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# WHAT'S SO DIFFERENT ABOUT DEVELOPING WEB-BASED INFORMATION SYSTEMS?

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## ABSTRACT

*This paper considers the suitability of traditional IS development methods to Web-based information systems. A two year e-commerce development project is used to explore Web-based IS development using action research. To distinguish the project from consultancy a framework of ideas – Multiview – is declared and tested in the research process. Multiview was defined in 1985 and has been since refined to become an influential approach to information systems development. It has soft and hard aspects and, as a contingency approach, is not prescriptive but adapted to the particular situation in the organization and the application. The differences and similarities of traditional IS development projects and Web-based projects are reported and found to be more about concrete differences of methodology content than abstract concepts. The project also provided an opportunity to reflect more generally about the role of methodology in IS development.*

## 1. INTRODUCTION

Many of the approaches to Web development have focused on the user interface and in particular the look and feel of a Web-site, but have failed to address the wider aspects of Web-based information systems (Howcroft & Carroll, 2000). At the same time, traditional IS methodologies - from waterfall lifecycles to rapid application development (RAD) – have struggled to accommodate Web-specific aspects into their methods and work practices. A notable exception is Conallen (2000) who has adapted the unified modelling language (UML) to Web applications. Although Web-sites are characterized historically as graphically intense hypermedia systems, they have now evolved from cyber-brochures into database-driven information systems that must integrate with existing back office applications. Web-based IS therefore require a mix of Web-site development techniques together with traditional IS development competencies such as database and program design.

This paper reports on an action research project that spanned two years and involved the building of an e-commerce application for a UK-based small to medium enterprise (SME) working in the food and drink industry. From a research viewpoint a ‘theory’, the Multiview methodology (Avison & Wood-Harper, 1990; Avison et al., 1998), is being tested by its practical application to the construction of a Web-based IS. The methodology that emerged from the application of Multiview in this context is a Web IS development methodology (WISDM). The learning outcomes sought are to gain understanding of: (1) the changes to the methods content of traditional IS methodologies needed to cope with Web-based IS; (2) the differences between Web-based IS development and traditional IS development; and (3) the role of methodology in IS development. To this end, the paper is organized as follows. In section 2 the research design and methodology are introduced. In section 3 the framework of ideas to be tested, Multiview, is described in overview. The client organization is introduced in section 4 and the outcomes of the intervention are reported in section 5. In section 6 the action research is reflected on and lessons drawn. A summary is made in the last section.

## 2. RESEARCH METHOD

Action research was used in order to learn about the actual and situated practice of Web IS development through first-hand experience. In making an intervention one can avoid the distorting lens of purely theoretical approaches to methodology: the unattainable ideals and hypothetical 'straw' men of utopian development where the methodical is privileged over the amethodical (Truex et al., 1999). Avison et al. (1999) argue that for academics to read about systems development, write case studies, and even build their own methodologies is not enough:

*In action research the researcher wants to try out a theory with practitioners in real situations, gain feedback from this experience, modify the theory as a result of this feedback, and try it again. Each iteration of this action research process adds to the theory – in this case a framework for systems development – so it is more likely to be appropriate for a variety of situations. (p. 95)*

