This is a win-win situation all round. Clearly, the advantage to Sharp is that they develop key links with a major university, providing access to information, consultancy, training, and a source of supply of future employees. Added value to the university involves additional income, satisfied students, improved external relations profile, an outlet and focus for research, development opportunities for staff, and a vehicle to enhance teaching." (Cooper, 2002)

4. PERFORMANCE IMPROVEMENT

Enterprise performance can be measured by means of reviewing achievements in relation to objectives. Achieving a financial surplus that can assist research and the development of new and innovative teaching is clearly an important goal. However, the performance of several enterprise activities might best be described as formative and difficult to measure objectively, especially in money terms. Nonetheless, with a view to estimating the total worth of enterprise, both tangible and intangible benefits would need to be logged and assessed. Targets for commercial income and surplus are now negotiated on an annual basis. In terms of operational controls, management accounting reports have been designed to allow Schools to monitor both controllable costs and projected surplus on a month and quarter end basis. Benefits from enterprise activity such as promotion and events to improve public relations, Faculty and University publicity, activities that inform and develop teaching and learning, and products and services that lead to new or enhancement of research activity is also recorded.

Clearly, enterprise is far more than commercial activity. The activity promotes new ways of learning and teaching. For example, from an initial

commercial contact, the notion of action learning and research entered the psyche of University. The approach has developed into a world renowned Centre of Excellence. Moreover, commercial contracts with industry have enabled project work that provides students with education in support of solving current business problems.

There are many more examples. For instance, enterprise teaching company schemes bring together the needs of small to medium enterprise firms, graduates and lead academics for two years to concentrate on specific key areas vital to company development and growth. Learning is a product of continuous dialogue, team and project based activities and research. Learning also occurs in all directions and to the betterment of everyone involved, not least to 'lead academics' and their academic support teams. Additionally, learning outcomes inform teaching and research and lead to other enterprising activities in a way that suggests the interplay between all three activities teaching, research and enterprise is often difficult to differentiate

Student learning is vitally improved as academics quote real and current experience as to how knowledge might be transferred into various working environments. They also benefit from project work that makes sense in terms of learning and business outcomes.

Many business contacts help build long relationships with the University. Companies associated with enterprise activities often see the University as a preferred provider of top quality graduates and postgraduates. They provide opportunities for student placements and often provide industrial talks as part of more conventional teaching programmes. Moreover, when organisations identify the need to sub-contract key aspects of development, they turn to the University to provide hands-on consultancy.

5. CONSTRAINTS

Performance might best be assessed in relation to inherent and time specific constraints. Firstly, history does not always assist cultural development and change. The notion of a University company proliferated in the early 1980's, and was given the function of 'managing-industry

links, arranging the provision of fee-paying courses, commercialisation of research, managing intellectual property and providing support for spin-off companies' (after Mitchell and Nossal, 1999). Unfortunately, the idea lost favour, and Salford was not an exception. Hill and Turpin (1994) comment that 'the cries of anger and anguish from the faculty sector became increasingly trenchant. Partly justified, partly projected, they saw university moneys crossing the organisational divide from faculty to commercial sector of the institution and being soaked up into an enterprise that some identify as the total antitheses of academic values.' Remnant of such a perspective still exists at Salford. However, regardless of one's perspective, it has become obvious that in order to grow and to achieve the aspirations of the University, enterprise must proliferate the whole of the University starting with individual entrepreneurs, Schools, Faculties and University support services, and be an integral element of all operations. To offset internal issues, University management will need to acquire new skills, systems and cultures, and internal planning and monitoring has to become more effective and efficient.

Secondly, academic enterprise does not exist in an environmental vacuum. The external context tends to encourage or subdue opportunities and threats. Performance as measured by agreed objectives relies on certain key aspects. One of which is the state of the national economy. At the time of writing, the global economic picture and several key national economies are not buoyant. The effects of global terrorism and the continued after shock of the September 11th 2002 attack on the World Trade Centre has quite naturally subdued travel, markets and national gross domestic product. While managing to retain some growth, the UK is above recession levels but reliant on spending in the service and retail sectors. Unfortunately, commercial enterprise relies on businesses identifying learning opportunities and being willing to spend on employee training, development and education. During lean market conditions, firms are more likely to be watching costs closely, and are far less opportunistic in making interventions toward staff educational improvements. Fortunately, this is not the case with every faculty of the University at any one time of the economic cycle.

Thirdly, Salford must be seen as being credible amongst the growing competition for enterprise. It might be fair to state that competition for enterprising initiatives has risen sharply. Now more than ever, higher

education institutions realise that in order to balance budgets they have to become more accessible to business. Some universities have an advantage, because of their long established success in teaching and research. The Times newspaper broadcasts league tables of Universities. Categories ranked include research quality but mostly concentrate on teaching quality, student staff ratio, drop-out rates etc. In 2000 Salford ranked 58 out of 98 universities. In 2001 the institute dropped to 65th position, and this year's position was 80. It is probable that ranking did not capture all key variables and in so doing Salford's low position might be seen as misleading if not inaccurate. Moreover, the Times do not include enterprise performance. However, it is clear that such messages enter the business and commercial world 'psyche' and consequently influence organisational decisions. In so doing, tables provide hurdles that enterprising staff find difficult to individually overcome. For instance, one School had an excellent track record providing tailored certificated teaching to establish large, national, and 'blue-chip' companies. From an enviable position of pre-qualifying to bid against tenders for such work, the school and faculty now have to work hard to find out if such tenders are to be offered.

At the outset of the academic enterprise notion, was the realisation that repositioning Salford as a premier league enterprise university will require considerable investment. As mentioned by Powell et al (2000) 'It may be possible in theory to boost investment in situations where income is declining, but there are not many successful examples, at least in universities. So a primary requirement is income growth.' Over the last five years total income in the University has fluctuated, from £98.7 million in 1995/1996 to a less than impressive £108.5 million in 1999/2000. However, due to no small contribution from academic enterprise income, in 2001/2002 income rose to £115 million. This figure represents a 6% growth. Moreover, the institute turned around a deficit in 2000/2001 of half a million to make a surplus in the last academic year of three quarters of a million. How much of this improvement was directly related to academic enterprise? In the same year, academic enterprise provided £6 million income and £1.2 million surplus. It would therefore appear that enterprise activity was not only providing surplus but also helping to sustain teaching and research activity.

Finally, there are also cultural divides. Turpin and Hill (1995) suggest that academics straddle the divide between generation and transfer of new

knowledge through their research and teaching, and on the other hand being encouraged to secure and maintain market niches for selling that knowledge. The two sets of objectives contain different ways of measuring success, different reward criteria, and different modes of communication supported by different forms of legitimating authority. 'The demand that universities set themselves up to act in the market, required them to act in a contra-academic manner, by seeking pecuniary gains rather than seeking the truth disinterestedly, and taking as much time and care in doing so as is necessary.' (Kogan and Hanney, 2000). Some Schools continuously exceed the target of staff numbers involved in academic enterprise of 50%. However, it would be fair to state that not all academic staff feels comfortable working across the three elements of teaching, research and academic enterprise. Some staff wish to concentrate on the first one or two areas and others might not have sufficiently developed competencies that are conducive to enterprise success. To assist staffs that are willing to be involved in enterprise activities, a full programme of training has been developed. This ranges from starting your own company, through dealing with intellectual property rights, writing bids and holding negotiations with prospective clientele. However, if we accept that many academics did not choose an academic career to work 'commercially', maintaining the 50% target of staff involved in enterprise activities may prove stretching.

At an operational level, the above constraints join to make enterprise activity sometimes seem volatile and uncertain. Short-term probability of outcomes is problematic and medium- to long-term predictions almost impossible. Faculty management are then left with an unenviable dilemma. They can reserve resources for academic enterprise activity in the hope of conditions being favourable. Or they subdue entrepreneurial thinking and concentrate on less dynamic elements/products and services. In times when balanced budgets are pressured, it is not surprising that faculty and school management become even more risk averse.

6. POINTING THE WAY AHEAD

The University embarked seriously on the enterprise philosophy three years ago. It is worth recalling however, that the vision is and remains to be, a fifteen-year aspiration. Compared to established teaching and research

elements of University activity, enterprise is a promising fledgling that requires constant attention and support.

Clark's guidelines suggest that an evolving university will contain the following characteristics:

- A management group working to a common purpose and so providing a strong strategic direction to the institution.
- Mainstream academic faculties and schools that share an enterprising approach to their own activities.
- A growing multiplicity of innovative units engaged in business and community links. Over time, the more successful and permanent of these units may lead to the creation of new mainstream schools.
- A diversified and growing funding base.
- A culture that supports and is committed to making an enterprise university a reality.

Progress so far includes:

- Salford has ensured Pro-Vice Chancellor representation on the Institute's Executive Group and has established an Academic Enterprise Strategy Group that encompasses all key enterprise players cross University. Its overriding intent is 'to develop academic enterprise opportunities beyond means currently available.'
- Enterprise has become part of the language of University, faculty and School dialogue. It is very unusual for teaching and research to be mentioned without also mentioning and/or considering academic enterprise.
- A number of Centres of Excellence have been formed with more in the pipeline. They provide natural habitats for the integration of all three key elements of University activity.
- Funds are continuously sought to provide infrastructure and pump priming of enterprise activity that is seen as fundamental to School, faculty and University strategic plans. New funding providers and opportunities are now captured within a meaningful approach that combines central as well as Faculty structures.

Working towards establishing enterprise activities within the Faculty of Business and Informatics has not been an easy task. Operationally, the Faculty has had to alter, re-design and communicate new policies,

procedures and processes. Not all initiatives have been readily welcomed. However, some important interventions are worthy of mention. The faculty has had to develop a realistic accounting methodology in order to provide focus and an opportunity to work commercially from a 'real' financial base. Concentration on increasing academic staff involvement without due consideration for the impact on opportunity costs would not assist the development of an enterprising culture. Consequently, activity-based costing techniques have been employed in order to estimate the true value of enterprise activities against other options as to resource utilisation. Appropriate systems and processes were required to help ensure entrepreneurial activity was encouraged but also coordinated and controlled.

In the longer-term, any entrepreneurial University will not only need to integrate but innovate in terms of research, teaching and academic enterprise. This will entail process that enhances knowledge generation, improves learner capabilities, and as a commercial enterprise, obtains sound returns. It will need to undertake excellent research in diverse settings and develop applications and linkages for research. It will be required to establish improved national and international networks, and engage with the local and regional community and undertake collaborative research with industry and commerce. From a teaching perspective, enterprise activity must take account of labour market requirements; employer needs and develop practical experience components in courses to embed entrepreneurial skills. As for commercial activity, all elements of the institution need to set clear goals, establish diverse sources of income, and provide commercially viable and valuable products and services. All must be set within realistic plans for growth in total income and surplus. Paradoxically, these aims will have to be achieved without undermining long-standing academic values and collegial processes; continuing to value the pursuit of knowledge for its own sake, and not ignoring the importance of students learning 'skills for life', and establishing and maintaining trust within scholarly communities.

It is too early to state that the University has a stable enterprising culture. However, there are now sufficient processes, procedures and commitment at all levels to make the 'Enterprising University' a coherent reality. Whether it achieves its aspirations will initially be the product of a comparatively few very dedicated staff. Using the selected key words of James Powell (in italics), its long term future will rely on 'highly skilled

imaginations of staff, *reasoning* to monitor and evaluate and reduce enterprise risk, and the application of intellectual *daring* with the intention of creating actual *improvement*.'

The innovative if not creative ideas of last year will be copied and assimilated by institutions that might be more highly regarded by many organisations outside the University's immediate environment. Consequently, Salford will need to continually transform and constantly find new ways to differentiate. The prospect of consistent effort should slowly but positively influence the institution's league standing. As improved standing takes place, this should naturally make things easier for faculties to interact with organisations, to gain their confidence, establish trust and build long-standing relationships and partnerships. Clearly, innovative learning and teaching methods in addition to research that proves effective in terms of having an immediate impact on business and the community will prove crucial to success. Above all, continuous improvement will be the outcome from encouragement and development of willing enthusiastic staff committed to the University's vision and aims – 'to be enterprising in everything we do.'

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UP FRONT EQUITY vs. PARALLEL DRAWING: A CASE STUDY OF SIMHADRI THERMAL POWER PROJECT

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KAITHAPALLI**

ABSTRACT

This is a study made at NTPC – Simhadri Thermal Power Project in India. This being the public enterprise uses 70:30 Debt-Equity as per government guidelines. The project is financed through bilateral loan from JBIC (Japan Bank of International Co-operation), domestic borrowing and internal reserves of NTPC. As changes in D/E ratio results in variation of cost, this study takes into consideration the different situations under which the project cost is minimal using up front equity and parallel drawing. The findings include usage of debt in place of equity where although the project cost increases the nation gets benefits and uses upfront equity against parallel drawl as the capital cost is low in case of up front equity.

1. INTRODUCTION

An optimal capital structure is important to both researchers and managers but no single theory completely explains the variations in capital structure. In most capital structure models, an optimal debt level is determined by weighing various leverage related costs against leverage related benefits. A number of theories have been proposed for explaining variations across firms in corporate financing decisions.

In an article Modigliani and Miller (1958) explains that a firm's choice of capital structure is irrelevant to its value when capital markets are perfect with no effective taxes. They (1963) suggest that in an environment with a corporate income tax, firms should use 100 per cent debt financing in a

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perfect market. However, many corporations have only a moderate amount of debt, which leads to the consideration of bankruptcy and liquidation costs due to capital market imperfections. Accordingly, the observed capital structure can be explained with the use of trade-off theory. The prediction of trade-off theory is that firms with higher bankruptcy costs or lower tax advantages should use less debt.

Agency theory, on the other hand is based on the premise that managers' actions are unobservable and cannot be perfectly specified by contracts. Those unobserved actions affect optimality of the capital structure choice (Jensen and Meckling, 1976; Myers 1977; Ross 1977 and Jensen 1986). Theoretical studies based on international environmental factors predict that MNCs (Multinational Companies) will have lower debt ratios than DCs (Domestic Companies) (Sharpio, 1978).

2. THE STUDY

The present study intends to suggest the possible cost reduction approach using up-front and/or parallel equity drawings in a project involving huge investment. NTPC – Simhadri thermal power project is taken for this study, which involves huge investment and is presently in the construction stage. Though NTPC is a PE controlled by the policies of government from time to time, the study has not considered the policies.

In the development of national economy, the power sector has the major responsibility. Towards this direction, the government set up the National Thermal Power Corporation Limited (NTPC) in November 1975, with the objective of planning, promoting and organising integrated development of thermal power in the country. NTPC is the largest thermal power generating company in public sector, wholly owned by the government.

The Simhadri Thermal Power Project is located near Pittavanipalem village of the Visakhapatnam district in Andhra Pradesh State. This was with an understanding that the entire power generated from the proposed project to be supplied to the State of Andhra Pradesh. The Andhra Pradesh government has identified this project as a priority project and has been pressing for expeditious implementation of this project to contribute in mitigation of major power shortages in the State.

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The project is financed through bilateral loan from JBIC (Japan Bank for International Cooperation), domestic borrowings and internal resources of NTPC. JBIC has extended a direct loan of JY 19,817 million. An amount of JY 9,025.02 million (Rs. 355.89 crore) was utilized during the year 1999-2000. The cumulative utilization until March 2000 is JY 16,077.98 million (Rs. 608.37 crore).

The project cost estimate for Simhadri Stage-I (2x500 MW) is as follows:

(Rs. In crores)

Project Cost excluding IDC, WCM, & ERV	3691.43
Interest During Construction (IDC)	335.11
Working Capital Margin (WCM)	80.00
Exchange rate Liability on direct loan	51.46
Total project cost	4158.00

Source: www.ntpc.co.in

The total foreign exchange loan available for this Power project is as given below:

Name of the loan	Currency	Amount	Interest
JBIC Tranche-I	Japanese Yen	19,817 Min. Yen	2.3% p.a.
JBIC Tranche-II	Japanese Yen	12,194 Min. Yen	1.8% p.a.

Source: www.ntpc.co.in

The loans made available from JBIC and the internal resources of NTPC are being used for the project. The NTPC is presently using 70:30 of Debt – Equity as per the guidelines of the government. In actual practice, there are certain government guidelines, which define the boundary limit and the companies cannot go beyond that. This is for the safety of the creditors. However, a company like NTPC, which expresses its stability in form of its strong balance sheet, recommendations may be made for the use of higher debt component in project financing. The other constraint in deploying all money in the form of equity by the company in the initial stages (i.e. use of up-front equity) is that the company may not have surplus cash reserves.

Keeping this in view, the study takes into consideration the proposition of debt equity ratio. Change in D/E ratio, results in variation in the cost.

More debt leads to more IDC and higher cost of the project. In this context, it is pertinent to mention that for a company like NTPC, drawing of less equity could facilitate utilisation of the same in some other project. Further, this would also reduce the burden on the internal resources.

To evaluate and understand the different situations under which the project attains the minimal project cost, the concept of up-front drawing and parallel drawing are taken into consideration. The IDC, which is dependent on the loan structure, is exploited by taking different propositions of the D/E ratios.

2.1. Up-Front Equity

Up-front equity is utilisation of the equity portion of the total cost in the initial stages. After the equity portion is utilized, then the (loan taken) debt is undertaken. This reduces the IDC, as the period of loan undertaken would come down. Thus the cost of the project would subside.

2.2. Parallel drawing

The company at the time of construction of the project puts in equity and loan in the same proportion as the debt/equity ratio. Thus, the period of interest payable during construction starts from the first day of the work. The IDC is payable from the day on which the project begins and this leads to increase in the cost of the project.

If one does not follow the above pattern and goes for deploying of the equity that is installed at the beginning, and thereafter the debt, IDC would reduce. Until the date equity is put in use, the IDC is nil. The day debt is secured, the IDC starts occurring and because the construction period is constant, IDC is less. This in turn reduces the cost of the project to a good extent.

To understand the change in the debt/equity ratio, the study is made by taking the ratios as,

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	Debt		Equity
1.	50	:	50
2.	60	:	40
3.	70	:	30 (existing)
4.	80	:	20

**TABLE 1: VARIATION IN CAPITAL COST WITH DIFFERENT
SETS OF D/E RATIOS**

D/E Ratios	P.C. Up-Front	P.C. Parallel
50: 50	3,800.10	4,088.93
60: 40	3,840.37	4,161.25
70: 30	3,924.13	4,236.49
80: 20	4,047.87	4,314.77

The table above shows the variation in capital cost with different D/E ratios. At present NTPC is using 70:30 ratios with parallel drawing. This amounts to Rs. 4,236.49 crores. It can be observed that if 80: 20 D/E were considered with upfront equity, the total project cost would be only Rs. 4,047.87 crores. This reduces cost to the extent of Rs. 188.62 crores. This also allows the company with a reduction in equity base, can use the same for other project financing. Even if one considers the existing D/E ration using upfront equity Rs. 312.36, crores would reduce the project cost.

3. CONCLUSION

This study has a definite indication on how the loan should be managed. Efforts should be made to decrease IDC, to keep the cost low. The different cases undertaken show significantly that in all cases, when the loan is drawn from the first day itself, the IDC is high with the same D/E ratio. With the same D/E ratio if one utilizes upfront equity, the IDC for the initial years are nil and IDC decreases reducing cost of the project.

It can be seen from the calculations that broadly if the debt component is increased in the capital structure, the project cost increases. The interest during construction also increases. On the contrary, this study emphasizes that although the project cost increases, the nation gets benefit as the equity

put in by the company is less and it can put the remaining equity in another project. Another interesting factor is that the company is not burdened since it is putting less equity and is hence able to get a sanction of large amount of loan. If the company continues with its strong performance, the possibility of employing less amount of equity makes the Balance Sheet further strong. It certainly has to take into consideration that the creditors get their investment back on time to maintain its credit worthiness in the market.

Based on this, it is recommended that,

Use of large proportion of debt as compared to the use of equity.

Use of upfront equity as compared to parallel drawl of equity.

Keeping other variables constant, the recommendation of the study would aid in increasing installed capacity while decreasing the project cost and tariff substantially.

APPENDIX

Different sets of D/E ratios are taken for this study. For the sample calculation of IDC, a D/E of 70:30 is assumed, as it is the present method being followed. Both Debt and Equity are parallely drawn in the ratio of 70:30 each year and for all expenditures.

Fund requirement is for the first year in a phased manner:

Year 0 - 1	=	Rs. 94.11 Crores
IDC	=	Rs. 4.49 Crores
Total requirement	=	Rs. 98.60 Crores

1. Calculation of IDC

Out of this Rs. 98.60, 70% is debt. 70% of 98.60 are Rs. 69.02 Crores.

Since this loan is spread for the whole year, for interest calculations 50% of Rs. 69.02 Crores is taken.

50% of Rs. 69.02 is Rs. 34.51 Crores.

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Interest for the year @ 10% on Rs. 34.51 Crores is Rs. 3.45 Cr.
Financial charges @ 1.5% on Rs. 69.02 Crores are Rs. 1.04 Cr.
Therefore IDC is Rs. 3.45 + Rs. 1.04 = Rs. 4.49

Similarly out of the Rs. 98.60 Crores 30 % is equity is Rs. 29.58 Crores.

Likewise, as per the phased fund requirement, the requirement of debt and equity is calculated for the total year i.e., from year 0 to year 1. It may be noted that from the year 6-7, because of the unit being declared commercially operational, the proportionately interest is booked to Revenue Account, and hence the IDC is reduced. As the debt percentage changes, it changes the IDC component and hence result changes in the total cost.

TABLE 1: VARIATION IN IDC WITH DIFFERENT SETS OF D/E RATIOS

D/E Ratios	P.C. Up-Front	P.C. Parallel
50: 50	32.82	317.44
60: 40	72.50	388.69
70: 30	155.03	462.83
80: 20	276.97	539.97

Case I: Up-Front use of Equity Debt = 50% and Equity = 50%

As debt is utilised for the initial expenses for the first 6 years and no loan is taken, the IDC is nil. In 6-7 year, Rs. 32.82 crore is paid as IDC due to utilization of loan component.

Case II: Parallel use of Equity Debt = 50% and Equity = 50%

Both loan and equity are utilised from the first day of construction. IDC is paid from the 1st year itself resulting in payment of Rs. 317.44 crore as IDC. Certainly, this increases the cost as against the up-front equity.

TABLE 2: VARIATION IN CAPITAL COST WITH DIFFERENT SETS OF D/E RATIOS

D/E Ratios	P.C. Upfront	P.C. Parallel
50: 50	3800.10	4088.98
60: 40	3840.37	4161.25
70: 30	3924.13	4236.49
80: 20	4047.80	4314.77

Case I: Up-Front

In this case, for the first 5-6 years, only equity is used and with the full utilization of 50% equity, after this, the debt is secured and henceforth the total capital cost is Rs.3800.10 cr.

Case II: Parallel

Here, one uses proportionate amount of debt and equity as per capital structure throughout the years, which results in a total capital cost of Rs.4.88.93 Cr. This is comparatively higher than the same case but using upfront equity.

TABLE 3: FUNDING OPTIONS OF PROJECT COST: CASE 1 - DEBT 50% AND EQUITY 50%

Year	Drawal = Parallel		Drawal = Upfront	
	Debt	Equity	Debt	Equity
0-1	48.63	48.64	0	94.11
1-2	68.75	68.76	0	128.18
2-3	181.13	181.14	0	338.76
3-4	290.64	290.65	0	532.55
4-5	265.50	265.55	0	454.83
5-6	210.95	210.95	0	322.73
6-7	515.01	515.01	972.38	28.89
7-8	401.50	401.50	803.00	0
8-9	62.33	62.34	124.67	0
Total	2044.44	2044.54	1900.05	1900.05
		4088.98		3800.10

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**TABLE 4: FUNDING OPTIONS OF PROJECT COST: CASE 2 – DEBT
60% AND EQUITY 40%**

Year	Drawal = Parallel		Drawal = Upfront	
	Debt	Equity	Debt	Equity
0-1	58.76	39.7	0	94.11
1-2	83.70	55.8	0	128.18
2-3	220.40	146.94	0	338.76
3-4	355.15	236.77	0	532.55
4-5	328.80	219.20	13.14	442.55
5-6	266.85	177.90	346.57	0
6-7	626.48	417.66	1016.84	0
7-8	481.80	321.20	803.00	0
8-9	74.80	49.87	124.67	0
Total	2496.74	164.51	2304.22	1536.15
		4161.25		3840.37

**TABLE 5: FUNDING OPTIONS OF PROJECT COST: CASE 3 – DEBT
70% AND EQUITY 30%**

Year	Drawal = Parallel		Drawal = Upfront	
	Debt	Equity	Debt	Equity
0-1	69.02	29.58	0	94.11
1-2	99.07	42.46	0	128.18
2-3	260.76	111.76	0	338.76
3-4	422.01	180.86	0	532.55
4-5	395.95	169.70	388.29	83.64
5-6	328.12	140.62	396.99	0
6-7	741.24	317.67	1034.61	0
7-8	562.10	240.90	803.00	0
8-9	87.27	37.40	124.00	0
Total	2965.54	1270.95	2746.89	1177.24
		4236.49		3924.13

TABLE 6: FUNDING OPTIONS OF PROJECT COST: CASE 4 – DEBT
80% AND EQUITY 20%

Year	Drawal = Parallel		Drawal = Upfront	
	Debt	Equity	Debt	Equity
0-1	79.42	19.85	0	94.11
1-2	114.87	28.72	0	128.18
2-3	302.26	75.57	0	338.76
3-4	491.31	122.83	303.78	248.52
4-5	467.19	116.8	518.93	0
5-6	395.14	98.78	433.16	0
6-7	859.49	214.87	1054.76	0
7-8	642.40	160.6	803.00	0
8-9	99.74	24.93	124.60	0
Total	3451.82	862.95	3238.30	809.57
		4314.77		4047.80

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STRUCTURE, ORGANIZATION AND FUNCTION OF PROFESSIONAL SPORTS IN GREECE

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ABSTRACT

By the end of the 20th century, many changes occurred in sports all over the world, including Greece. More nations competing against each other on an international level, the competition program at world and European championships has expanded, the depth of performance has increased and there is a continuing commercialisation of sports. This research is based in review of literature and its purpose was to define the changes, which occurred in the structure, organization and function of sports in Greece, due to the professionalism in sports. The results showed that: a) the professional sports created certain obligations and responsibilities related to the team's structure and organization, b) in order for a professional team to be able to operate efficiently the three principal parts that constitute it - administrators, sport executives and coaches/athletes, should work on a professional basis, c) the professional sport teams should operate like an enterprise, d) the existence of competent sports executives is considered indispensable for the development of amateur and professional sports, and e) the departments of Physical Education and Sport Science apart from their task to qualify teachers and coaches should aim at the graduation of students who will have the appropriate knowledge to become sports executives/ managers.

Keywords: Professional sports, changes, structure, organization, and function.

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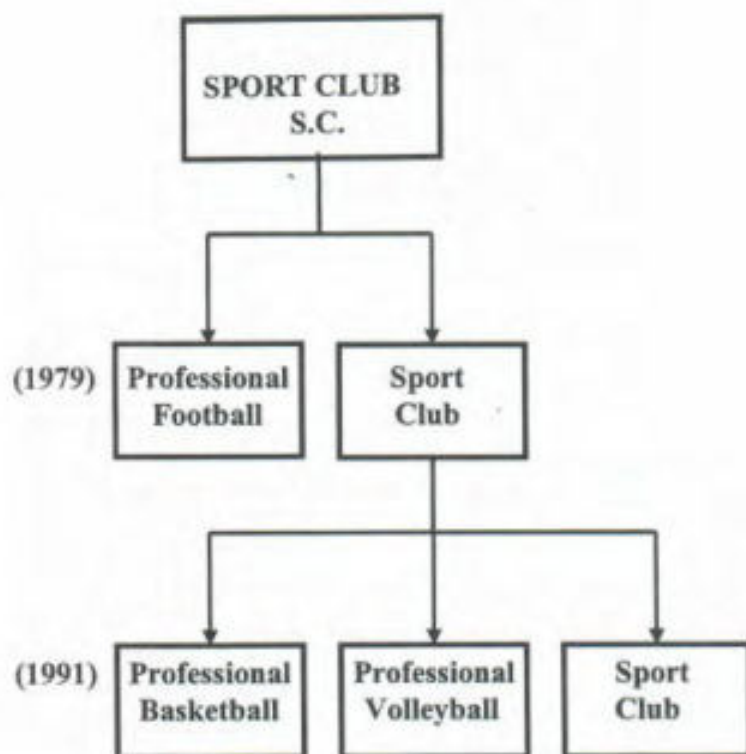
1. INTRODUCTION

Professional sport is the kind in which the principal persons involved (administrators, athletes, coaches, sport executives and personnel), work on a professional basis. From a very early time the U.S.A. and Europe instituted professional athletes in the sector of sports. In 1512 in England appeared the first salaried jockeys in races. In 1884, again in England, the first two professional football teams were established (Hajigeorgiou, 1985). The first professional baseball teams were established in U.S.A., in 1876. The first International Tennis Tournament was organised in 1889 and the first professional American football game was played in 1895. The first professional golf tournament was held in 1901 in U.S.A., while the first professional golf games were organized in England in 1914 (Britannica, 1985). In 1968, Wimbledon officially accepted professional tennis players (I.T.F., 1996), and in 1989, F.I.B.A. (Federation International of Basketball Associations), officially professionalized basketball (F.I.B.A., 1991).

2. PROFESSIONAL SPORTS IN GREECE

The tendency towards the professionalism in sports affected Greece as well, where before 1978, all sport activities, games and championships were operating on an amateur basis. Up to 1978 there was only the Sport Club (S.C.) in which all kind of amateur sports belonged. In 1979, the Greek Football Association decided to professionalize football. Twelve years later, in 1991, basketball and volleyball began professional sports as well. The evolution of professional sports is depicted in figure 1.

FIGURE 1: THE EVOLUTION OF PROFESSIONAL SPORTS IN GREECE

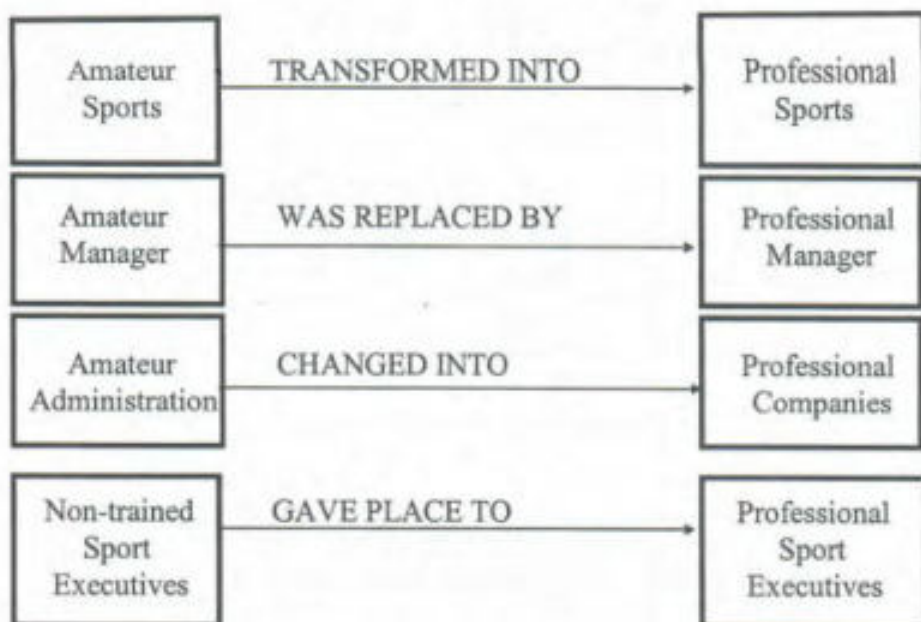


2. THE STRUCTURAL AND ORGANISATIONAL EVOLUTION OF SPORTS IN GREECE

Since 1991 there was a big evolution in Greek sports and two very popular sports, basketball and volleyball became professional. This evolution created certain obligations and responsibilities related to the team's structure and organization. Special changes were observed, the result of which was that amateur sports *transformed* into professional sports. Amateur manager-administrators were *replaced* by professional managers. Amateur board-administrations *changed* into professional companies. Non-trained sport executives *gave place* to professional sport

executives. The whole evolution of sports in Greece, as regards the structure and the organization of sport, is depicted in figure 2.

FIGURE 2: THE STRUCTURAL AND ORGANIZATIONAL EVOLUTION OF SPORTS IN GREECE



4. THE ADMINISTRATIVE AND ORGANIZATIONAL PROBLEMS DUE TO THE NEW SITUATION IN GREEK SPORTS

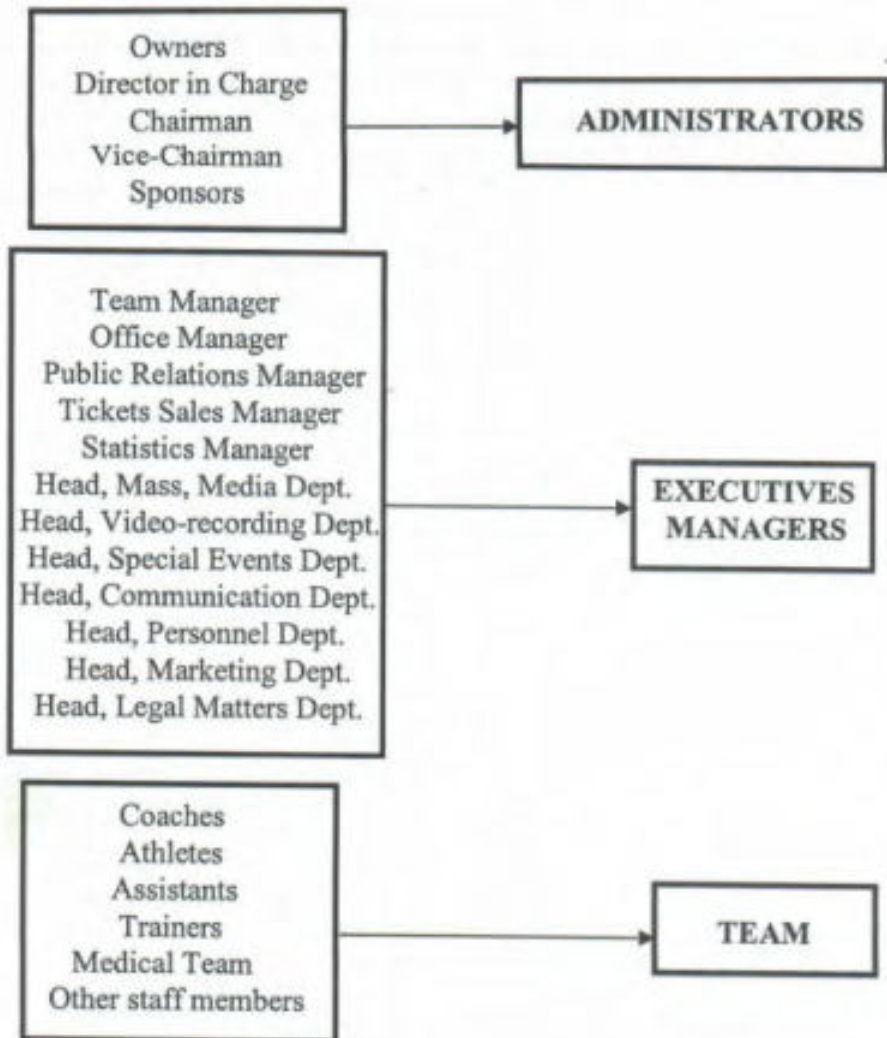
The coaches and athletes of the most popular sports in Greece are already considered professionals (Kousoulis & Malatos, 2000). However, the whole operation of professional sport in many cases is still administrated and managed by amateur administrators or amateur executives. The professional sports team should operate like an enterprise. The major difference lies in the fact that whilst the enterprise aims purely to profit (market-consumers), the professional team aspires primarily to distinction, and eventually to profit (Hamakos & Taxildaris, 1994).

The professional teams operate as companies and the modern needs are in search of experts in public relations, marketing, sport facilities,

personnel administration, legal affairs and operation of sports programs (Nikolaidis, 1991).

However, in order for a professional team to be able to operate efficiently the three principal parts that constitute it - administrators, executives and coaches/athletes, should work on a professional basis. At this point a major problem arises. The problem regards the professional status of the coaches / athletes and the amateur status of the administrators-executives. All three parts that are involved in a professional organization should have the same status, in order to operate effectively and productively. Figure 3 depicts the organizational structure of a professional team and the stakeholders that should operate on a professional basis.

FIGURE 3: ORGANIZATIONAL STRUCTURE OF PROFESSIONAL TEAM



Source: (Detroit Pistons, N.B.A 1996)

5. CONCLUSION AND DISCUSSION

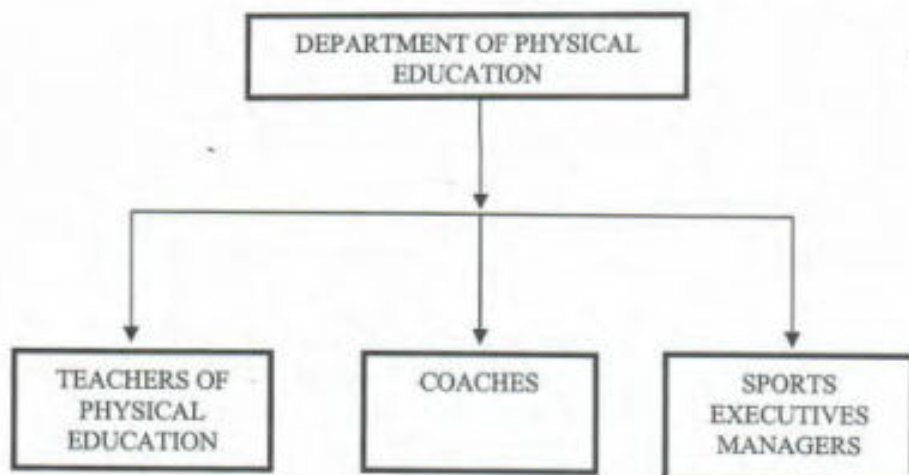
In Greece, the development and promotion of sports have been entrusted by the State to 29 Sport Federations (Kousoulis & Malatos, 2000). Many of the individuals, who are employed in the administrative affairs of the teams, federal or sports associations, work more or less empirically, without having a university degree in sport management (Gargalianos, 1996). Several reasons force the departments of physical education to review their curriculum, in order to satisfy the needs and demands of sports in Greece, especially when Athens will be the Host city of the 2004 summer Olympic Games. Among the reasons are:

- Changes in the structure and organization of sport clubs.
- Necessity of Sport Executives / Managers with proper managerial knowledge in order to replace the amateur administrators.
- Necessity of Sport Executives / Managers in order to staff the 29 Sport Federations of Greece.
- Graduate students with knowledge of sport management in order to help with the organization and function of the 2004 Olympic Games.

On the other hand, the departments of Physical Education & Sport Science are not offering the appropriate number of sport management courses in order to graduate capable persons who will staff either a local sport union, or a sport federation or a sport team as sports executives or managers. Greece is not inferior either in athletes or in coaches or distinctions, but lacks competent sports executives, the existence of which is considered indispensable for the development of sports (amateur and professional).

The departments of Physical Education & Sport Science could develop sport management as an academic discipline and play an important role in satisfying meaningful jobs. Along with the two already existing orientations (teaching & coaching), they should offer sport management as well. The proposed orientations of the Departments of Physical Education & Sport Science are depicted in figure 4.

FIGURE 4: THE PROPOSED ORIENTATION OF THE DEPARTMENTS OF PHYSICAL EDUCATION AND SPORT SCIENCE IN GREECE



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THE ESSENTIAL PRINCIPLES FOR ACHIEVING COMPETITIVE ADVANTAGE IN THE AIRLINE INDUSTRY

PANTELIS IOANNOU*

ABSTRACT

The forthcoming air transport liberalization and the Cyprus accession as a full member state of the European Union (E.U); preannounce the change of the airline transport industry of the 21st century. This article emphasizes the need of reforming airlines' contemporary strategic thinking, structure and processes. This paper also suggests several alternative strategies that airline companies should apply in order to survive and be competitive in the coming fierce airline arena.

1. INTRODUCTION

A new business era is emerging in the airline industry resulting of the increasing competition, rapid evolution of technology, environmental uncertainties, air transport liberalization and globalization. That's why all airlines are urged to redesign their strategies by establishing co-operations, strategic alliances, reform their functions and processes so as to provide superior customer value. The forthcoming air challenges will affect the world air industry either negatively or positively because the whole air market structure will change. Thus, there is a need of undertaking a strategic marketing audit by all airlines to identify new market segments, needs and expectations of travelers. Those challenges necessitate transforming conventional airlines to compete in the forthcoming dynamic business arena.

Furthermore, despite the above-mentioned environmental uncertainties, some global events affect the airline industry tremendously, causing many economic consequences.

- The 11th of September

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- The war in Iraq
- The SARS virus (Severe Acute Respiratory Syndrome)

Those consequences heat almost all organizations around the world. However they heat especially the airline industry, manufacturers, airline companies and all the related businesses. Thus, Cypriot airlines should be proactive and be well prepared to confront those challenges, to take advantage of the opportunities and be able to face the threats by designing and implementing an effective and efficient strategic marketing plan.

2. PROPOSED STRATEGIC ACTIONS

As a starting point, all airlines must begin with a thorough analysis of all the company's functions and processes. In order to achieve this, airlines should conduct a strategic marketing audit.

A. External Audit (Main Opportunities & Threats)

1. Marketing Environment Audit - Macro environment.

- Political/Legal/Fiscal - war, legislation.
- Economic - Inflation, Investment, taxes.
- Social - cultural, demographic, lifestyles.
- Technology - New technology, methods, processes.
- Ecological - Pollution, noise, green legislation.

2. Micro (task) environment: Market, Competition, Distributors, suppliers, advertising agencies.

2.1. Market Overview

- Market Segmentation.
- Customers' analysis, segmentation current and future profile.
- Porter's five competitive forces (evaluation of: key competitors, suppliers, customers, new entrants and substitute products/services).

B. Internal Audit (Main Strengths & Weaknesses)

1. Marketing Strategy Audit

1.1. The Company

- Company's background/history.
- Any subsidiaries.
- Company's mission – marketing myopia, product oriented or market oriented?

1.2. Corporate and Marketing Objectives

- Company's objectives & strategies: Ansoff's and Porter's Strategies.
- Main issues (SWOT) facing the company.

1.3. Marketing Strategy

- To what extent do they reach their goals? (Abell 3x3 strategic directional matrix).
- Are there any planning & control procedures?
- Is the communication strategy internally & externally effective? (Three-fold marketing philosophy).
- Target Markets (segmentation, targeting and positioning strategies).

2. The Marketing Organization Audit

- Company's structure: Centralized, decentralized, flat or pyramid.
- Company's philosophy – product or market oriented (customer oriented).
- Lines of communication.
- Internal relationships.
- Employees training, compensation, evaluation and control.

3. Marketing Information Systems

- Is there enough information to existing & potential markets/ segments/ geographical markets?
- Is there an efficient MIS? (Internal records, CIS, MR, MDDS).
- Any planning & control systems?
- Any system for New Product Development (NPD) to get new ideas, modifications?

4. Marketing Productivity Audit

- How profitable the company is?

- Financial analysis.
- Company's income/sales/expenditure/costs.
- Increasing and decreasing level of sales/profits/market share etc.
- Which segments or business are profitable and which are not?

5. Marketing-Mix Analysis

5.1. Product and Services

- Product portfolio/routes/destinations.
- Product/service characteristics.
- Use of portfolio matrices i.e. BCG, PLC.

5.2. Price

- Company's pricing strategy (Active or passive).
- Evaluation of strategy whether skimming, penetration, break even, economies of scale.
- Pricing tactics.

5.3. Value Chain (Distribution)

- Market coverage level.
- Distribution structure, direct, wholesalers, middlemen.
- Travel agencies, GDS, CRS.
- Channels Configuration.
- Intensity.

5.4. Promotion

- Advertising.
- Personal selling.
- Sales promotion.
- PR.
- Direct Marketing.

5.5. People

- Sales force procedures.
- Internal marketing.
- Motivation schemes.
- Training.

- Communication/co-operation.
- Inter-functional efficiency.

3. SEGMENTING THE AIR TRAVEL MARKET

Market segmentation is the process of identifying and sub-dividing the market into homogeneous sub-segments with similar response characteristics and behavior. Thus, market segmentation prepares the ground for the market targeting and positioning strategy.

Airline companies should apply following segmentation matrices so as to draw the right strategic decisions on their segmentation principles.

- Key country matrix
- Brand positioning

Due to the intense competition in the market the organizations are trying to design effective marketing strategies to satisfy their customers' needs. Firms to be market-driven should understand how buyers' needs and wants change and satisfy them by offering superior value. One of the most essential marketing tools for identifying the different needs and wants of the market is the market segmentation.

The Segmentation, Targeting and Positioning (STP) Process:

1.	Situation analysis	• Identify the organization's position, capabilities, objectives and constraints (Weaknesses)
2.	Market Segmentation	<ul style="list-style-type: none">• Identify the segmentation variables and segment the markets• Develop profiles of each segment
3.	Market Targeting	<ul style="list-style-type: none">• Evaluate the potential and attractiveness of each segment• Select the target segment
4.	The Product Positioning	• Identify the positioning concept within each target segment

		•	Select and develop the appropriate positioning concepts
5.	Marketing Mix	•	Develop the marketing mix strategy

In the past all organizations were applying mass marketing producing and distributing a product without taking into consideration the customers needs. However, nowadays this philosophy is not effective. Nowadays customers demand to have certain benefits by buying a product and service. Customers are demanding, they look for quality, price, punctuality, availability, service, warranty etc. The most important factor that makes an airline successful is to be marketing-orientated. Airlines should invest in identifying their customers profile, needs, requirements and expectations.

4. CHOOSE THE RIGHT STRATEGIC DIRECTION

After a careful marketing evaluation of the strategic marketing audit and company's capabilities and resources, management must draw a specific strategic direction or choose one or a combination of the following strategic alternatives.

4.1. Porter's Three Generic Strategies

- **Cost Leadership** – The firm concentrates on achieving economies of scale e.g. producing large production means lower cost and setting lower prices.
- **Differentiation** – To give emphasis on a particular element of the marketing mix that it's seen by customers as important i.e. quality, service.
- **Focus/Niche** – The organization concentrates its effort upon one or small market segment. It can build specialization and create barriers to entry.

Strategies for Market Leader:

- Expansion of the overall market – identify new uses of products, target non-users.
- Keep the existing market share – Heavy advertising, relationships, and distribution.

- Expansion of the current market-share – Heavy advertising, NPD, Geographic expansion.

Strategies for market Challengers:

- Price discounting.
- Product innovation.
- Differentiation.
- Market Development.

Strategies for Followers:

- Follow the leader closely, at a distance or selectively.

Strategies for Nichers:

- Focus your strengths on specific profitable segment or segments.
- Specializing: Geographically, By product, On quality, On service, Type of customer.

Most of the airline companies failed to pursue one of the above strategic options as a result to be forced to get stuck in the "Middle of the road" position where there is no define market and objectives are confused. Small and medium size airlines should follow a differentiation strategy to give more emphasis on a particular element of marketing mix that is seen by customers to be important. It's most appropriate to use this aggressive strategy to become leaders.

As it concerns the strategic issue based on Porter's competitive industry model, airlines have to identify the following: (Porter's Five Competitive Forces).

- a) What is the threat of entry into a new market and where does it arise?
- b) Are there any other substitute services and what is their impact on the organization and industry?
- c) Who are the buyers and what is the extent of their power with regard to the organization?
- d) Who are our suppliers and what is their power with regard to the organization?
- e) Who are our present and potential competitors and how intense is present and potential competitive rivalry?

4.2. Ansoff's Growth Product/Market Strategic Matrix

- **Market Penetration:** Marketing existing products/services to existing markets.
- **Market Development:** Marketing existing products/services to new Markets.
- **Product Development:** Marketing new products/services to existing Markets.
- **Diversification:** Marketing new products/services into new markets.

However, in order to set the right strategic direction; airlines must also investigate and evaluate the importance of the following portfolio matrices:

- Abell 3x3 direction strategy
- Product Life Cycle Analysis (PLC)
- Boston Consulting Group Growth-share Matrix (BCG)

By applying the above-mentioned matrices and analyses, airlines will be in a position to identify the position/stage of each product/service/routing and market segment. They should analyze their position in terms of ROI whether they are cash cows, rising stars, problem child or dogs. So as to set the appropriate strategy for each product/routing/market whether to invest funds into a particular market or stop servicing certain unprofitable routings. Airlines must set their strategic objectives and marketing strategies with a short/medium and long-term perspective.

5. FOCUSING ON THE BUSINESS TRAVEL MARKET

It is not easy to identify and meet all travelers' needs and wants. That is why airlines are segmenting the air market into smaller segments such as the business travel segment, the leisure travel segment and the cargo segment. Nonetheless, after segmenting the air transport market into small segments it is easier for an airline to set its objectives. To choose on what segment to focus and prepare the appropriate promotional plans to satisfy it's specialized needs and wants. Airlines must identify and evaluate the potential of each market segment that they want to serve. They must decide on which travel segment they want to invest more.

- The business-travel market.
- The leisure-travel market.
- The air freight market.

Thus, airlines must identify who actually is the customer so as to focus on the company's resources and promotional activities. Furthermore, they should upgrade their booking and CRS procedures and policies so as to provide more facilities and flexibility to business travelers. Based on the in-flight survey by satisfying the business traveler requirements will gain a competitive edge against their rivals. In the future, an airline in order to differentiate should offer the business travelers more leg-space, comfortable seats, hot towels, special meals, special services by the cabin crew, easy access to the Internet, WAP, last time bookings, and secure their transport to/from the airport.

Business travel segment in Cyprus is mostly male passengers, 30 - 54 years old. They are businessmen, managers and corporate business travelers. The 58% of them are traveling on club class. Cypriot airlines should keep track of its upgrading measures by receiving information, customers' expectations and even complaints from the passengers so as to set its future marketing strategies and allocate the appropriate funds for each travel segment. The passengers who traveled for business (which is the business travel market) mostly travel on club class and they are yield passengers.

- The 41% of the total passengers traveled for business reasons.
- The 59% traveled for other reasons.

The 41% of the total traffic shows that the business segment is a very respectable and substantial yield segment.

The four essential needs of the business traveler are:

- a. High frequency of conveniently timed flights for point-to-point and the connecting passenger.
- b. Frequent flyer programs are becoming a significant factor in airline choice.
- c. Safety and punctuality are also very important elements for a Business traveler.

- d. Furthermore, flexibility is required by the short-haul business-traveler. Flexibility to make cancellations and re-bookings easily without penalty.

6. COMMUNICATION PLAN

In order to achieve the predetermined objectives and strategies; airlines must design, develop and implement an efficient and effective communication plan to communicate those strategies to customers and the air transport market as a whole so as retain, inform current customers and attract new business.

- Advertising
- Personal Selling
- Sales Promotion
- Direct Marketing
- Public Relations

The four key issues in the promotional planning are the following:

- a. Who is the person to whom the information must be addressed to?
- b. What is the nature of information sought by the customer e.g. benefits compared to competition?
- c. When is the customer seeking for information in the market?
- d. Which promotional channels are likely to be used to acquire the required information?

Communication is the process of applying all the elements of the marketing mix, to make known the company's objectives, strategies and products to the external and internal environment of the organization and all others who influence purchasing decisions.

Some Communication Objectives:

	To....	
Education and Information	Create awareness	These objectives contribute Towards a total marketing Program, the objective of which is to achieve profitable sales
Branding and Image building	Inform/Get inquiries	
Affecting attitudes	Get company name in file	
Loyalty and reminding	Create company image	
	Inaccessible to salesmen	
	Ease the selling task	
	Alter perceptions	
	Influence end-users	
	Reduce selling costs	
	Achieve sales	
	Establish connections and direct contact	

1. Advertising activities

Advertising is any paid form of non-personal presentation and promotion of ideas, goods or services by an identified sponsor.

<ul style="list-style-type: none">• Print & broadcast ads• Packaging-outer• Packaging inserts• Motion pictures• Brochures and booklets• Posters and leaflets• Directories	<ul style="list-style-type: none">• Reprints of ads• Billboards• Display sign• Point-of purchase displays• Audio-visual material• Symbols and logos• Video tapes
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2. Personal selling activities

It's a face-to-face interaction with one or more prospective purchasers for the purpose of increasing sales.

<ul style="list-style-type: none">• Aircraft Demonstrations• Sales presentations	<ul style="list-style-type: none">• Samples• Fairs and trade shows
---------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------

<ul style="list-style-type: none">• Sales meetings	<ul style="list-style-type: none">• Incentive programs
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3. Sales Promotion activities

S.P is a short-term incentive to encourage a trial or a purchase of a product or a service and create an incentive for purchase.

<ul style="list-style-type: none">• Frequent flyer program• Contest, games, lotteries• Premiums and gifts• Sampling• Fairs and trade shows• Exhibits• Entertainment	<ul style="list-style-type: none">• Low-interest financing• Trade-in allowances• Trading stamps• Rebates• Demonstrations• Continuity programs
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4. Direct marketing activities

D.M is a non-personal contact tool to communicate with a specific customer.

<ul style="list-style-type: none">• Catalogues• Mailings• Telemarketing• Radio, magazines, newspapers• Internet, Electronic shopping	<ul style="list-style-type: none">• Company's web page• Fax mail• E-mail• Voice mail• TV shopping• Kiosk shopping
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5. Publicity - Public Relations (PR) activities

P.R is a variety of programs designed to promote and protect a company's image and products.

<ul style="list-style-type: none">• Press kits• Speeches• Annual reports• Charitable donations• Sponsorships	<ul style="list-style-type: none">• Publications• Community relations• Lobbying• Identity media• Company magazine• Seminars
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7. RELATIONSHIP MARKETING MANAGEMENT (RMM)

Nowadays, due to the forthcoming air-travel business transformation, airlines must design, develop and implement new marketing concepts to gain competitive advantage. Relationship marketing is to build and manage relationships with key customers or with other companies in related industry. Relationship marketing plays an essential role in achieving company's objectives. Strategic relationships can be made among suppliers, producers, distribution channel organizations and customers. Nowadays more and more companies apply relationship marketing to share costs, technology and marketing so as to survive and compete in the intense competitive environment. The air transport business competition is intensifying and travelers become more and more demanding, thus airlines should also establish a marketing relationship management program.

- **Customer Relationship Management (CRM)**
- **Organization Relationship Management (ORM)**

Relationship marketing consists of six markets where the management should be capable to manage and manipulate.

1. **Customers markets** - Should undertake promotion to external markets to retain existing customers and gain new ones.
2. **Referral markets** - Should get others to do the marketing for us such as intermediaries, travel agencies, and tour operators. Use of interactive marketing.
3. **Supplier's markets** - Establish co-operation with suppliers, CRS, GDS.
4. **Employee's markets** - The Company should attract quality staff.

5. Internal markets - Keep our employees happy to improve quality and customer service. Use of internal marketing, staff should be committed to achieve company's objectives.

6. Influence markets-relationships with influence markets such as financial institutions and government.

The relationship objectives may be:

- To gain access to markets.
- Enhance value offerings.
- Reduce the risks by the rapid environmental changes.
- Share skills and financial risks.
- Utilization of distribution channels.
- Sharing technology development costs.

Types of Organizational Relationships:

1. Vertical Relationships - they are the relationships between suppliers, manufacturers, distributors and consumers.

- a) Customer-Supplier Relationships
- b) Distribution Channel Relationships
- c) End-User Customer Relationships

2. Horizontal or Lateral Relationships are between organizations, competitors, non-profit organizations and the government.

- a) Strategic Alliances
- b) Joint-Ventures

3. Internal Relationships are between the firm and business units, employees and functional departments. The objective is to encourage and facilitate Cross-functional cooperation rather than specialization, so as to achieve NPD.

However, there is organizational resistance to change to every new idea, new processes or innovations. Thus, an organizational culture change program is indispensable to be able to adapt and adjust company's strategies to the future competitive and highly innovative airline transport environment. Consequently, in this liberalized and deregulated environment, airlines should be cost effective in order to succeed. If a company has high

costs and no flexibility it will be very difficult to survive in the future competitive environment of the air transport. Also, in a deregulated market it should be flexible and adaptable to the rapidly changing market environment and more demanding travelers.

8. DISCUSSION AND SUGGESTIONS

Due to the forthcoming intense competition, rapidly evolving technology and globalization there is a need for cutting costs. Airlines should establish a Yield Management Control Unit. Yield Management's contribution will be significant to the firm's profitability. It is the process used to match demand (potential passengers) and supply (seats) to earn the maximum revenue on each and every flight. With Yield management airlines will identify the no-show passengers, the seat spoilage, why flights that had been fully booked depart with empty seats. By protecting enough seats for the late yield passengers and allocating the remaining seats to lower fares and balance yield and load factor. Furthermore the computer support and yield management techniques, yield controllers will be able to control over-bookings and future flights must be booked with precise number of seats allocated to each fare/class. Nonetheless a successful management unit will provide some benefits to the business travelers such as; more seats available for last minute bookings, greater frequency to more destinations and more markets and destinations. However the benefits of the leisure passenger will be the declining average fares, and more seats available at discount fares.

Airlines should try to monitor the capacity and optimize seat allocation. They must set up a successful yield management unit to optimize distribution of flight seats, statistics and increase its revenue. For this cause the manipulation of an airline's reservations control system (CRS) will enable an airline company to maximize passenger revenue and curtailing of costs. Indeed the business travel segment is yield traffic and must be prepared to take advantage of this profitable challenge. The business travel segment in Cyprus is about 41%, which is a substantial share. However due to the air travel liberalization airlines should reanalyze, identify the special requirements, of the business traveler, corporate or individual business men and try to satisfy their special needs and wants by providing superior value.

Nonetheless, airline companies should also apply the three-fold marketing philosophy; Organizations should apply the Three-Fold Marketing Philosophy in order to be able to convey effectively their objectives and strategies to internal and external customers.

The Three-Fold Marketing Philosophy:

- Internal Marketing
- External Marketing
- Interactive Marketing

1. External Marketing:

Marketing company's products to external customers by applying the marketing mix components.

(Product/Price/Place/Promotion/People/Process/Physical Evidence)

2. Internal Marketing:

Internal marketing is concerned with the management of human resources. It's the marketing applied within the company towards company's staff to be customer-oriented. Internal marketing is to create a service and customer orientation organization. It is about company's internal customers, the employees to train and motivate and supporting personnel to work as a team and a cross-functional structure to provide superior value and customer satisfaction. Internal marketing focuses on increasing the good relations between the company and its people. It can be achieved through education, training, seminars, more incentives, creating better working climate and culture of the organization.

3. Interactive Marketing

Interactive marketing describes the employees' skills in handling customer contact. In the marketing of services, the service quality is enmeshed with the service deliverer and is especially true for professional services. The client judges service quality not only by its technical quality but also by its functional. (e.g. not only whether the surgery was successful but also how much attention did the surgeon pay to the patient.)

Airlines should also apply people empowerment so as to create a learning organization. Airlines by providing training and motivation to their employees, they will be more capable and gain more skills and knowledge. Employees should be able to handle customers and work as a team and providing customer satisfaction. The continuous training on customer handling on the ground e.g. booking offices, reservation, ticketing, customer complains, airport counters and on board with in-flight service. In addition, airlines have to identify customer needs and wants at each stage of service of his/her contact with the airline.

Therefore customer service is one of the most important factors in the aviation industry. Consequently based on the stages of service. An essential element of service is heterogeneity where the product cannot be separated from the service. All services on board and on the ground are interrelated to each other, the one complements the other. Thus airport services and handling should be excellent and go along with the airlines services. Companies could identify their passengers and choose what segment and how to serve it. Airlines must take into consideration the following issues in upgrading their service.

- a. At the point-of-sale which is the initial stage. In this stage airlines should correct the processing of reservation and ticketing procedures, consider their special requirements.
- b. At the airport which is the second level should consider the parking-place, check-in, baggage handling., passenger information and direction and boarding facilities.
- c. In-flight service is the third stage where an airline must provide comfortable seats, good catering, entertainment and nice cabin attitude.
- d. Post-flight service is the final level of service where airlines have to be very careful on miss-handled baggage, refunds, handle any complaints and provide coach.

Furthermore, airlines have to apply the generic value chain analysis. Airline companies should analyze their operations and procedures so as to identify and explore profitable opportunities to build a competitive advantage. They have to examine their reservations procedures, customer handling, airport facilities, crew appearance, in-flight service etc., so as to identify any weaknesses. They should make corrections and improvements and find innovative ways to differentiate and gain competitive edge through

combine use of all its activities, such as marketing, technology, functions, procedures, human resources and management.

Based on a research, the 63% of the business travelers in Cyprus were corporate business travelers and they traveled on club class. Another important information was that, the trips were financially arranged by their companies. It is very important to know the reasons why passengers are choosing a specific airline. According to the survey the main reasons for businessmen in choosing an airline were:

- The schedule
- Offering frequent flights
- Consistent timings
- Connections

Marketing research should be carried out on a continuous basis because customer needs and requirements change continuously. Airlines should be upgrading their product and services and be up-to-date with what is happening in the market and future travel trends and technologies. Because of these new developments some airlines will focus their strength on a specific travel segment. Having identified the needs and expectations of the business travel segment the companies should penetrate more and increase their market share in this particular market. An organization in this new global market environment and the great impact of leading-edge technologies should possess five important ingredients to succeed:

- Synergies
- Strategic alliances
- Joint ventures
- New product development (NPD)
- E-business oriented

Furthermore successful airlines should go along with the innovation and technology in order to manage environmental changes and be competitive in the air industry. That's why an airline in order to survive in the forthcoming liberalization and environmental uncertainties should set a strong IT department to provide training and assistance throughout the organization, advising the management on the information and communication

technologies (ITC). IT infrastructure enables airlines to have direct contact with customers globally. Being able to perform many of their current business activities through the Internet so as to provide superior benefits to customers.

All airlines should consider the globalization concept as a great opportunity and be proactive by entering into new alliances with other airlines to strengthen their position altering their conventional strategies so as to gain further market access and strengthen their global position. The world air transport industry is experiencing a lot of changes; they set up consortiums or partnerships and co-operations such as KLM and Northwest, British Airways and USAir are few examples of global competitive strategies. More and more airlines are entering into marketing alliances so as to be more competitive, cut costs and have a wider schedule. Many carriers discontinue unprofitable routes like American Airlines and Japan Airlines and they establish agreement with other carriers so as to carry their traffic via these points. In addition, take into consideration the joint ventures between American Airlines, Canadian Airlines, Air Lingus, Cathay Pacific and Qantas Airlines creating the "One World Co." Also, Star and Wings Global Alliances.

Due to the increasing trend of low-fare charter airline companies such as Easy Jet or Go. The schedule carriers are urge to alter their traditional business philosophy. They should redesign their strategies, their organizational structures and their strategic thinking in general. They should be flexible, cost-effective and fast in decision-making. They should decide whether to serve all segments equally or invest more on a specific potential profitable travel segment.

Airlines should give more emphasis on the business travel market. Airlines must identify and evaluate the potential of each market segment that they want to serve. Furthermore, they should upgrade their booking and CRS procedures and policies so as to provide more facilities and flexibility to business travelers. Based on the in-flight survey by satisfying the business traveler requirements will gain a competitive edge against their rivals. In the future an airline in order to differentiate should offer to the business travelers more leg-space, comfortable seats, hot towels, special meals, special service by the cabin crew, easy access to the Internet, WAP, last time bookings, and secure their transport to/from the airport.

Yet, despite the world travel developments of IATA official predictions are very encouraging. The international air traffic will double by the year 2010. Besides the air transport developments there are many opportunities to be explored. They will identify their weaknesses so as to undertake the appropriate measures to strengthen them. The world economical growth will be especially to the Pacific (Asia). The business travel market will increase rapidly, as international business become more competitive and the world will become a global market. Nowadays, Multi-national companies establish collaborations or set-up business all over the world. Thus, the air-travel will be of high demand and intense competition.

Nevertheless other important factors for the short-haul connecting business traveler are; baggage handling so as traveler's baggage to reach the final destination. Besides the above should provide non-stop service, in-flight entertainment for long-haul flights and effective marketing will provide flight frequency, standardized departure/arrival timings and a morning arrival so as to attend a meeting and provision of phone/WAP/fax/laptop. Business travel market is of major importance in airline marketing.

Airlines must enter quickly into this new and promising air travel market, based on their product/market matrix analysis. They should be withdrawn from not profitable routes, provide more capacity to a route when there is increasing demand, offer lower fares (promotional fares), reduce costs, establish marketing alliances, develop a large network of services and be flexible to switch from one route to another. They should not depend on a particular market. Cypriot Airlines must get into negotiations with the government and all parties involved in finding a strategic direction so as airlines to be competitive in the global air transport market, such as:

- If CTO and government want to continue the operation of not profitable routes they must subsidize the airline companies involved.
- More benefits to business class travelers.
- Special phone services, special ticket counter treatment, faster check in and priority in aircraft baggage loading and unloading.
- Stop wasteful meetings.
- Revise collective agreement for cockpit crew and cabin attendance.

- Extensive exploitation of the Internet opportunities and e-commerce processes.

During 2000 the number of scheduled international passengers exceeded 2 billion. By the year 2010 it will be around 4 billion. However this growth will be uneven. In Asia the growth will be higher because of the economic development of China, Japan, Singapore, India and other countries in the South East Asia. However, some airlines are testing a new project of Airport Automation where they will have more security, cut costs, improve their efficiency, reduce congestion and will have higher bag handling reliability offering superior customer value. However, by focusing on the business travel market segment doesn't mean that the company will ignore the importance or underestimate the leisure or the freight market segments.

In addition carriers should try to find new innovative ideas to meet customers needs and adapt to the changing environment so as to be in a position to take full advantage of the future challenges. Airlines should introduce some drastic changes in the management system towards decentralization, establish more alliances and find new innovative ways to attract customers. All airlines should consider the globalization concept as a great opportunity and be proactive by entering into new alliances with other airlines to strengthen their position altering their conventional strategies so as to gain further market access and strengthen their global position. Application of integrated marketing to convince and manage all functions to work together, people empowerment, by providing specialize training, educating staff on airline matters, participating in the decision making. Teamwork and synergistic work encourage productivity and efficiency to achieve organization's objectives.

9. CONCLUSION

The government protectionism will be withdrawn (as per E.U legislation) and the government's stake in Cyprus Airways will be minimized under 50% of shares. As a result, all airlines will be able to complete on equal rules. Cypriot airlines must stand on their own capabilities, resources and set up an efficient and effective proactive strategic planning to survive and compete in this intense air transport

market. Hence, airlines have to undertake a strategic gap analysis to identify if the planned objectives have been attained. If not, they have to take corrective action to improve and close the strategic gaps. They should revise their marketing strategies very often considering that, the air industry is very complex and unstable environment. Marketing strategies should be revised either due to oil crisis, political crisis, emerging technologies, customers' expectations, strikes (PESTE factors) and so forth.

Finally, Cypriot airlines should aim to become the leading airlines in the East Mediterranean area and Middle East. Now Cyprus being a member of the EU, which opens new opportunities for co-operation and strategic alliances with other airlines. They must continuously provide superior customer service, further upgrade of their service and apply a hub and spoke network connecting the three continents; Europe, Africa and Asia. However, in order to realize these aggressive strategies there are some infrastructure constraints. Cypriot airlines should engage a discussion with the government for fast improvement of Larnaca's airport infrastructure and implementation of the airport renovation, transit facilities, faster baggage handling, CAA enhanced service and further expansion.

For the time being, the " Hub-and-Spoke " concept cannot be applied to Larnaca airport. But in the near future it will be feasible as a result of the doubling of air traffic, airport expansion, modernization, automation and privatization. Then the Hub-and-spoke would be very profitable - because of the geographical position of Cyprus linking three Continents; Europe, Africa and Asia - both for Cypriot airlines and Cyprus government in general. Nevertheless, the future trend indicates that business travel market will grow substantially the international air traffic in Europe is predicted to double over the next 15 years. Therefore Cypriot airlines and the government must undertake several projects, set the appropriate aggressive strategies to gain the most of these future travel challenges. They should commence by the airport's expansion, avoid airport congestion, the effectiveness of alternative communication methods, Tele-conference, easy access to the Internet so as Larnaca and Paphos airports to become sophisticated and automated European airports connecting the three continents.

Countries one by one would tear up restrictive airline agreements (Schengen Agreement), regulations and barriers so as to allow more

freedom and development of global airline competition. In a dynamic intensive world like the air transport industry, there is no room for complacency. Consequently, the key success factors for airlines is the ongoing improvement of their schedules, wider network/connections and upgrading of all their services, cost effectiveness, improve business travel services, learning organization, airline staff empowerment and application of leading edge technologies. All airline companies will be operating in a new competitive and aggressive environment that necessitates the airline business transformation, so as to be competitive and succeed in this new air travel marketplace. The airline companies that succeed in the 21st century will be those capable of adapting to constant change and adjusting their strategic thinking to new air transport challenges.

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EXPLORING SHOPPERS' IMPRESSION ON STORE IMAGE: AN EMPIRICAL RESEARCH IN GREECE

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ABSTRACT

Store image has gained wide acceptance from more retailers as an important tool in the development of an effective retail strategy due to stiff competition in the sector. This study discusses the findings of an exploratory research in metropolitan Thessaloniki in a sample of 535 respondents to identify attributes critical to store image impression. Thirteen store attributes were factor analysed to determine distinct constructs regarding store image. Conclusions from the analysis, marketing implications as well as limitations of the study are discussed.

1. INTRODUCTION

Store image is an important marketing tool for retailers because a better image means greater customer flows, fewer walkouts and thus more customer spending each time they visit (Davies and Brooks, 1989). On the other hand, store image is crucial because consumers' decisions on where to shop depend on their perceptions of the available shopping alternatives (Oppewal and Timmermans, 1997). The importance of store image is quite high in the choice of the store because the shopper seeks the store image which is most congruent with the image he/she has of himself/herself, with his/her vision of the world and lifestyle (Martineau, 1958). Thus, store image becomes a key factor determining a retailer's strategy.

Store image is generally described as a complex combination of tangible and intangible attributes of store image (Lindquist, 1974-1975; Doyle and Fenwick, 1974; Oxenfeldt, 1974-1975; Marks, 1976; Zimmer and Golden, 1988; Keaveney and Hunt, 1992). Several scholars (Hirschman, 1981;

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Mazursky and Jakoby, 1986; Burt and Encinas 2000) point out the interplay of these elements and the customers' overall interpretation of them, based on previous knowledge and experience, are widely accepted to determine store image.

In general, store attributes are important to consumers when they make the decision, "where to shop". Consumers form impressions about stores and these impressions have a significant impact on store patronage. In general, consumers patronise stores with image that is congruent with their self-perceptions and unconscious needs. Thus, store image and general attitudes toward the store can influence shopping behaviour (Darley and Su-Lim, 1999). Consumers prefer certain attributes to be present in the stores they choose to shop in (Erdem *et al.*, 1999). The preferences for certain store attributes are explained by differences in consumer values. Store attributes are presented by retailers according to their specific functional strategies. Store attributes must be offered as desired by the targeted consumers. The challenge to retailers is to determine which store attributes are relatively more important to the targeted consumer. Providing appropriated store attributes is not enough to satisfy consumers and guarantee store loyalty. Maintaining the quality of their attributes is the hardest and most critical task to survival in the competitive nature of retailing (Ko and Kincade, 1997).

The creation of a suitable store image for the potential target markets (customers) is a complex task involving the use of an increasing number of store characteristics and attributes (i.e., size). Thus, the offered store image must be consistent with the needs and motives of the target segments to avoid creating confused images in the minds of consumers. Additionally, Davies (1992) by presenting empirical findings between 1983 and 1990 on multiple food retailers, showed that the determinant store attributes tend to change over time in parallelism with the changing nature of shoppers' needs, wants and motives and hence repeated studies are necessary.

In recent years dramatic progress has been seen in supermarket sector (food retailing) as a response to the structural changes in the Greek market due to intense competition from the invasion of foreign retailers and the establishment of new retail formats (i.e., hard discount stores). On the other hand, the existence of district food markets "laikes" historically plays a key role in food retail trade in the Greek society. The appearance of foreign

supermarket chains in Greece brought many changes upon the Greek retailing sector. The competition has become harsher. In order to attract more shoppers and be more profitable, retailers must find new strategies to satisfy their existing customers as well as the potential ones. One of these strategies is to improve the image of their stores (Priporas, 2002).

The purpose of this study is to empirically investigate and conceptualise the relationship between a store's image and a consumer's buying behaviour in Greek food retailing and particularly in the city of Thessaloniki. This research will focus on the role of store image in food retailing with regard to consumers' impression.

The paper is structured as follows. Following the introduction, where a brief synopsis on store image is provided, the next section explains the research methodology. Section three contains the research findings, and the paper concludes with a brief discussion of the major findings as well as the implications and limitations of this study.

2. METHODOLOGY AND RESEARCH DESIGN

A two-step research method has been utilised in this study. In the first step, a qualitative research was employed through three focus groups and twenty-one participants in total. In the second step the questionnaire of quantitative research was tested for content validity and face validity. In addition, a pilot study is conducted through personal interviews. Finally, the empirical research was completed by using the modified questionnaire in the final sample of this study. Table 1 describes the research methodology.

2.1. Structure of the Questionnaire

A structured questionnaire consisting of three parts was employed for this study. The first part of nine questions included general introductory questions to filter the interviewees by asking them about their shopping behaviour (i.e., from which supermarket they buy their food, shopping frequencies, use of shopping list, etc) in order to reduce the respondents' uncertainty and increase their confidence.

The second part of six questions was designed to measure directly and subjectively the consumers' impressions with regard to the store attributes. For the purpose of measuring store image a five point Likert scale was used in this study. The five point scale used as a scoring method a 1, 2, 3, 4, 5, rating from "very unfavourable" to "very favourable" statements for each of the store image related attributes. The 13 proposed attributes and dimensions of a retail store (supermarket) were based on findings and suggestions generated from qualitative research, expert opinions and literature review. Table 2 presents these attributes.

It is noteworthy that, McGoldrick (1990) points out that several studies have attempted the classification and identification of store image variables, ranging from individual attributes, aggregation of similar attributes into components and the most general of all, constructs. Although there exist a quantity of store attributes the relevant sub-set for any particular application would be subject to an understanding of the retail sector under investigation and its macro and micro business environment including the country's geographical position (location), local conditions and consumer profiles (McGoldrick, 1990). In addition, cultural reasons and traditional shopping patterns should be included (Priporas, 2002).

The main purpose of the last part of the questionnaire containing seven questions is to get demographic profiles of the respondents. Usually, these questions are asked at the end of the questionnaire since these types of questions are perceived as personal and even threatening by at least some respondents (Dillon *et al*, 1993). The respondents also become "committed" to it (Johns and Lee-Ross, 1998).

2.2. The Sample

In the present study, the judgmental area sampling technique was employed to select areas within the city in which interviews were to be made. Within each area, households were chosen on a convenience basis subject to controls for geographic dispersion. Potential households were identified in this way and screened for interview qualification. Similar technique was applied by Westbrook (1981).

The sample size for the intent and purposes of this study was 535 (n=535), which was significant enough to help the investigator to describe

the store image in the metropolitan Thessaloniki. The sample was composed of adult individuals (18 years old and over): 1) who actually live in the great area of Thessaloniki, and 2) who participate in the shopping procedure.

2.3. Data Collection

The method of personal in-home interview was employed to collect the data needed for this research. The method of personal interviews was applied since it has more advantages compared to other methods because of its versatile, relative speed and economy. Peterson and Wilson (1992) contended that higher levels of satisfaction are reported when telephone or personal interviews are conducted than when self-administered questionnaires are used. Personal surveys are regarded as the most flexible technique of collecting survey data (Malhotra, 1996). Face to face interviews are considered superior to impersonal survey methods in terms of accuracy and completeness of the information they generate and the ability to detect problems by observations (Miller, 1995; Churchill, 1995).

The main study (field research) was conducted during the period December 1999-March 2000 in metropolitan Thessaloniki. For the interviews a survey questionnaire of 22 questions was employed and it required 20-25 minutes to be completed as estimated in the pilot test. SPSS statistical software was used to analyse the findings.

3. DATA AND RESULTS

3.1. Sample Profile

The sample comprised of individuals of varied demographic backgrounds. Out of the 535 respondents participating in the study, 63.2% were females with the majority of the respondents (45.2%) were in the 26-45 years age categories. Half of the respondents were married and 26.2% held a University degree or a master's degree. Also, the majority (29.6%) of the working respondents were salaried employees, while more than one third (39.6%) were dependent (i.e., students, housewives, retired, etc). Lastly, 38.4% of the respondents had family monthly net income between 883-1467 Euro.

3.2. Factor Analysis

Factor analysis was conducted in order to identify the underlying components of impression scale and their extent of influence on store image. For the needs of this research, the Principal Component Analysis (PCA) method with varimax rotation has been adopted to summarise most of the original information to a minimum number of factors for predictive purposes (Hair *et al*, 1995).

In addition, KMO (Kaiser-Meyer-Olkin) measure of sampling adequacy, BTS (Bartlett Test of Sphericity) measure the partial correlation coefficient and Significance (p) are reported. It must be underlined that although Likert scales are expressed as variables measured on an ordinal level, it is a tradition in marketing research and behavioural sciences studies to assume that these levels possess underlying metric properties (Priporas *et al*, 2000).

A strict choice of items (variables with loadings equal to or greater than 0.70 in a given factor to decrease the probability of misclassification) was chosen to determine which items are those that mainly contribute to the development of factors. These factors explain the underlying components of shoppers' impressions of the supermarkets at which they usually shop. Factor analysis with varimax rotation for the impression components defined three factors with 7 variables by the original 13 variables. These factors interpret 54.21% of total variance, of what shoppers' impressions were when shopping at stores (Table 3).

A reliability analysis (Cronbach's alpha) was performed to test the reliability and internal consistency of each of 13 attributes. The scale was found to be internally reliable ($\alpha = .80$). This alpha exceeded the minimum standard of .60 suggested by Malhotra, (1996); Spector, (1992). BTS with a value of 2042.75, $p=0.000$ and a calculated KMO statistics of .83 (which could be described as "very good") indicated that data seemed suitable for factor analysis. Malhotra (1996); Hair *et al*, (1995); Coakes and Steed, (1999) recommend that KMO with the least value of 0.50 or 0.60 is required for factor analysis to be performed. The communality of each variable was relatively high ranging from .537 to .811, indicating quite strong correlations between the indicators and the associated factors.

Each factor named based on the common characteristics of the variables it included. The first factor, easy to shop, décor and variety of merchandise, interprets 33.67% of total variance and referred to three variables: *easy to shop*, *décor*, and *variety of merchandise*. Factor 2, store personnel, interprets 12.5% of total variance and encompassed three variables: *personnel behaviour*, *helpfulness of staff*, and *appearance of staff*. Factor 3, convenience of location, interprets 8.03% of the total variance and consisted of a single variable (convenience of location).

3.3. Validation

Validation of any factor analysis model is essential, particularly when attempting to define underlying constructs. For this reason, the sample was split twice into two equal random samples of 267 respondents and the factor models were re-estimated to test for comparability. In each case the interpretation of the relationships among the variables did not change significantly.

4. SUMMARY AND IMPLICATIONS

The objective of this paper was to investigate the relationship between store image and consumer shopping behaviour. The research focused on the role of store image in supermarket sector with regard to consumers' impression.

The major determinants of store image were the store attributes or factors: easy to shop, décor, variety of merchandise, store personnel and convenience of location. The findings revealed that these store attributes are quite similar to factors in past studies and the store attributes included in these factors have been used and recognised as important elements of store image (Martineau, 1958; Lindquist, 1974-1975; Pessemier, 1980; Malhotra, 1983; Jacoby and Mazursky, 1986; Baker et al. 1994; Joyce and Lambert, 1996; Samli et al, 1998).

Overall, the study findings suggest that shoppers (consumers) might judge the store's image on a set of attributes, some of which are more tangible than others and some of which are relatively more important in determining store image.

4.1. Limitations of the Study and Implications for Future Research

The results should be interpreted with several unavoidable limitations in mind.

First, although the sample of respondents used in this study was adequate for the purposes of this study, it cannot be considered representative of the general population. This limits the generalisation of the results. The analysis of the scale items needs to be examined using a nation based representative sample in terms of geography and demographics. Although the findings of this study may not be generalised without further empirical testing, this study adds to the overall knowledge about store image and it does provide a foundation for further studies of store image.

Another limitation is that there may be other factors influencing the development of store image. This study was limited to the variables, which are mentioned as the most important factors in the focus groups study in Thessaloniki, and also consistently and repeatedly mentioned and partially supported by empirical results in the literature. They are also recognised, as key items affecting store image. Future research should consider other variables, including the explanatory power of the findings.

Finally, this study was exploratory in nature and future research should be carried out to confirm the findings of the current study. The relationships between store image formation and their determinants can be extended to other areas to further assess the external validity of the model.

4.2. Recommendations

In today's intense competitive environment in retailing a pointed marketing approach is undoubtedly required to assess consumer perception of store image and to formulate effective marketing strategies. Researching consumers' perceptions can assist retailers in identifying strengths and weaknesses of their stores and in an improved focus on their marketing strategies to attract potential customers. This study provides retailers with important variables that should be taken into consideration in store image development efforts. Retailers should understand that in order to influence affective evaluation of their stores, both store attributes and shoppers' motivations should be taken into account.

More analytical, retailers should regularly survey the regular customers or members regarding the image of the store as well as monitor the effectiveness of service systems to ensure that the store or the retail group stays on par and competitive. This is crucial since neighbourhoods change in terms of population synthesis. Also, they have to devote resources of the store among the store's attributes and enhancement of the reputation of the store. In essence, each store must position itself strategically in order to gain a competitive advantage over the other supermarkets.

TABLE 1: RESEARCH METHODOLOGY AND DESIGN

Qualitative Research		
	Method	Sample
	Focus groups	<i>Convenience sample, 21 respondents</i>
Quantitative Research		
Questionnaire Development	Content Validity (Kinnear et al., 1996; Chisnall, 1997; Kamenidou, 1999)	5 Retailing Experts
	Face Validity (Pretest) (Berdie et al., 1986; Aaker et al., 1995)	<i>Face to Face Interviews, 10 Respondents</i>
	Pilot Test (Mertens, 1998; Johns and Ross, 1998)	<i>Convenience sample, 150 respondents</i>
Field Research	Face to Face Interview (Malhotra, 1996; Peterson and Wilson, 1992; Churchill, 1995).	<i>Judgmental Sample 535 respondents (Malhotra, 1996)</i>
Data Analysis	PCA Factor Analysis, Item Analysis	

TABLE 2: STORE ATTRIBUTES

Attributes	Indicative Studies
Easy to shop	Mavromatis & Burt, 2001; Samli et al, 1998; Experts
Décor	Samli et al, 1998; Experts
Store Layout	Martineau, 1958; Experts
Merchandise Quality	Oppewal & Timmermans, 1997; Mazursky & Jacoby, 1986; Bearden, 1977; Lindquist, 1974
Merchandise Variety	Mazursky & Jacoby, 1986; Malhotra, 1983; Pessemier, 1980; Lindquist, 1974, Qualitative Research
Comparative Prices	Mavromatis & Burt, 2001; Oppewal & Timmermans, 1997; Ghosh, 1994; Mazursky & Jacoby, 1986; Bearden, 1977
Personnel Behaviour Helpfulness of Staff Staff Appearance	Samli et al, 1998; Joyce & Lambert, 1996; Baker et al, 1994; Marks, 1976; Kunkel & Berry, 1967; Martineau, 1958; Qualitative Research
Convenience of Location	Pessemier, 1980; Bearden, 1977; Lindquist, 1974 Qualitative Research; Experts
Presentation of Information	Qualitative Research, Experts
Services Offered	Oppewal & Timmermans, 1997; Mazursky & Jacoby, 1986
Speed of Service at Checkout	Qualitative Research, Experts

TABLE 3: ROTATED COMPONENT MATRIX OF IMPRESSION SCALE

Attributes	Loadings	Communalities	
FACTOR 1			a = .7136
<i>Easy to shop</i>	.731	.542	Variance = 33.677
<i>Décor</i>	.755	.621	
Store Layout	.674	.560	Eigenvalue = 4.378
Merchandise Quality	.452	.315	
<i>Merchandise Variety</i>	.730	.537	
Comparative Prices	.448	.417	
Presentation of Information	.399	.321	
FACTOR 2			a = .8003
<i>Personnel Behaviour</i>	.820	.688	Variance = 12.507
<i>Helpfulness of Staff</i>	.842	.743	
<i>Staff Appearance</i>	.700	.579	Eigenvalue = 1.626
Services Offered	.498	.456	
Speed of Service at Checkout	.644	.459	
FACTOR 3			Variance = 8.034
<i>Convenience of Location</i>	.894	.811	Eigenvalue = 1.044

KMO=0.831, BTS=2042.755, p=0.00

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SERVICE QUALITY IN PUBLIC RELATIONS CONSULTANCIES: A LACK OF CUSTOMER FOCUS?

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ABSTRACT

Consumer service providers have been aware, for some time, of the value of quality assessment as a tool to develop a business as well as to establish or sustain a competitive advantage. As a result they have adapted models from manufacturing to measure service quality (SQ). In the context of professional services, and in particular in business-to-business situations, much less work has been done. This paper uses the context of Public Relations consultancies to examine the importance given to SQ by professional service providers, their understanding of the concept and of the measurement tools, and their practices in this domain. Results of a survey of the Top 150 UK Public Relations consultancies reveal that, although the majority agrees that SQ is essential to success, there are wide variations in the understanding of the concept as well as in measurement practices. The research also reveals the lack of customer focus of Public Relations consultancies in their approach to SQ measurement, and how little use is made of whatever SQ measurement findings are collected in order to identify and pursue business development opportunities, or improve competitive position.

Keywords: Service quality measurement, SERVQUAL, relational quality, professional services, competitive position, customer focus.

1. INTRODUCTION

1.1. Background to the research

Growing rapidly, service industries have had to tackle the issue of quality and, in particular, the issue of quality measurement. However, service providers have had to adapt the quality management models and

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techniques developed in the manufacturing sector. Commercial consumer service organisations were at the vanguard of these developments. In professional services, however, developmental work, whether theoretical or empirical in nature, has been much less forthcoming (Lapierre, 1993). In this sector, the Public Relations Consultancy (PRC) industry has experienced a remarkable boom over the last 10 years or so. As a result, the industry as a whole has recognised the need to professionalize in a demonstrable manner. The establishment of standards of quality has played, and continues to play, a vital role in enabling the PRC industry to fight back labels like "spin doctoring" and "media hype", which have dogged its attempt to achieve recognition as a serious professional service. The purpose of the study was therefore to investigate the importance of service quality (SQ) as perceived by Public Relations (PR) consultants in the UK, exploring in particular the measurement of SQ as well as the utilisation of SQ assessment findings.

1.2. Qualitative research methodology

Semi-structured interviews were carried out with senior PRC staff to explore their understanding of SQ in their context, in other words what they saw as the key elements of a quality service in PRCs. The interviews also enabled the assessment of the importance given to quality in general and quality assessment in particular.

Opinions were also sought from a number of PR academics who had all, at some stage in their career, worked in the industry and in most cases still had strong links with the profession. The key question was: "For a PR consultancy what elements do you consider as most critical in ensuring the delivery of a good quality service?" The responses were used to establish a list of 12 statements, defining activities, which translate into service quality for a PRC. These were used to construct part of the questionnaire.

1.3. Quantitative research methodology

A postal survey was conducted of the Top 150 UK PR consultancies, as listed in a PR Week report (April 1999), which identified the companies as the most successful nationally. It was, therefore, a fair assumption to make that if these consultancies were successful enough to figure amongst the Top150, they paid sufficient attention to their management techniques in

general and to the management of their service quality in particular, to provide useful data for the study. Fifty responses were received (a 30% return rate). The questionnaire consisted of 3 parts. Part one, aims to test the consultants' views on SQ in the profession in general. Part Two aimed to investigate the practices of each consultancy with regards to measuring SQ and client satisfaction. Part Three was designed to collect background information in order to build up a profile of the responding population. The responses were processed using SPSS software.

1.4. Definitions of quality

Since the beginning of the decade, SQ has emerged as the next big differentiator in the market place (Navran, 1990). In service organisations for which differentiation and the ability to develop and sustain a competitive edge are notoriously difficult, quality is the best weapon to fight competitors (Kasper et. al, 1999).

Yet, what is quality? Pirsig (1987, p186) states that "although we cannot define quality, we know what quality is". The sheer number of definitions tends to indicate that quality is indeed an ambiguous term. Over the past decades, quality gurus from both manufacturing and service sectors have attempted to coin a number of phrases to pinpoint what quality is. For example fitness for use (Juran, 1974), conformance to requirements (Crosby, 1983), zero defections (Reichheld and Sasser, 1990) or exceeding customers' expectations (Zeithaml, Parasuraman and Berry, 1991).

2. FIVE APPROACHES TO QUALITY

Quality is ambiguous as it can be viewed from different viewpoints. Garvin (1988) formulated 5 approaches to the study of quality. Although developed for tangible products, the framework can be translated into an intangible service context. In brief, the five approaches are: transcendent (quality means innate excellence, which cannot be analysed precisely but can be recognised only through experience); product-based (levels of quality are defined by the quantity of features or attributes of a product); user-based (quality is determined by what the customer wants); manufacturing based

(quality is about conformance to requirements) and value-based (cost and price come into the quality equation). It is important to reflect on which one of these approaches is better suited to define SQ.

2.1. User-based approach to quality

According to Gronroos (1990), the quality of a service is often a "perceived quality" because of the intangible nature of the service itself. The perception depends as much on the customer's expectations as on what is actually delivered. The concept of expectation is therefore central to the definition of SQ. Intangibility also causes a higher perception of risk by the consumer, price being a strong influence. The user-based approach agrees with all the basic principles of marketing and with the perspectives of relationship marketing (Gummesson, 1991). Kasper et. al. (1999 p 188), define SQ as "the extent to which the service, the service process and the service organisation can satisfy the expectations of the user".

2.2. What is Service Quality (SQ)?

Having defined the term quality in the context of service industries, it is important to examine what is SQ. According to Kasper et al (1999), Japanese service-quality theory and practice can be summarised as total quality control (TQC). TQC is not very different to the concept of Total Quality Management (TQM) in so far as its main tenet is that all in the organisation are responsible for quality. In a service context, even the customer is involved in the production process, (or the Servuction system, Langeard, E., Bateson, J. E. G., Lovelock, C., and Eiglier, P., 1981), it can be said that the customer also contributes to quality. Kasper et al (ibid.) further argue that the customer should perceive the total offered service as high quality. They refer here to both the core service and the augmented services. Customer research - the most basic purpose of which is to map out customers' needs - has in fact developed into a tool to measure customers' satisfaction. It is interesting to note at this point that practitioners (as opposed to theorists) have without scruples equated customer satisfaction with service quality. Before going further into this debate, indicators of quality, obtained via consumer research, measure for example levels of loyalty, of repeat purchase, of the success of cross-selling, of complaints and compliments. Tools of measurement include Quality Awards,

benchmarking, quality improvement experiments, critical incident technique, conjoint measurement as well as mystery shoppers, complaint analysis and comments analysis.

2.3. Customer Satisfaction vs. Service Quality

The gap between perceived service and expectation has given rise not only to the construct of SQ but also to that of Customer Satisfaction (Caruana, 1997). The distinction between the two is often made along the following lines: satisfaction is transaction specific whereas quality is an overall evaluation of long-term attitudes to the service (Oliver, 1981; Parasuraman et al, 1988; Bolton and Drew, 1991; Boulding et al, 1993; Cronin and Taylor, 1994). Differences of opinion between some of these authors have arisen regarding whether satisfaction leads to quality or whether quality results in satisfaction. However, most accept that SQ is mostly an antecedent of customer satisfaction (CS). Others agree that the 2 concepts are similar but still different (Bloemer, De Ruyter and Venetis, 1995). Both represent an overall evaluation of a service provider and its offering (Kasper et al, 1999). It is therefore important to examine more closely what makes up the concept of customer satisfaction. Kasper et al (ibid.) point out that, in the literature on quality and satisfaction, expectations and perceptions play a decisive role. We need therefore to examine these two concepts.

2.4. Expectations and Perceptions in the CS equation

Expectations belong to the domain of consumer behaviour but little is known about what determines expectations and how they are formed. On a basic level, we can agree that expectations are formed from internal sources such as past experiences for example as well as external sources, which can include advertising and word-of-mouth. As expressions of consumer behaviour, expectations are determined not only by the nature of individuals but by reference groups and external situations. In a service encounter the concept of expectation goes further. It refers to the idea that consumers must know what is expected of them as a performance within the service process. Langeard, Bateson, Eiglier and Lovelock (1981), constructed the Servuction model to represent the impact of the different elements of the service

environment on consumers. Perceptions are, literally, observations. Schiffman and Kanuk (1987, p 174) define perceptions as "the process by which an individual selects, organises and interprets stimuli into a meaningful and coherent picture of the world." Perceptions therefore are by nature subjective and selective. They are concerned not only with the service itself but also with the service delivery process. It is also important to note that perceptions may change over time. "Perceptions also partly determine the reputation and image of the service provider. This is important ... since reputation is a key success factor in services and an issue consumers often use in their decision making process" (Kasper et al, 1999, p 200). The literature does seem to point to an irresistible equation for the study of SQ: Consumer Satisfaction (CS) = Service Expectations (SE) - Service Perceptions (SP). In other words, if the customer's perceptions match (at least) his expectations, it is likely that he will be a satisfied customer. This goes some way towards explaining why service providers of all kinds spend significant resources in researching customer satisfaction.

3. EVALUATION OF SERVICE QUALITY

Three aspects provide valuable insights into the evaluation of the quality of service-delivery processes (Kasper et al, 1999): the 5 dimensions of SQ, the 3 types of SQ and the 3 types of service attributes which consumers refer to when evaluating services.

Dimensions: The evaluation of the overall performance of a service is not sufficient for managerial purposes. A service needs to be described by a number of characteristics, which can be assessed separately, and improved if need be. In terms of conceptualising this managerial recognition, the work of Parasuraman, Zeithaml and Berry (PZB) from 1985 onwards has been determinant. In their original study, PZB depicted SQ by 10 quality dimensions, namely: Tangibles, Reliability, Responsiveness, Competence, Courtesy, Credibility, Security, Access, Communication and Understanding the customer. Later PZB reduced the 10 dimensions to only 5: Tangibles, Reliability, Responsiveness, Assurance and Empathy.

Types: It is also important to recognise 3 broad categories of quality (Garvin, 1988): (1) technical (or objective) quality, concerning the quality of

the outcome of service delivery, i.e. what is offered and received; (2) functional (or subjective) quality relating to the service delivery process, i.e. how it is offered and received and also possibly to relational elements, i.e. by whom the service is delivered; (3) image (or corporate or also local) quality which influences whether a customer is attracted to the service in the first place and also whether the customer continues with his relationship with the provider. Garvin is not the only author to have discussed these 3 types of quality. Lehtinen and Lehtinen, (1982 and 1991) constructed their own model of service quality on these 3 dimensions. Gronroos (1990) also emphasised the corporate quality aspect as well as technical and functional quality (1984 and 1988). Parasuraman et al recognised competence and reliability (1985) and assurance and reliability (1986, 1988, 1991, 1993 and 1994) as technical quality. They also recognised responsiveness, courtesy, accessibility, and empathy as functional quality.

Attributes: Services also have attributes which impact customers' evaluations of services prior to, during and after consumption. As such these attributes belong firmly to the conceptual domain of buyer behaviour, the concept of perceived risk having been first suggested by Bauer in the 1960s. Nonetheless, buyer behaviour is central to customer satisfaction and consequently to service quality because (a) the customer is involved in the Service system and thus contributes to the quality level of the service and (b) expectations and perceptions, as expressions of buyer behaviour, are central to the concept of customer satisfaction.

Parasuraman et al (1985) suggest the following 3 types of attributes: (1) search attributes i.e. characteristics which customers can evaluate before purchase. The nature of a service will affect to what extent pre-purchase evaluation can occur. (2) Experience attributes i.e. characteristics, which can only be evaluated during and/or after consumption of the service. (3) Credence attributes i.e. characteristics which customers cannot (or can with difficulty) assess before, during or even after the delivery of the service. A period of time usually needs to elapse before some sort of judgement can be made. Credence therefore assumes that some faith (or trust) has to be placed in the ability of the service provider. This situation often applies to professional services such as health care, financial or legal services.

Before moving on to examine how SQ and SQ measurement in general translate to the Professional Services context and to Business-to-Business interactions, it is important to examine briefly the SERVQUAL model, developed by Parasuraman et al (1988). Although just one of several models put forward by researchers for the measurement of SQ, it has been, nonetheless, for many years, the main focus of attention of academics concerned with the study of SQ measurement. It has also been the main tool of measurement for many practitioners. It is important to remember that SERVQUAL was devised for consumer services and as such may not translate easily to professional services or to business-to-business situations. Buttle (in Gabbott and Hogg, 1997, p248) reminds us that "the SERVQUAL instrument is founded on the view that the customer's assessment of SQ is paramount". This assessment is represented by the gap between the customer's expectations of what the performance for a particular class of service should be and his evaluation of the performance of a particular service provider.

SERVQUAL is an instrument originally constructed around 10 quality dimensions, as described earlier, later collapsed into 5 dimensions for greater simplicity (tangibles, reliability, responsiveness, assurance, empathy). The authors argue that the advantages of SERVQUAL are that it provides a rigorous statistical framework for the measurement of quality and that it is adaptable to different contexts. However SERVQUAL has attracted a number of criticisms of a theoretical as well as operational nature. Buttle (in Gabbott and Hogg, 1997, pp 249-250) draws a useful summary of the main arguments against SERVQUAL. The main protagonists in this debate are Cronin and Taylor (1992, 1994), Iacobucci et al (1994), Anderson (1992), Babakus and Boller (1992), Teas (1993, 1994). In addition Gronroos (1993) and Carman (1990) have also made comments on the operational aspects of SERVQUAL.

It is also important to differentiate the Scandinavian school of thought represented by Gronroos and Gummesson, from the American school of thought represented by PZB. Gronroos (1984, 1988) identifies 2 main components of SQ: technical and functional quality. In addition, he also recognises the power of corporate image and reputation as a moderator or amplifier of SQ perceptions. This is very much in line with what we saw earlier as forming 3 types of quality. Lapierre and Filiatrault provide a very

useful comparison of the PZB and the Gronroos approach in *The Foundations of Research on the Quality of Professional Services to Organisations*, in *Managing Service Quality*, volume II edited by Paul Kunst and Jos Lemmink, 1996, p 102.

4. SQ MEASUREMENT IN PROFESSIONAL SERVICES

Lapierre and Filiatrault (ibid.) explain that the need to better understand SQ is also recognised as essential for professional service firms: "As competition and customer sensitivity intensify, professional service providers are becoming increasingly concerned with the quality of their offering" (Hall and Elliott, 1993, p27) but that the theoretical and empirical literature dealing with professional services is far less developed than that of more traditional services. Having compared the two main research frameworks and attempted to bridge the gap between them, Lapierre and Filiatrault conclude that two determinants are worth particular attention in the professional context: competence and reliability. In professional services, they argue, the non-interactive elements of SQ must be considered separately from the interactive elements. Results of a study on consulting engineers (Lapierre, 1993) indicate that professionals use a technical language when talking about SQ. Referring back to the Gronroos model, non-interactive quality is Technical Quality, for which there is only one dimension (1988): professionalism and skills. In the PZB model (1985) this corresponds to competence. However, in the later version, competence has become part of the assurance dimension and thus part of the functional quality. Lapierre argues that this does not reflect the reality of professional services. In fact very many studies have shown that competence is the most important factor for the evaluation of the quality of professional services (e.g., Day et al, 1988; Baumgarten and Hensel, 1987; Little and Myers, 1987; Knoll and Hoffman, 1986; Cravens et al., 1985; Albert and Pearson, 1983).

Both Gronroos and Parasuraman et al make statements on professional skills, which seem to confirm this view. Gronroos (1988, pp10-13) says: "The customers realise that the service provider, his employees, operational systems and physical resources, have the knowledge and skills required to

solve their problems in a professional way". Parasuraman et al (1985, pp 41-50) define competence as "Possession of the required skills and knowledge to perform a service". Lapierre and Filiatrault (1996), therefore conclude that, for professional services, the competence determinant should not be subsumed under assurance as per the 5-dimensional SERVQUAL model. According to the PZB framework, reliability is one indivisible dimension defined as "consistency of performance and dependability" (Parasuraman et. al, 1985) and also as "the ability to perform the promised service dependably and accurately" (Zeithaml, Parasuraman and Berry, 1990). However, on closer examination of the 5 statements (or items) of the SERVQUAL questionnaire under the Reliability dimension, Lapierre and Filiatrault point out that 2 of them (statements 7 and 9) have definite technical connotations. They propose therefore that the reliability dimension be divided into technical and functional dimensions in the case of professional services. Gummesson (1979), highlights the particular nature of professional services as "being mainly advisory and operated by skilled professionals". Venetis (1997) builds on this statement by using research by Szmigin (1993) and Halinen (1994) to remind us that the nature of professional services means that clients and providers work together to reach a solution to a problem. Therefore the customers (or clients) will experience, on the one hand, the professionalism and technical quality of methods used to reach a solution, and, on the other hand, the manner in which the provider interacts with them within the service delivery process.

Szmigin (1993), looks in particular at professional services in business-to-business interactions and recognises three aspects of quality: hard quality, soft quality (which correspond to technical and functional quality respectively) and outcome quality. This last dimension is largely absent from considerations of SQ in consumer services. Szmigin proposes that these three aspects form the basis for an ongoing review of client/supplier relationships. This is highly relevant to most business-to-business services. It is important for the provider to understand not only the clients' perceptions of quality but also the clients' different quality priorities and their changing nature.

This relationship is an investment of time and money for the client who is therefore unlikely to drop it because of short-term competitive advantages offered by a rival. It is therefore a powerful competitive tool for the

provider. Szmigin (1993), also suggests that in business-to-business services it may be more useful to identify subjective components of quality likely to satisfy the client rather than looking for some objective measure of quality. This approach would obviously not be economically viable in consumer services but may be fruitful in dealing with client relationships. This does not detract from the fact that, based on the Gronroos approach (1984, 1988), technical quality can and should be assessed by objective measures, but it implies that functional quality should be treated very differently and measured more subjectively to ensure competitive advantage.

On the basis of this conceptual framework, Venetis (1997) argues that because of the specific characteristics of professional services, the traditional models need to be adapted. The quality perception of what has been delivered (or technical quality, or hard process or again outcome) does apply. So does the quality perception of how the service is delivered (or functional quality, or soft process or relationship). However other factors also come into play. The delivery process occurs usually over a long time, at least a much longer time than in a consumer service situation. Furthermore the customer participates actively in the relationship and several interactions usually occur as opposed to the one moment of truth for consumer services. Also the client rates the quality of the final outcome as most important. This confirms the Gronroos view presented earlier.

4.1. The dynamic effect of time

Venetis (1997) also recognises the importance of the dynamic effect of time on the nature of the relationship between the client and the provider as well as on the quality perceptions of the client at each and every stage of the relationship (Haller, 1995). Recognising that change will occur is not sufficient however. We must also understand in what direction the change occurs. Szmigin (1993) argues that soft quality is more crucial in the early stages of the delivery because client uncertainty (or perceived risk) is high then. The client needs support and reassurance from his interactions with the provider. Once the relationship is established the soft aspects become less important and the client becomes more concerned with hard quality and outcome quality. On the other hand, other authors (Wackman et al, 1987; Yorke, 1990; Woodside, Wilson and Milner, 1992), have argued that once a

client feels confident about technical and outcome quality, the soft elements will become more influential.

5. FIVE DIMENSIONS OF PROFESSIONAL SQ

Venetis' final proposal is that we should use five (5) dimensions for the evaluation of SQ in professional services, particularly in business-to-business situations. These are:

- The potential of the service provider or structure (Haller, 1995; Donabedian, 1980, in Venetis, 1997). This refers to all the stable and tangible characteristics of a service provider, i.e., whether he has the available tools, the resources, and the organisational framework to do the job.
- The technical aspects of the process by which the core service is performed.
- The interactive and relational aspects of the service delivery process.
- The immediate outcome of the service delivery (e.g. a trial in a legal service or and advertising campaign in an advertising agency).
- The final outcome of the service delivery process (e.g., being acquitted or increasing sales or company reputation).

In conclusion, the SERVQUAL model, despite its high profile and statistical rigour, may not be the best instrument to use in the case of professional services especially in a business to business context. In particular it may be preferable to use the earlier version of the model with all 10 dimensions rather than the revised version, with the 10 dimensions collapsed into 5. For this reason the author's questionnaire was designed to examine the 10 (rather than 5) dimensions of SQ.

5.1. Key issues in the PRC industry

The industry as a whole and the Public Relations Consultant Association (PRCA) in particular, has worked very hard to develop professional standards which can give credibility to the industry. This is particularly important in days of "media hype" and "spin doctors". Although the PRCA

already had a PRCA Professional Charter, a management standard was accepted by the membership in April 1997. Of interest to the core of this study, the focus of this standard was identified as "quality of consultancy operations" (Tom Watson, *Institute of Public Relations Handbook*, 1997). The consultancy management standard (CMS) was developed as a supplement to (or replacement for) the usual quality standards such as ISO 9001 and Investors-In People. It is accredited externally by DNV Quality Assurance and Marketing Quality Assurance. The CMS consists of 10 elements of assessment. An organisation must score a minimum of 50% in every one of the 10 steps and must score a total of 75% to qualify.

With reference to SQ, it is important to look in particular at the 8th and 9th elements of CMS, namely Client Satisfaction and Service Delivery. For client satisfaction, the consultancy must demonstrate that it does have defined and visible procedures for measuring client satisfaction. However, no one method of measurement is advocated but measurement must be carried out on a continuing and consistent basis. Evidence (such as questionnaires or periodic account reviews) from a cross-section of three (3) clients must be submitted as evidence. With regards to Service Delivery, the organisation must demonstrate the existence of defined systems and procedures used to monitor the management of advice and output. Interestingly, the CMS document defines service delivery as "advice and output". This definition in itself is debatable in the light of the theories and models outlined earlier. For both elements, as indeed for the 8 others, the rating scale for the assessment of performance is arranged according to whether the element "is happening", "is being done systematically" and "is done effectively". A third element of the CMS, "Campaign Evaluation" also merits attention, as it requires an organisation to demonstrate its ability to plan, manage and evaluate campaigns. No single evaluation method is prescribed however.

The annual PR Week Agency Report (the guide to PR Agencies) provides yet another benchmark of PR practice performance. The report, as opposed to the Top 150 report or the PR Awards report (see below) is outwardly focused to some extent, since it includes assessment by the clients. The survey of the clients is conducted independently by Westcombe Business Research. The criteria used for both categories of data are

illustrated in the table below. Furthermore, the overall evaluation is summarised as a star rating. The maximum achievable is a Five-Star rating. In addition, a commentary is added to the ratings, which reflects on improvements or deterioration and their reasons.

AGENCY CREDENTIALS		CLIENT ASSESSMENT	
Mark	Out of	Mark	Out of
Business Performance	15	Pitch promises	10
Staff	9	Relationship with agency	10
Infrastructure	7	Nuts and Bolts	10
Quality controls	7	Evaluation	10
Industry recognition	2	Client satisfaction	20
Total	40	Total	60

Source: Agency Report, The Guide to Public Relations consultancies, PR Week, 20.11.98

Industry awards can also be used to evaluate the quality of a consultancy. They are a way of tangibilising the very intangible element, which is creativity and which is at the core of the technical quality of PR work, according to Dennis Kelly, Managing Director, Brahm PR. However they tend to be mostly inward-looking, as the majority of the judges on the panel are chosen from the PR industry. Nonetheless, existing and potential clients can of course take note, and so the publications of the Awards provide a useful reference tool.

5.2. Qualitative research findings

The interviews with Consultants revealed that although SQ was seen as extremely important and a key success factor there was a wide variation in practices with regards to its assessment. Generally this tended to be internally focussed and rarely independent. There appeared to be some confusion between SQ assessment and the evaluation of specific outcomes (e.g. a PR campaign). All interviewees agreed that flexibility and customisation were key elements of SQ. However, only one consultant associated SQ measurement with business development opportunities.

5.3. Quantitative research findings

An analysis of the frequency scores revealed that the vast majority of respondents either agrees or strongly agrees that quality in general and

quality assessment in particular are very important, although a significant 14.3% strongly disagree. With regards to the 12 statements defining what quality means in PRCs, an examination of the mean scores and standard deviations confirms that all statements are perceived as important by the respondents (lowest mean is 3.65 out of a potential 5). However the need to employ high caliber staff and to keep to times-scales is seen as the most important, with respective mean scores of 4.84 and 4.78 out of 5. Significance tests were carried out to examine the link between the recognition of the importance of the 12 elements and the carrying out of quality assessments. These tests revealed that there was a link (<10%) with regards to the need to define clear roles and to negotiate a programme of activity.

The majority of respondents (83.7%) claim to carry out client satisfaction assessments but, as was already encountered in the interviews, there is a wide array of practices with regards to the frequency and the independence of the assessments as well as the methods used. Most assessments were carried out in-house once or twice a year. The most common methods were the survey (42.9%) and individual interviews with clients (59.2%). In addition the most common technique used to assess customer satisfaction was "end of project evaluations" and to a lesser degree "benchmarking" and "complaint analysis".

A significant part of the survey was to assess to what extent the respondents' assessments covered the dimensions of a recognised quality assessment model, namely the 10 dimensions of the original SERVQUAL model. Respondents were also asked to rank the importance given to the different dimensions. An examination of the mean scores and standard deviations revealed that the respondents' assessments cover all dimensions to a significant extent (lowest mean 3.47 out of 5), the highest mean scores (4.56) being for "competence" and "understanding" dimensions and the lowest being for "courtesy" and "security" (3.98 and 3.47 respectively).

With regards to the use made by respondents of the findings from their various assessments, it was interesting to discover that only 4% used them for new business developments and 2% for improving their competitive position. The most common usages were "feedback to staff" (20.4%),

"feedback to client" (22.4%) and "identifying changes for the future" (28.6%). The latter related to changes in terms of technical outcomes, and not to improvements of the whole business.

6. CONCLUSION

Despite the fact that SQ and its assessment are perceived as essential for success in the industry, there are clear variations in the understanding of the nature of SQ in the context of PRCs, as well as in its assessment. Generally, there is a tendency for PRCs to focus on technical aspects of quality and ignore relational elements. Activities such as "defining clear roles" and "clarifying who pays" were found to be the most significant. The competence dimension, ranked as most important, relates to technical quality, whilst customer-focus dimensions such as courtesy and security come last in the ranking. The choice of techniques for measuring client satisfaction also reinforces this tendency.

Similarly, the new standard developed by the PRCA, the CMS, concentrates mainly on technical areas. It does not promote consistency in the assessments methods, which would demonstrate customer orientation by enabling clients to make comparisons between providers. The PRC industry is people intensive and relies heavily, as most professional services, on the development and nurturing of relationships between staff and clients. However it seems that it ignores relational quality in its assessment, going against the user-based approach recommended in the literature. This lack of market focus is also demonstrated by the limited usage made by PRCs of the findings from assessment. They pay more attention to improving the product and the procedures than to improving the service experience or the business as a whole. Very few even use their findings for new business development or improving their competitive position.

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FOOD AND THE BLACK COUNTRY HERITAGE TOURISM PRODUCT: REPRESENTATION OF TRADITIONS

GHISLAINE POVEY*

ABSTRACT

The Black Country is a region in the midlands of England, which extends from Walsall and Wolverhampton in the North to Stourbridge and Halesowen in the South. Generally these days it is comprised of the four boroughs of Dudley, Walsall, Sandwell and Wolverhampton. It has never had any official boundaries. It is culturally distinct from the surrounding area, which is reflected by the number of distinct dishes that are traditional to the region.

This paper reviews the role and representation of traditional foods in tourism today, with particular reference to heritage tourism. It then delineates the Black Country, and profiles the area's Heritage Tourism Product. It outlines the key foods that are both traditional to and representative of the area, and which contribute to its cultural distinctiveness. Representation of these foods within the Black Country Heritage tourism product is investigated, from the viewpoint of both producers and consumers.

Strategies that could be adopted to ensure appropriate and authentic representation of the Black Country traditional foods in the Heritage Tourism Product are recommended. Primary data is derived from interviews with both consumers and producers of the Heritage Tourism Product.

1. INTRODUCTION

This paper reviews the role and representation of traditional foods in the Black Country's heritage tourism product. It also proposes strategies that could ensure that these assets to the area are used appropriately to maximise benefits from tourism to the area. The primary data for this study was from

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interviews with consumers and producers of the Black Country Heritage Tourism Product.

Food is not simply consumed as a necessary fuel for our lives. It relates to a range of issues for the consumer, related both to culture and identity (Hall & Mitchell, 2000). After many years of the relationship between tourism and food being purely the supply of food for tourists, food is now being seen as central to the destination culture that the tourist consumes (Ritchie & Zins, 1978). Consumption is noted as being an increasingly dominant element of contemporary culture (Bell & Valentine, 1997). Thus the consumption of food, which has been produced from local ingredients, consumed alongside the indigenous population, has become an integral part of the tourist experience (van Westering, 1999).

The Black Country is a roughly square shaped area of the midlands of England, given its name for two reasons. Firstly, there are extensive tracts of shallow coal drifts, so when people dug deeply into the land the soil itself was black. Secondly the excessive amount of airborne pollution from the mines and the iron foundries meant that all the buildings and even the plants were covered in a layer of soot.

Elihu Buritt, an American Consul who was sent to Birmingham in 1865, made the area's name famous worldwide. He coined the phrase 'Black Country' in the title of a report he prepared for the American Government, which was published as *Walks in the Black Country and its green Borderland* (Chitham, 1972). Rumours suggest that the sight of the Black Country was so offensive that when Queen Victoria's train passed through the region, she directed the blinds of her railway carriage to be drawn so that she could be spared the sight of the desolate scenery of the region (Cashmore, 1986). The region has suffered considerable economic degradation since the 1960s, with the key industries of mining and steel closing down, and changing the nature of employment in the area. In efforts to move to a tertiary economy the Black Country has made efforts to attract tourists.

2. BLACK COUNTRY FOOD

The cuisine of the area is distinct from that of the surrounding areas. In an area where women have worked in industrial pursuits such as mining and nail making since the sixteenth century, local dishes were generally easy to prepare and very substantial. Key dishes found only in the local region are: gray pays un baycon: grey (maple) peas soaked in bicarbonate of soda overnight then cooked slowly for about six hours with bacon bones and a few herbs for flavour, groaty dick: groats (wheat grains) cooked with scraps of beef and bacon for a few hours with lard and a few herbs, faggots and pays: minced pig heart and liver flavoured with sage and onions that are shaped into round balls and served with mushy peas, eel soup: eels caught in the canals cooked with leeks and some cream; boonie pie: pie made with breast or neck of lamb and vegetables, with the bones left in hence it is boney.

3. FOOD AND TOURISM

Some authors view the relationship between food and tourism as a key element of tourism and a crucial travel motivation (van Westering, 1999). Van Westering (1999) goes on to purport that gastronomy is important to choice of destination, with a growing role in tourism products. He also argues that even when food and drink is not the main purpose of Tourism it is, often used in the promotion of other tourism products. For some tourists the chance to explore new gastronomic environments is the main motivator for participation in tourism.

In a number of regions food and drink production is the destination's prime attraction. Regional tourism development based on food and drink tourism has been the focus of many Australian states (Macionis & Cambourne, 1998). Packages are being developed based on food and drink products (van Westering, 1999). Interest is growing in the development of this type of tourism worldwide (Macionis, 1998). The extent to which the destination's food and drink profile motivates travel is nevertheless debatable. Sheldon and Fox (1988) investigated the role of food service in both destination choice and quality of tourist experience. They found that very few tourists from Canada and US (16%) actually considered food as an important factor in destination choice, although they did note that 37% of

Japanese visitors were influenced by food. When looking at the impact of food on the likelihood of return to a destination, it was found to have a little influence.

Harmston (1980) and Polacek (1986) both purport that tourists spend approximately one third of their total holiday outlay on food, although other research has suggested that the percentage can vary by both nationality and length of journey to destination (Sheldon & Fox 1988).

Cai, Hong and Morrison (1995) investigated household expenditure patterns for tourism products and services, and found that food expenditure was influenced by a family lifecycle stage. Families in the early nesting stage were more likely to spend less on food than those in later life stages however other age groups were found to be very similar. Households with married couples were found to spend more on food, and those with children less. Occupation was also found to have influence, with those involved in farming, fishing and forestry spending significantly more than others. They also noted that food is somewhat income elastic, and a one percent increase in income generating a less than one percent increase on food expenditure.

The importance of food to populations of the consumer cultures of Western Europe and the USA can be easily observed by noting the plethora of magazines, books and television programmes, even television channels, which are about food and cooking. Media content can also be observed to reflect the increase of interest in food production.

Food tourism can, in fact, also be linked to consumer experience tourism, 36% of the factory tours in the Axelrod and Brumburg (1997) guidebook are food and drink product related. Industrial heritage sites such as distilleries and food producers have become common tourist attractions. For bigger food and drink manufacturers this tourism can be a very important marketing tool. For smaller scale producers it can be a lifeline, generating vital extra income (Mitchell & Mitchell, 2000).

4. TOURISTS AND REGIONAL FOOD

To maximise the benefits to be gained from tourism it is essential that destinations exploit the links between tourists and consumption of locally

produced goods, particularly food and drink. If tourists are consuming food and drink which is imported to the area, then much of the economic benefit of their visit is lost to the local community, and employment levels will be consequently lower. In many countries tourism is developed mainly as a means of generating foreign exchange, bringing hard currency into the country's economy. Tourism however often has high levels of external economic leakage with little regional produce being consumed. Consequently there is only a diminutive benefit being passed onto the local community (Telfer & Wall, 2000). The role and value of heritage food, and its relationship with tourism, has been studied surprisingly little. In fact within the context of tourism in general there is surprisingly little research in the area of food and drink, or even gastronomic tourism (Macionis & Cambourne, 1998).

5. FOOD AND GASTRONOMY

Food and gastronomy, whilst not clearly linked to tourism over the past few years, was evidently connected historically. Whereas latterly the tourist product has been linked recently to the physical, stressing for example sun, sea or snow, cultural tourism was stronger historically and is set to regain importance. Chaucer for example in the *Canterbury Tales* viewed food, along with storytelling and heritage as an holistic experience (Van Westering, 1999). Participants in the Grand Tour perceived the meals eaten while travelling and at their destination as integral to the whole tourism experience.

Many authors view food and its cooking as central to cultural identity and key to successful communication with a culture (Reynolds, 1993). However despite its central role in culture, food is often ignored when heritage is discussed. Popularly art, handicrafts, dances, folklore, religion, music and drama are viewed as heritage, whilst traditional food and drink is ignored (Van Westering, 1999). Heritage can be considered as an emblem, or distinctive characteristic of a social group (Bessiere, 1998). Yet why food is ignored is difficult to understand since most definitions of heritage refer to the passing down of knowledge and artefacts from one generation to another. This is often the case, in less developed cultures, with recipes and cooking methods, which are passed down from generation to generation, mother to daughter, father to son, often being taught spontaneously.

Food and drink is evocative of cultural rituals. The eating of turkey is synonymous with Christmas in Britain, the drinking of champagne with celebration. Van Westering (1999) supports that "unconsciously we carry with us our gastronomic heritage." The heritage of culinary culture is directly linked to the environment of any place, including type of soil, topography, climate; methods adopted can be seen to be pivotal to the culture. Eating and drinking is a daily activity for all, and thus can be seen as that part of culture closest to us (Van Westering, 1999). Kuzenof et al (1997) viewed recipes, food preparation and food service, along with climate and geomorphology as the elements of custom and locale that sculpt culinary heritage.

6. FOOD AND CONSUMPTION OF TOURISM

Food is that part of heritage that can literally be internalised and absorbed (Van Westering, 1999). This has led to its increased importance to present day tourists who are increasingly accepting that kudos gained from travel is linked to the level of interaction with local culture. Thus food and drink has become increasingly important to these tourists. Food and drink consumption is an easy way for tourists to sense that they have interacted with locals, and literally ingested the foreign culture.

Tourism is intrinsically about the consumption of that which is different; hence unusual food is intrinsic to that experience (Hall & Mitchell, 2000). Tourism can be viewed as allowing participation in local rituals, giving the tourist the opportunity to integrate socially and culturally with the indigenous population, consuming cultural codes (Bessiere, 1998).

Beyond that which is passed on, heritage can be considered to define who we are and it can impart to inhabitants their cultural identity. It is perceived by some to be fundamental to an understanding of the present. Heritage, however, is dynamic and constantly evolving, regarded differently as our current viewpoint changes over time. Bessiere (1998) describes this evolutionary process as a 'dialectal interplay between interior/exterior and tradition/innovation.' Individuals are regarded as being 'archaeologists' and 'innovators' simultaneously.

Thus that heritage which is adopted and preserved in modern culture is subjective. It is reliant upon the preferences and whims of the individuals who comprise a particular social group, is subject to their biases, and reliant upon their recognition and appreciation. When the tourist arrives they also bring preferences and idiosyncrasies of their own, which are sometimes different to those of the local population. This can cause a gap to arise between the groups. What the tourist appreciates and values may be different from that which is pleasing to the local population. Bessiere (1998) also notes that heritage is often not valued until it is close to being lost. Culinary heritage falls into this category, with its value being greatly increased now as traditional cooking skills are being lost, particularly in Western cultures, because of the industrialisation of food production.

7. FOOD'S CULTURAL MEANINGS

Visser (1991) proposes that food is significant in several ways. It is seen to be part of socialisation where families and tribes gather to talk as well as eat. Ritual is another area where food is considered to be important. It is also relevant to hierarchies and social structure, what, where and with whom we eat are also pertinent sociologically. What we eat and the tools we use to eat it with are also central to cultural heritage. Food is also seen to be an essential element of courtship rituals. Food and drink are strongly associated with identity, prestige, social place and symbolic meanings (Martini & Wong, 2001).

Food and drink is part of our environment and has many meanings. Food is imbued with symbolism, for example bread is associated with rural lifestyle and simplicity. In Christianity bread represents the body of Christ. In Indonesian cultures rice, and the way that the special tumpeng rice is served, is symbolic of mountains and their impact on people's lives. Tumpeng rice is served with other foods representing other spiritual elements such as chicken for land animals and fish for water animals. Nasi tumpeng is served at all rituals whether happy or sad.

Food links groups together, families and friends eat together to celebrate special occasions. Business people eat together to seal deals. Thus it can be perceived as integral to some communications (Bessiere, 1998).

Bessiere (1998) contends that in addition to the nutritional element, food has psycho-sensory attributes. Food and drink can even be perceived as an icon, which can unite those who live in, or originate from, the same geographical area as the product. Food can even be used as a social class indicator. Caviar for example is seen to designate affluence, the greater the frequency of its consumption, the greater the affluence of the consumer.

When eating, the symbolism of the food is as much a part of the meal and is consumed alongside the nutrients that it provides. During this process the consumer becomes that which is consumed, more popularly phrased, as *we are what we eat*. Choice of what, where and how frequently an individual eats defines their identity (Bessiere, 1998). The farmer may still eat a freshly prepared meal, made from locally grown raw ingredients. The office worker in the city may have a burger, which has little or no link to its place of consumption, and which has been shaped by an industrial process.

It is no longer the case, in modern British culture, that culinary heritage is passed from mother to daughter and father to son, in the way that it has been over the past centuries. The changing role of women in the home, and the rapid advances in kitchen technology such as the freezer and the microwave have led to us moving away from our culinary roots. Contemporary cooks look to the media to pass on culinary technology. Often consumption of food represents consumption of a desired culture or lifestyle. This can be illustrated in the Black Country by the loss of family recipes for local delicacies such as faggots, groaty dick and boonie pie, along with the prerequisite skills to make them.

Martini & Wong (2001) contend that food is intrinsically not culturally neutral but strongly associated with identity, prestige, social place and symbolic meanings. Food has an array of representations that make it fundamental to culture. It possesses inherent characteristics that are the consistently accrued conclusion of a lengthy social process. Food can readily be domesticated as ethnic cuisine through which representation is established and justifiably given prominence to the ethnicity.

Over the past twenty years or so British views of food and systems of thought regarding the custom and purchase of food and drink has changed immensely. There has been an unprecedented revolution in food

consumption. Consumers now expect that the food and drink products that they want will be available, where ever in the world they originate and at whatever the time of year they want them. Kitchen skills have been lost and cooks at home and in many restaurants, now assemble food that has been pre-prepared for them, and think that they are cooking. This has challenged the notion of what regional, indigenous food is in Britain and thus the Black Country. In England in particular we have had very little pride in our regional food and culinary heritage. The impact of Puritanism on British culture was significant, and is easily illustrated when we look at the culinary heritage of our close neighbours such as France or Belgium.

Many authors contend that an experiential element is essential to their enjoyment of heritage consumption (Elias, 1987; Pearce, 1987; Martin & Mason, 1993; van Westering, 1999). Heritage, which is not experiential for the tourist, is perceived to be dead tourism (Urry, 1995). That which can be experienced however is more greatly appreciated.

8. REGIONAL FOODS AND TOURISM

For numerous British tourists the consumption of regional food in the destination is a balance between the desire to consume authentic experiences, and the perceived risk of eating the dish. Many tourists, particularly mass-market tourists avoid restaurants where the locals eat because of poor language skills and the inability to read and understand menus in a foreign language (Reynolds, 1996). They are concerned that they will not like what they order, and will not get value for money if that is the case. There is also a concern amongst tourists that the food will be dirty or cause sickness. In fairness it should be noted that this fear is not unfounded as more people suffer from food-related illnesses on holiday than any other sickness (Hernimann, 1982; Alleyne, 1993). More conservative tourists consequently select tourist experiences that they feel are safe, and which often means hotel based and all-inclusive packages.

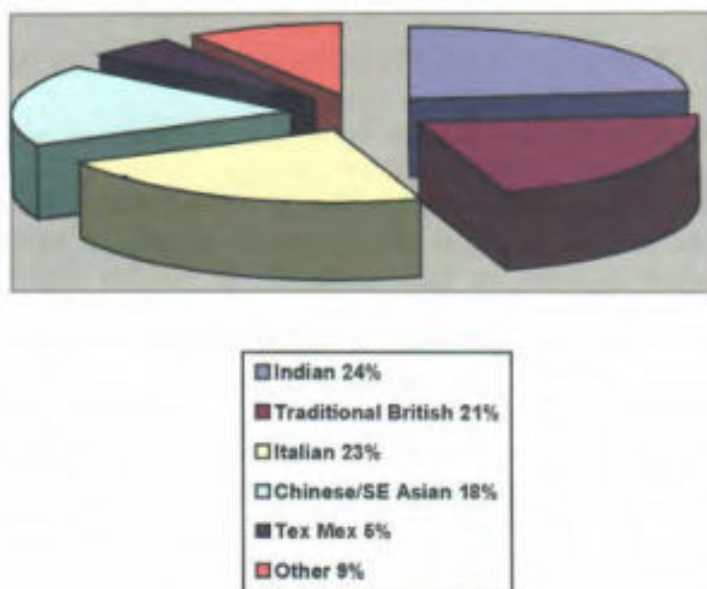
In juxtaposition to the British perspective, food and drink is an integral part of heritage tourism in France. The French government has published a list of culinary heritage as part of a catalogue of the country's national traditional treasures, indicating the importance they assign to it (Bessiere, 1998). Gastro-tourism, and identification and recreation of culinary heritage

can give an area an identity, which is readily promoted. French tourists are as interested in quality as they are in price.

9. THE DEVELOPMENT OF REGIONAL CUISINES

Little research has been completed regarding the changes in regional cuisines, although Hall and Mitchell (2000) identify three main epochs of change in regional cuisines. The first was in the 1400s to 1800s when European adventurer traders brought produce from the 'new world'. It is easy to forget that the Mediterranean cuisine that we know today would not exist without such products as tomatoes (Sokolov, 1991). The quintessential British fish and chips, relies intrinsically on potatoes from the Americas. The second epoch was marked by the start of the extensive migrations from the 17th century. Migrants take their traditional animals and seeds to their destination (Hall & Mitchell, 2000). Migration of groups such as the Asians, Chinese, and Italians has had a huge impact on the eating patterns of Britain for example. This can be demonstrated by the chart below, which shows the estimated retail sales of ready meals by national cuisine (Mintel, 2002). In a recent survey of ready meals purchased in Britain, Indian food was found to be the most popular comprising 24% of consumption. This is closely followed by Italian cuisine, which accounts for 23% of ready meal purchases. Chinese and South East Asian foods represent another 18%. The cuisines of immigrant populations can thus be seen to dominate the British diet. Traditional British foods represent only 21% of consumption (Mintel, 2002).

FIGURE 1: THE ESTIMATED UK SALES OF READY MEALS BY CUISINE 2002



Source: Mintel (2002).

The third epoch is that of the dramatic change of food supply due to the industrialisation of food production. Hall and Mitchell (2000) also cite the rapid transmission of information concerning food globally, as pertinent to this change in our culinary traditions, alongside the rapid trans-global transportation of food. It is not unusual in the present day to eat food that has travelled half way around the globe, and still manages to be sold at a lower price than that produced locally, such as the case of New Zealand lamb in Britain. The entire practice of food production, processing and distribution, even how it is cooked in the home, has changed significantly, becoming increasingly dominated by technology (Symons, 1993). A number of authors take the view that there is currently a trend in tourism for tourists to swing away from the standardised, mass, package tourism product to a more adaptable, tailor made, individualistic product. The change from physically inclined products to those that are culturally orientated is also noted (Howe, 1996; Poon, 1994; Reynolds, 1996; Urry, 1995; van Westering, 1999). The fact that the heritage tourism market is

growing is also well documented (Howe, 1996; Shackley, 1998; van Westering, 1999).

10. INTERNATIONAL RESPONSES TO CHANGES IN DEMAND

In response to this change in demand destinations are considering changing elements of their product offerings. Majorca, for example was renowned for mass-market tourism, but, since the 1980s, it has reformulated its tourism product. This has led to a revival of the local heritage food and drink, which is based on local produce. A valuable side effect to this phenomenon has been the improvement in diet of both the local population and tourists alike (Alcock, 1995). Similarly Hungarian food to an American is a goulash of minced beef and pasta served in a paprika flavoured cheese and tomato sauce. The American version would generally not be prepared with lard and would have little in common with an authentic gulyas, in which lard would be a crucial ingredient in the dish in Hungary.

Food has been catapulted into the public eye with increasing concerns regarding where food comes from and how it is produced amongst consumers (Gilg & Battershill, 1998; Ilbery & Kneafsey, 2000; Marsden, 1998). The foot and mouth crisis following the BSE epidemic and outbreaks of E.Coli have made consumers much more aware of food and the implications of some modern production methods (Ilbery and Kneafsey, 2000). Consumers are starting to be more conscious of the implications of their choice in food (Marsden, 1998).

Today's consumers want reassurance that they know what the food that they consume contains, how and where it has been produced. Labelling can help to give them the guarantees they desire. Labels can give food an identity and let consumers feel closer to the food's place of production (Bessiere, 1998).

British tourists are noted for their concern about food whilst on holiday. What we eat represents our cultural codes and is symbolic. Whilst for some tourists seeking local foods as part of the destination's identity, mass tourists tend to seek familiar foods (Andrews, 1999). Thus British food has invaded destinations worldwide, with the 'British Breakfast' being the main culprit. Andrews (1999) links the deep seated belief that the ingredients of

the British breakfast give strength to the consumer, which is perceived to imbue strength to the consumer in the face of an unfamiliar foreign environment. The unease that this foreign environment generates in the tourist leads them to seek food that is reminiscent of home, leading them thus to consume 'Britishness'.

Food and gastronomy are becoming increasingly important to regional development, often as part of a tourism development policy. As a nation we do not promote our food and drink well, we take little pride in our products. When interviewed during the course of this research very few older visitors to Black Country attractions thought that local food was important, and generally felt that visitors from further afield would not want to bother with traditional foods. This however was not the case with younger local visitors in the 25-45 age group, who were keen to try traditional fayre and in some cases felt that there was not sufficient opportunity to do so in the area. The younger age group, 18 – 25 year olds, who were in fact the smallest group interviewed, were not keen to try traditional foods, and preferred the range of international foods that were on offer.

Swarbrooke and Horner (1998) observed that we promote our traditional foods very little and that whilst our public houses and the beer and whisky we associate with them, have become a successful part of our tourism product, other regional speciality foods and drinks have not. They do however outline a number of ways that food and drink do form a valuable part of the British tourism product. Very few of these however can be said to relate specifically to regional foods. Those that are relevant include: mapped food or drink routes, the promotion of unusual local foods, visits to small producers with the opportunity of tourists being able to directly purchase products, food or drink themed museums, food and drink related festivals and special events, themed catering, visits to and purchases from farms including pick your own schemes. It has to be said that the Black Country has so far done little to promote the traditional regional foods in its attractions. One good example however is the Beer and Balti trail that it promotes, which was developed with Heritage Studies students from University of Wolverhampton. This is an excellent linking of real ale, a local traditional product with tourism. Some people find it difficult to perceive the balti as a traditional local food. A balti is a meat or vegetable curry dish served at the table in a special semi-spherical bowl. The dish is essentially a fusion food that has developed from the traditional recipes of

the immigrant population, adjusted to reflect the tastes and culture of the local population and the availability of local produce. It can be argued that baltis are just as much a traditional regional food of the area, as local residents, using regional produce, prepare them. It is very important that the preservation of heritage does not stifle the evolution of culture and tradition. The plethora of traditional Black Country pubs are probably the best-known food and drink related tourist products in the area. Howe (1996) explored the value of the heritage pub. It was concluded that tourists were essential to the long-term sustainability of the pub. Heritage pubs were viewed as a valuable asset to any region. This concurs with Swarbrooke and Horner (1998) who cite the English pub as being particularly valuable to the tourist product, however they view it as being predominantly an asset to rural areas. It can be argued however that the pub is as valuable to the tourist product in the Black Country as it is to other rural areas. The Black Country developed as a network of villages, which gradually crept together as they grew. There are distinct cultural differences between particular villages even now because of this. The area was and is thus distinctly different from the city development of other areas such as Birmingham.

11. AUTHENTICITY

Tourists also wish to perceive that their experience is authentic (Van Westering, 1999). As demand for authenticity grows, then it becomes more and more expensive to consume. Reynolds (1993) purports that the consumption of food and drink is the last readily affordable authentic tourism product available to all tourists. Its other benefit is that it is fairly readily available to all. To quote Van Westering (1999) "local dishes eaten with the local population in a local setting, may provide the tourist with the closest of encounters with the authentic." This culinary experience can be viewed as the most satisfying cultural experience, and actually outrank the experience of the heritage site being visited itself.

Food has a clear geographical identity. It often tastes different when eaten away from its traditional place of production (Van Westering, 1999). Many countries, towns and regions identify themselves by prized local food. If for example a Frenchman from the Savoie is asked about his region he will immediately refer to a local wine such as apremont, or cheese such as tome. He may refer to other specialities such as raclette. The same is true

for natives of most regions of France. When asking the same of a Black Countryman, he is more likely to refer to Dudley Zoo or the Merry Hill shopping centre. It can be noted that all regional culinary traditions are in some part an invented tradition, with climate, and environmental factors impinging on food and drink production. The cultural history of the local population is also key (Hall & Mitchell, 2000).

As noted earlier, the Black Country has a distinct regional heritage, in addition to which there are a plethora of butchers, with a butchers' association that is perceived to be one of the most active in the country. There are many regional food producers who export food world wide, with the pork scratching being most noteworthy.

12. IMPACTS OF TOURISM ON REGIONAL FOOD

Tourists can have effects on local cuisines, which can ultimately lead to changes in culinary traditions. An example of this can be seen in Peru, where traditionally guinea pigs are kept in the home, often running around the kitchen or the restaurant, for food. They would be caught and killed after the guest had selected the animal they wished to eat, then prepared for the table. Understandably tourists from western countries found this most distressing, and tended to use restaurants where this did not happen. Consequently the number of restaurants serving guinea pig has drastically reduced. This can be considered to be a loss of culinary identity.

Singapore Tourism Board has perceived ethnic food as a choice commodity to help promote tourism in line with government policy since the 1980s. The private sector is crucial to this as they are the providers of the restaurants, and negotiators of the actual ethnic food product offer, dealing with tourist consumers, regulators and local consumers to ensure their businesses adapt to the changing environment and continue to operate profitably. In Singapore's Little India, despite hybridisation of the cuisine, Indian food or cuisine has survived and holds a dominant position in the community's daily life. The cooked food product is still essentially ethnically Indian. In restaurants the foods sold have been hybridised to the extent that their authenticity is dubious.

Another example of food and drink tradition having to adapt to the demands of tourists, is noted by Cai and Ninemeir (1993). In China foodservice styles have had to change, as the number of tourists has increased. Foreign visitors do not like the Chinese traditional method of serving food, 'Gongcanshi' whereby they help themselves from a central platter shared with the whole table, using the chopsticks that they are eating their meal with. There were problems with guests being unable to reach all the dishes that had been served and concerns that disease could be spread by having to eat food that another guest's used chopsticks had touched. To ameliorate this problem two alternative foodservice styles have been adopted by restaurants. Some restaurateurs have adopted 'Zhuanpanshi' or a Lazy Susan, whilst others have adopted Fencanshi, which is similar to the original Gongcanshi but with communal serving chopsticks or spoons being provided (Cai & Ninemeir, 1993).

The 'demonstration effect', can be an added advantage to those regions that do have tourists consuming locally produced food and drink. Tourism to an area, particularly the interest of the tourists in the local food can rejuvenate interest in food and drink traditions. This leads the local population to emulate the consumption patterns of tourists, creating more demand for regional products (Telfer & Wall, 1996; Macionis & Cambourne, 1998). This has been seen in the Black Country where there is resurgence in interest in local dishes, demonstrated by the inclusion of a weekly traditional food column in the local paper. The Black Country butchers are becoming world-renowned, with clients travelling the length and breadth of the country for locally produced pies, sausages and bacon. Pies made in the area are even sold in top London shops.

13. CONCLUSIONS

In conclusion the distinctive regional cuisine of the Black Country could be an asset to the heritage tourism product of the region. Food and drink has a unique cultural role, and it is an intrinsic element of heritage in any region. Modern tourists are seeking authentic heritage experiences when on holiday they view this experiential element as crucial to their enjoyment of the heritage (Elias, 1987; Martin & Mason, 1993; Pearce, 1987; van Westering, 1999). Traditional food and drink is that part of heritage, which can actually be internalised and digested. It is an experience that can be

readily consumed (Van Westering, 1999). Some tourists, particularly mass-market tourists, perceive that the consumption of authentic food is a balance between the risks of eating something that they may find unpalatable, or that is in fact likely to give them food poisoning, and the desire to gain the prestige associated with participation in authentic heritage experiences (Andrews, 1999).

There appears to be international growth in heritage and cultural tourism (Macionis, 1998). Some research, however suggests that not all tourists are motivated by food (Sheldon & Fox, 1988). This implies that the Black Country needs to identify clearly that it wants cultural tourists rather than those with a pure business motivation. An individual's attitude to the importance of food is shaped by his or her own culture. The Black Country needs to follow the lead of destinations such as Majorca where a revival of local heritage food and drink has proved to be popular, with both tourists and the local population (Alcock, 1995).

Early attempts by Black Country Tourism to promote local food and beverage products, such as the Beer and Balti trail and the Black Country Food Fair, have proved popular. The seeds of a revival in appreciation of local Black Country heritage foods have been sown and can be seen for example in the popularity of a traditional food column in the local paper. A key strategic direction for development would be the setting up of strategic alliances between food producers, food processors, retailers and tourist attractions to further develop the links between tourism and food production similar to that in Niagara (Telfer, 2000). By doing this the Black Country would establish a sound basis for sustainable heritage tourism development, and benefit from its distinct traditional cuisine.

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SUSTAINABLE TOURISM IN SMALL ISLANDS: THE ISLAND OF CYPRUS

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ABSTRACT

One of the major trends in today's Tourism, focuses in sustainability and sustainable development. This paper identifies issues related to the definition, evaluation and implementation of sustainable tourism. Significant issues include the range of definitions of sustainability, the range of issues considered under sustainability, the range of perspectives, criticism of sustainability analysis, evaluating sustainability, tourism impacts on sustainability, goals versus objectives, sustainable tourism decision-making, approaches to sustainable tourism.

1. INTRODUCTION

There is no universally accepted definition of sustainability, sustainable development or sustainable tourism.¹ Some definitions include:

"Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs."²

"Sustainable development is the achievement of continued economic development without detriment to the environmental and natural resources."³

"The goal of sustainable tourism is to ensure that environment; social and economic considerations are factored into decisions affecting tourism activity."⁴

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*"...sustainability is not about threat analysis; sustainability is about systems analysis. Specifically, it is about how environmental, economic, and social systems interact to their mutual advantage or disadvantage at various space-based scales of operation."*³

Sustainable development originally focused on a few resource consumption issues, but is increasingly defined more broadly to include economic and social welfare, equity, human health and ecological integrity. A narrow definition of sustainable tourism tends to favor individual technological solutions, while a broader definition tends to favor more integrated solutions, including improved travel choices, economic incentives, institutional reforms, land use changes as well as technological innovation. Sustainability planning may require changing the way people think about tourism.

Several factors contribute to interest in these issues. Concern about sustainability is rooted in the growing awareness that human activities have significant environmental impacts that can impose economic, social and ecological costs. Global air pollution, the durable effects of manufactured toxins, degraded natural resources such as fresh water and fisheries, and the cross-border nature of many environmental problems all highlight the need to view human impacts from a broad perspective.

Tourism is often identified as a promising sector in small island developing states. It offers one of the few opportunities for economic diversification in very small islands. Tourism has many linkages with other economic sectors, and if integrated into national development plans with adequate provisions for intersectional linkages, it can contribute to the growth of all tourism-related activities in all of the major economic sectors: agriculture, fishing, industry, services and transportation. At present, the extent of tourism activities in small island developing states varies widely between geographical regions as well as between countries within regions. Likewise, the economic benefits derived from tourism are diverse. In some small island developing states, tourism has become the major contributor to the gross domestic product (GDP), while in others it is still relatively undeveloped.

The important contribution of tourism to the development of many small island developing states, is noting that "if not properly planned and managed, tourism could significantly degrade the environment on which it is so dependent".⁶ In this vein, it espouses actions to be promoted at the national, regional and international levels in order to ensure the viability of the sector and its harmonious development with the cultural and natural endowments of small island developing states.

Interest in sustainability originally reflected concerns about long-term risks of current resource consumption, reflecting the goals of "intergenerational equity" (i.e., being fair to future generations). But if *future* equity and environmental quality are concerns, it makes little sense to ignore equity and environmental impacts that occur during this generation in distant places.⁷ Thus, sustainability ultimately reflects the goals of equity, ecological integrity and human welfare, regardless of time or location.

1.1. Overview of the tourism industry: towards sustainable Tourism

Tourism is one of the world's largest industries and one of its fastest growing economic sectors. It has a multitude of impacts, both positive and negative, on people's lives and on the environment. Its importance to - and impacts on - the world's economy are illustrated below.

Some basic facts about tourism and the environment based on W.T.O reports of Tourism in 2000:

- 700 million international travellers per year, 62% leisure/vacation.
- Average growth of 4.7% between 75 and 2000 - hotel rooms grew by 3%.
- US\$ 478 billion international receipts/revenues (The equivalent of 22 annual UNEP budgets per day!).
- Tourism is one of the top five export categories for 83% of countries, and the main one for 38% of them.

- Tourism employs 3% of the total global workforce (8% if indirect/informal jobs are included, or one in every 12 workers).
- In France, the world's number-one tourism destination, tourism accounts for over 7% of GDP.
- 33-50% of Internet-based transactions are tourism-related.

BUT...

- Globally, about 7% of total carbon emissions are attributed to air travel from tourism.
- In France, personal travel consumes about 5.3 million tons/equivalent petrol in energy per year, or 11% of total energy consumption in transportation, mainly because 80% of domestic tourist travel is by private automobile.
- In the US, tourism consumes 870 billion litres (230 billion gallons) of water per year, produces 317 million tons CO₂ equivalent, and generates 11 million tons of suspended solids in sewage.
- Tourism pays 20% less than average employers in other areas, and 13-19 million children are employed in the industry.
- Increased ocean levels and disturbed weather patterns due to climate change will affect all major destinations in the world (the Mediterranean, the Caribbean).
- Least developed countries contribute only 0.8% of tourism flows, and over 85% of tourism revenues are lost in leakages by the time they reach destinations in Africa.

There were about 698 million international tourist arrivals worldwide in 2000, nearly 50 million (7.3%) more arrivals than in 1999 - the highest growth rate in nearly a decade. All regions in the world grew, and the fastest

developing region continued to be East Asia and the Pacific with 14.6% growth, and 16% of the total market.

Europe saw an increase of 25 million international tourists (5.9% growth rate), and had 57.7% of the market share - by far the largest among the world's regions. The Americas are the second-biggest region, with 18.5% of arrivals. International tourist receipts grew by 5%, totaling US\$ 478 billion in 2000, with an additional US\$ 97 billion from international transport carriers earned outside the country of origin. Receipts per arrival averaged US\$ 700 in 1999.

Air transport increased its share against road in international holidays; together these two account for 85% of all international trips. Rail and sea transport remain below 8% each.

Tourism demand was seriously affected by the terrorist attacks in 2001, but appeared to have largely recovered by the summer of 2002. The World Tourism organization (WTO) predicts that international tourism will continue to grow by 4 to 4.5% annually over the coming years.

According to the WTO (1999), "Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future." The development of sustainable tourism meets the following requirements:

- Tourist resources - natural, historical, cultural and others - are preserved in a way that allows them to be used in the future, whilst benefiting today's society.
- The planning and management of tourist development are conducted in a way that avoids triggering serious ecological or socio-cultural problems in the region concerned.
- The overall quality of the environment in the tourist region is preserved and, if necessary, to be improved.
- The level of tourist satisfaction should be maintained to ensure that destinations continue to be attractive and retain their commercial potential.

- Tourism should largely benefit all members of society.

1.2. Range of Issues

Sustainability, for tourism as for other industries, has three interconnected aspects: environmental, socio-cultural, and economic. Sustainability implies permanence. So, sustainable tourism includes optimum use of resources, including biological diversity; minimization of ecological, cultural and social impacts; and maximization of benefits to conservation and local communities. It also refers to the management structures that are needed to achieve this.

Sustainability is sometimes defined narrowly. Some studies of sustainability focus on long-term resource depletion and air pollution problems, on the grounds that they represent the greatest risk and are prone to being neglected by conventional planning.⁸ But sustainability is increasingly defined more broadly to include the issues in Table 1.

TABLE 1: SUSTAINABILITY ISSUES

<u>Economic</u>	<u>Social</u>	<u>Environmental</u>
Business activity	Equity	Pollution prevention
Employment	Human health	Climate protection
Productivity	Education	Habitat preservation
Tax burden	Community	Aesthetics
Trade	Quality of Life	

This table lists various sustainability issues.

Although Table 1 implies that each issue fits into a specific category, in practice they often overlap. For example, pollution prevention is an environmental concern, but it also protects human health (a social concern) and is important for fishing and tourism industries (economic concerns). Sustainable planning reflects the realization that impacts and objectives often interact, so solutions must reflect integrated analysis.

Narrowly defined sustainability tends to overlook many relationships between issues and opportunities for coordinated solutions. For example, some

climate change emission reduction strategies may exacerbate other economic, social and environmental problems, while other strategies may reduce these other problems.⁹ A comprehensive analysis can take into account these additional impacts which a narrow analysis overlooks. Solutions that help solve multiple problems tend to be more cost effective and politically acceptable than solutions with more limited benefits. Comprehensive analysis can identify *no regrets* solutions, which help achieve multiple objectives and are therefore justified regardless of the value assigned to costs such as global warming.

Increasing evidence shows that an integrated approach to tourism planning and management is now required to achieve sustainable tourism. It is only recently that there has been a growing recognition of the importance of combining the needs of traditional urban management (transportation, land use planning, marketing, economic development, fire and safety etc.) with the need to plan for tourism.¹⁰

Sustainability tends to reflect a conservation ethic which minimizes resource consumption and waste. This requires changing current economic policies that encourage production and consumption. For example, many countries minimize energy prices in order to keep utilities and driving affordable, and to encourage manufacturing. That reflects a *consumption* ethic. A *conservation* ethic might increase energy prices (perhaps through a carbon tax) while implementing programs to weatherize buildings, increase vehicle fuel efficiency, improve alternative modes, and increase industrial efficiency so manufacturers and consumers can meet their needs with less resource consumption.

2. IMPACTS OF TOURISM IN SMALL ISLANDS

The survival of small islands is firmly rooted in their human resources and cultural heritage, which are their most significant assets; those assets are under severe stress and all efforts must be taken to ensure the central position of people in the process of sustainable development. The Report of the Global Conference on the Sustainable Development of Small Island Developing States

identifies the single most important issue to be borne in mind as we address the challenge of survival and development for our islands.

Sustainable development in small islands depends largely on coastal and marine resources, because their small land area means that those States are effectively *coastal entities*.

Tourism is one of many anthropogenic activities with a special focus on coastal areas. The two most popular locations for holiday makers are the mountains and the coast. The coastal area or zone, as it is often called, is hard to define, as the area where fresh and salt waters mix contains many complex, diverse and productive ecosystems on- and offshore interacting with each other. Tourism leads to increased traffic flow and overcrowding in already densely populated areas. Up to 130 tourists have been calculated per inhabitant in the most popular coastal regions. Therefore tourism adds substantially to the following pressures:

- Pollution by waste-water, garbage, heating, noise and traffic emissions;
- Encroachment of buildings, facilities and roads close to the coastline;
- Beach erosion due to building, dune removal and dredging;
- Excessive use of natural areas;
- Destruction of natural areas to accommodate tourism or other needs;
- Inter-sectoral competition and conflict over (marine and terrestrial) space;
- Exclusion of local communities from any role of significance in decision-making;
- The loss of natural and architectural heritage in the face of rapid expansion;
- Strain on public utilities and facilities;
- Displacement of local population;

- Creation of restricted exclusive zones that are off-limits to the local people; and
- Loss of business of the local enterprises as all-inclusive resorts supplies all the needs of their guests.

Additional typical tourism impacts are socio-economic conflicts as property and general costs of living are increasing and small communities can be overrun by summer guests, changing the social structure significantly. Foreign customs and expectations can create conflicts and a deterioration of cultural and regional values.

Tourism in the small islands context involves people who come from other countries for the pleasure of visiting the island environment. Since tourists spend money on travel, hotels, food, entertainment and recreation, they can be an important source of income and thus of economic development for islands with few other possible sources of revenue.

The tourists who come to the islands have been attracted by their image of the island environment: sun and sea, white sandy beaches and waving palm trees, lush vegetation and friendly natives. The reality is never quite the same as the tourist image, but while it can be different, it should not disappoint them or tourism will ultimately fail.

Tourism thus depends on the quality of the environment for its success, and good tourist development requires the protection and even the improvement of the environment. The most important tourism resources are the natural beauty of the island, their distinctive or exotic character, their recreation possibilities, and the cultural interest of the people. The hotels, resorts, transportation networks, recreation facilities and other tourism infrastructure can complement but never completely replace the dependence on environmental resources.

The basic problem with tourism development is that tourism facilities and the tourists themselves have impacts on the environment. If care is not taken, the tourism development itself can gradually destroy the environmental

resources on which it depends. This problem can be particularly serious on tropical islands where the environment is fragile and easily degraded, and where the small scale of the island means that even moderate tourism development can have a proportionately large impact.

2.1. Economic and social impacts

Economically, tourism can create jobs for local people and bring money into the country. However many tourists like their comforts from home, and it is often necessary to import a large part of their requirements, so that much of the money may leave the country again to pay for these imports. If the resorts and hotels have been financed by overseas investors, they will also want to export their profits. The developers may want the government to improve the airport, roads and other infrastructure, and possibly to provide tax breaks and other financial advantages, which cost the country money. The remaining benefit to an island country from some kinds of tourism development may thus be small indeed. Other kinds of tourist facilities provided by villages or financed locally may be economically more interesting.

The social impacts of tourism may also be important. Most jobs for local people in the tourist industry are as servants, house maids, waiters, gardeners and other menial work that may give people a sense of inferiority. At the same time the tourists come from other societies with different values and lifestyles, and because they have come seeking pleasure, they may spend large amounts of money and behave in ways that even they would not accept at home. Local people seeing the tourist as example may want to live and behave in the same way. Tourists may also, out of ignorance or carelessness, fail to respect local customs and moral values. These and other social effects may be among the most important long-term impacts of tourism development.

2.2. Environmental impacts of tourism facilities

Tourism development usually starts with the construction of hotels, resorts and other places for tourists to stay. In addition there may be restaurants, night clubs, and recreation facilities such as golf courses, tennis courts, swimming pools, and marinas. These facilities require a lot of space, and land is usually

scarce on an island. Land and resources used for tourism are not available for other uses; developers may even want to keep local people away from beaches, reefs and lagoon areas reserved for tourists only. Whenever possible, tourism developers prefer to build on the coast, where the hotel will front on a beach and perhaps a coral reef, yet the coast is the most fragile and vulnerable area on an island, with the greatest conflicts between uses.

The construction of these facilities can have the same kinds of impacts as any other construction projects, such as soil erosion, changes in water runoff, and damage to natural environments. If the resort is on the coast, the plans frequently call for changes in the coastline, such as the creation or improvement of a beach, the construction of an artificial island, or the dredging of a harbor or building of a dock for tour boats used to pick up and drop off the tourists. These changes may upset normal coastal processes and be very difficult to maintain. Coastal hotel sites themselves are often vulnerable to storm damage, erosion and other problems because of their exposed location.

Tourist developments also require resources that may be scarce on an island. Water may be in short supply, yet tourist use of water is usually much greater per person than among the local population. Tourists require large quantities of high quality food; if it cannot be produced locally, it will have to be imported.

The sewage from large hotels can be a source of pollution if it is not treated and disposed of carefully. Most hotel projects include waste water treatment plants, but these can be difficult to maintain in the islands and need to be monitored regularly. Tourist facilities also produce large amounts of solid waste which can add to the existing solid waste disposal problems on many islands.

2.3. Infrastructure requirements

Any major tourist development requires a good airport where large jets can bring tourists from overseas countries. Visits by tour ships may require improved docking facilities. Roads may have to be built to resort sites, or improved for tour buses. Water and electricity supplies may have to be increased. All these kinds of infrastructure require investments which must be added on to the direct cost of a tourism project.

Building roads, airports and docks can have major environmental impacts which are beyond the scope of this unit. Their overall effects, however, may be positive as well as negative. Such facilities benefit local people as well as tourists, reducing the isolation of remote areas and increasing the convenience of travel within the country and overseas but the areas of reconstruction and design of airports must be taken into consideration if the location has any historical value and to avoid the creation of nuisance and disturbance of the local people. Tourism development can thus support useful expenditures that could not be justified for the local people alone.

3. DAMAGE FROM TOURIST USE

Tourists are often unaware of how fragile some island environments are. They may trample vegetation and thus cause erosion, or disturb birds and wildlife. They may leave their rubbish behind, littering the environment. They are apt to break corals as they walk or swim over the reef. Even anchoring in a fragile reef area can result in significant damage to corals. Tourists love to collect corals, shells and other pretty objects as souvenirs, but too much collecting can damage a reef or other sites. Fishing is a sport for a tourist, but it may take away resources needed as food in nearby villages.

Where a few tourists may do little damage, thousands of them can be a disaster. Think of the difference between one tourist breaking off a piece of coral, and hundreds of tourists each taking a piece of coral; a reef could quickly be stripped of its corals and shells. Areas subject to heavy tourist pressure should be protected from damaging activities. Laws may be needed to protect wildlife and to control collecting.

The increasing demand for curios such as stuffed turtles, turtle shell jewellery, mounted butterflies, and traditional objects made with rare bird feathers or animal skins can threaten rare species with extinction. The manufacture and sale of such objects should be prohibited or strictly controlled. Coral, shells for handicrafts or collectors, and local trees used for carving can

also be wiped out locally or reduced to low levels when too much is used to supply the tourist trade.

4. PLANNING TOURISM DEVELOPMENT

One major question to be answered in planning tourism development is what scale of tourism is appropriate for the local environment and culture. Every place has a carrying capacity that cannot be exceeded without bringing about serious changes or even the collapse of important resources or systems. While some small-scale tourism can be fit in almost anywhere, large scale tourism can cause major problems if it is not planned very carefully.

The number of tourists an area can absorb should be decided before tourism development goes too far, because always will be a pressure for bigger and bigger developments. The appropriate scale of tourism may be determined by the most limited resource, such as water or coastal land, or by the desire to prevent serious social or cultural impacts. How many people, for instance, can a community receive comfortably as visitors, or how would it feel to be outnumbered by the tourists on its own island?

4.1. Comprehensive planning for tourism

Unlike most development projects that only involve a specific site or area, tourism frequently depends to some extent on an entire country or island. It is therefore in the interest of the tourist industry to see that the overall planning of the country's development includes the requirements of tourism. As more governments begin environmental planning and make physical plans (including town plans, master plans and coastal zone plans), it is essential that these plans include the sites of a particular scenic or recreational potential. The coastlines, vistas, swimming beaches, waterfalls, mountains and lagoons that tourists visit and photograph are capital assets just like hotels, but they are generally not owned by the tourism interests that benefit from them. Only careful comprehensive planning, and often the understanding and support of the

traditional owners, can protect these resources from degradation and destruction.

Planning helps in making choices between conflicting uses, or in finding ways to make them compatible. It should aim to locate unsightly or polluting activities, like industrial areas, fuel storage depots, rubbish dumps, etc., where they will not destroy the beauty of a town or coastline or conflict with tourist sites. In many island towns, there are already too many cases where urban pollution is making tourist beaches unsightly or unsafe. Planning early for tourism development can help to avoid damaging and expensive errors and also to prevent the gradual erosion of environmental values significant to tourism.

Improvements that help tourism, like better transportation, tree planting, restoration of historic sites, urban beautification and cleanliness, also improve the environment for the local population. Tourism development can help to stimulate general community improvement.

Overall, tourism tends to be a mixed blessing in its benefits and impacts on the island environment. If it is allowed to grow unplanned, it can have serious social and environmental impacts while providing little real economic benefit. If developed with care, it can bring many advantages to small island communities with few other resources.

5. ISLANDS SUSTAINABILITY- CYPRUS

Islands are the second most important holiday destination after the category of historic cities. This new scenario presents an ambivalent situation for islanders that must be faced with a decision. On the one hand, the tourist industry is effectively a powerful vector for development and for breaching isolation, on the other it is an unprecedented risk for the conservation of an island's natural and cultural resources, its most valuable capital, and a particular repercussion on the island's coastline and marine environment.

Tourism is starting to become one of the leading economic sectors on most islands but many islands are highly seasonal, which means they need solutions

and products that maintain employment and economic activity in the low season.

For the period January - June 2003 arrivals of tourists are estimated at 892.655 compared to 1.017.387 in the corresponding period of 2002, recording a decrease of 12.3%.

Taking into consideration island tourism, we may refer to the example of Cyprus (see table 2) and the intensive island destinations of the European Union, where we find holiday accommodation densities that vary between 75 and 150 beds per square kilometre. They very often exceed conventional population densities of populated areas of any continent. The Mediterranean Blue Plan gave some spectacular figures for 1994: European islands have more than 1,800 km² of tourist infrastructures. But if we make the comparison in terms of tourist flows, the results are even more striking: the Greek islands receive more international tourism than Brazil; the Balearic islands are host to the same number of tourists as Portugal; Hawaii is visited by more people than Chile and Argentina together and twice the number of tourists visit the Canary Islands each year than the 5.5 million international tourists that go to the whole of South Africa, the great emerging destination of the African continent.

These figures indicate the intensity and the degree of specialization that the tourist industry has reached in island regions, and should serve as a warning about the environmental and social risks being faced by extremely fragile territories. The Conference on Sustainable Island Development in Europe (UNESCO-INSULA-Minorca 1997) called attention to these matters, recognizing that it was time to set the right action strategies. Islanders do not want to remain as mere spectators of a process that, if not suitably controlled, will turn a source of wealth into a new crisis factor.

TABLE 2: ARRIVALS OF TOURISTS (MAIN COUNTRIES)

Country	June			January – June		
	2002	2003	Change (%)	2002	2003	Change (%)
TOTAL	293.192	262.100	10,6	1.017.387	892.655	12,3
United Kingdom	175.360	153.773	12,3	556.841	522.641	-6,1
Germany	10.594	7.728	27,1	80.555	50.286	-37,6
Sweden	14.180	12.572	11,3	39.681	35.484	-10,6
Russia	15.827	14.490	8,4	50.975	40.735	-20,1
Greece	8.101	9.774	20,7	41.812	44.806	7,2
Ireland	8.638	10.473	21,2	20.596	22.115	7,4
Norway	8.462	10.185	20,4	21.416	22.114	3,3
Switzerland	7.144	3.691	48,3	24.351	11.999	-50,7
Other	44.886	39.414	12,2	181.160	42.475	-21,4

Source: C.T.O. 2003

In small islands there is a tendency for fast growth of tourism to be accompanied by inflationary pressures. Prices of real estate, particularly land suitable for building, which is extremely scarce, quickly rise beyond the reach of the local population. Inflationary pressures build up throughout the economy as the prices of locally produced construction materials and consumers rise. Although this process means higher profit margins in bottleneck sectors and could stimulate more inward investment, overly accommodating monetary policy could generalize the inflation with adverse consequences for international competitiveness and future investment.

As Sustainable tourism is a trend that will contribute to more "fairly traded" tourism, five areas must be taken into consideration and are: local community level; consumers-tourists; national government of each country; and international agreements with concentration in respect for the culture, beliefs and ancient civilization of each country.

Island tourism is invariably concentrated on sun, sea and sand. However, to the extent that some interaction occurs with local customs and traditions, tourism is sometimes believed to exert a negative socio-cultural influence. A high level of tourism can lead to commercialization, which is thought to cheapen local customs and traditions. Local arts and crafts and cultural practices are sometimes adapted to suit foreign tastes, which leads to the creation of contrived cultural products.

As an example, the island of Cyprus is used, which the booming of tourism after the Turkish invasion in 1974, and the golden decade of 1980's and 1990's drove to an uncontrollable construction of hotel and other tourist establishments in all sea and mountain resorts of the island, without taking into consideration the harm caused to our natural environment and turning the traditional Cyprus and Greek Culture of the island into a "business monotorium" of guest satisfaction by offering high quality standards of services in combination with sun, sea and sand, leaving aside the natural resources of the island, our local arts and cheapen as mentioned before our local customs and traditions.

What was really the customer-tourist feedback who is spending a couple of weeks or more on the island? Customer feedback in local tourism business has shown that guests were pleased to see the use of local products, to enjoy an overnight stay into a traditional Cypriot village house, to be educated about our history that bring Cyprus centuries back, recycled products composting, recycling, promotion of public transport and walking, cycling, climbing etc.

Recently, the government has proceeded with the formulation of plans of agro-tourism, for the protection of forests and the plantation of new ones, for the protection of small rivers and the different species of birds and animals. These activities have substantially enriched the profile of sustainable tourism.

On the whole there was general impression from business that they did feel a sense of duty to care for the environment and recognized the importance of working with other local business and the agricultural sector. A concerted effort was made in many cases to reduce the amount of chemicals used, use natural fertilizers, compost wherever possible, local suppliers, purchase local products

etc. It was made clear however by many operators that in this present economic climate the extra costs involved in using organic foods, recycled products could not always be passed onto the customer, making profit margins even tighter. Although it was thought that customers were highly appreciative of the use of local and organic produce there was often resistance to actually paying higher prices for these products. This again has limited the progress some businesses have been able to make and with foreign holidays becoming increasingly cheaper there is a concern that passing any extra costs onto the customer will be detrimental to the long term viability of their business.

6. CONCLUSION

One area where tourism interest coincides with the long-term interest of a country is in the conservation of nature and traditional culture. Tourists are particularly attracted by unusual vegetation, birds and wildlife, by coral reefs and lagoons, and by distinctive cultures, customs and life styles. Very little has been done to develop these resources for better tourism, and ways need to be found to make them available without putting them at risk or degrading them.

The development of protected areas such as national parks and reserves can be one way to protect a country's heritage and to make it available for local education and tourism. The investment in facilities such as trails, signs, picnic shelters and visitors' centres is usually repaid through tourists who come in larger numbers and stay longer because there are more things to see and do.

Conservation areas will also attract special categories of tourists with interests in botany, bird watching, wildlife, nature photography, diving, archaeology, etc. Such kinds of tourists are generally more interested in the country they visit and less apt to cause serious social impacts.

Sustainable Tourism is the consequence of the industry adapting the strategy of Sustainable Development to the world of tourism. On an international scale, it was formulated at the World Conference on Sustainable Tourism, held on the island of Lanzarote in 1995. It is generally accepted that sustainability in tourism means being ecologically acceptable in the long term

and financially viable and fair from a social and ethical viewpoint, for local communities. Thus, tourism must become part of the natural, cultural and human environment, respecting the fragile balance that is characteristic of many holiday destinations, particularly on small islands and in environmentally sensitive areas. Sustainable tourism will place special emphasis on conserving the cultural heritage and traditions of local communities, enabling destinations to enhance their social and cultural heritage and improve the quality of life of their people.

Within a strategy of environmental quality as a means of conserving destinations and satisfying customer needs, top priority has been given to promoting the participation of everyone involved in the tourist industry and opting for cultural, technological and professional innovation.

In the domains of planning, regulations covering tourism, the environment, and the generation of environmentally-friendly projects, islands have shown an extraordinary capacity for action. The number of practical cases is high, although the scattered position of islands prevents us from seeing the overall magnitude of the change in mentality. They are small building blocks that, one at a time, are constructing the edifice of sustainable island development within the framework of the new tourism culture.

That is why the transfer of information and experiences between one island and another is essential. Our problems cannot be solved in the same way as on the mainland, and it may well be a mistake to import technical and management solutions, without validating and adapting them to island conditions.

NOTES

1. Timothy Beatley, (1995). The Many Meanings of Sustainability, *Journal of Planning Literature*, Vol. 9, No. 4, May, pp. 339-342.
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5. *Toward a Sustainable Future*, Special Report 251, Transportation Research Board (Washington DC), 1997.
6. *Report of Global Conference on the Sustainable Development of Small Island Developing states, Bridgetown, Barbados, 25 April-6 May 1994(A/CONF.167/9 and Cor. 1 and 2)* (United Nations publication, sales No. 94.1.18 and corrigenda), chap.I, resolution 1, annex II.1
7. People could be more concerned about future generations who may include they own descendants, but those descendants could have ancestors from anywhere earth, so improving the welfare of people in distance places can also benefit their own descendants.
8. Committee for a Study on Transportation and a Sustainable Environment, *Toward A Sustainable Future; Addressing the Long-Term Effects of Motor Vehicle Transportation on Climate and Ecology*, National Academy Press (www.nas.edu/trb), 1997.
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Enders, W. (1995). *Applied Econometric Time Series*, John Wiley & Sons, Inc.

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