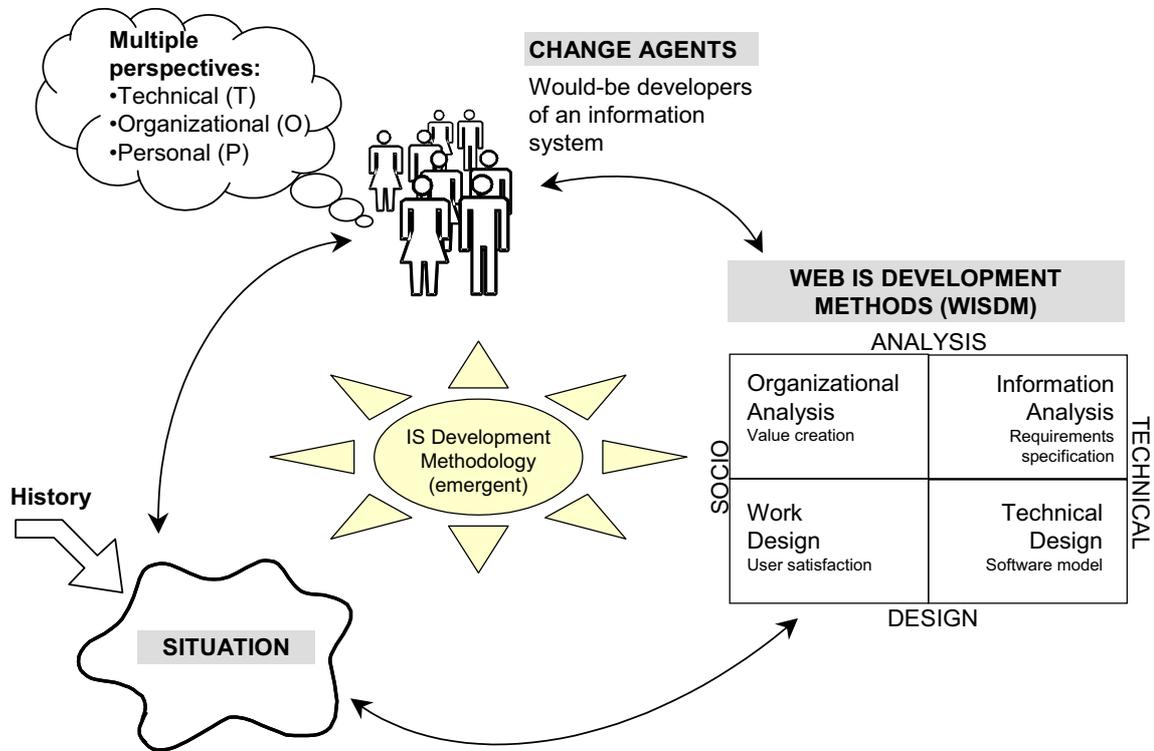
According to Checkland (1991), the definition of a framework of ideas is important if action research is to be rigorous and have validity – it also helps differentiate action research from consultancy (Baskerville and Wood-Harper, 1996). The aim of the action research project reported in this paper is to find out about Web IS development (particularly e-commerce systems development), using Multiview, a long established and pre-Internet IS development methodology, as a framework of ideas to be tested through intervention. The client organization in which the framework of ideas is tested is Zenith International, a company specialising in consultancy to the food and drinks industry. More specifically, the area of application for the action research is the Global Drinks Service (GDS) e-commerce project, which ran from October 1999 through September 2001.

## 3. THE FRAMEWORK OF IDEAS - MULTIVIEW

Multiview originated as a response to approaches to IS development that had strong roots in engineering discipline and technical rationality. The extension of structured programming into structured analysis and design was, perhaps, a logical progression that resulted in IS development methods such as Structured Systems Analysis and Design Method (SSADM). The process of taking successful programming strategies and broadening them out into design and analysis methods continued unabated with the object-oriented (OO) paradigm, where OO programming was extended into OO analysis culminating in the Unified Modelling Language (UML) notation (Booch et al. 1999). Although there are certainly differences between the structured and OO paradigms, the philosophical foundations are shared - a functionalist paradigm of objectivism and social order (Hirschheim et al., 1996). Engineering-based approaches to IS development can lead to an over-emphasis on the design and construction of computer-based artifacts with insufficient attention given to the social and contextual aspects of IS development. Hirschheim et al. (1996) take the view that the changes associated with system development are emergent, historically contingent, socially situated and politically loaded. As a consequence of this position they argue that sophisticated social theories are needed to understand and make sense of IS development activity.

Multiview is structured in three tiers: general framework, local methodology, and methods/techniques (collectively these constitute 'Multiview'). The Multiview *framework* (figure 1) is used to inform the emergence of a situation-specific methodology; at its best it is the result of a genuine engagement of the IS developers (change agents) with the problem situation. This engagement, which is historically contingent and locally-situated, informs the choice of methods and techniques, such as object-oriented design and job satisfaction design, that will be used to get things done. The Web IS development methods (WISDM) matrix (figure 1) categorizes methods in two dimensions: socio (the organization and individuals) and technical (things), analysis ('what' is required) and design ('how' it will be achieved). Engineering-based approaches to IS development concentrate on the right hand side of the matrix: the generation of a requirements specification and its stepwise refinement into a software model. Multiview supports a more even-handed approach, where a sociotechnical solution is sought.

Thus, the IS development methodology is emergent only in practice through the interaction of developers, methods, and situation. Multiview is, therefore, more usefully seen as a metaphor that is interpreted and developed in a particular situation, rather than as a prescriptive description of some real-world activity.



**Figure 1: the Multiview framework for Web-based IS development (adapted from Avison et al., 1998)**

#### 4. THE CLIENT ORGANIZATION

Founded in 1991, Zenith International Ltd is a business consultancy specializing in the food, drinks and packaging industries worldwide. The main business activities are market analysis, strategic advice, technical consulting projects and conference organization. In spring 1998, the strategic aims of Zenith were to create a global presence, to broaden the product range, and to develop complementary skills (e.g., a synergy of market intelligence reports and consultancy). In September 1998 Zenith launched its first Web site. The first stage of the web site implementation was to create a web presence and to provide marketing information about Zenith companies and their services and products. Market report contents pages and sample pages were made available on the web site, but not full electronic copies of the reports. At the time of the Web site launch Zenith was very much wedded to the delivery of market intelligence in paper form – partly because this was what they knew and were comfortable with, and partly because customers were not at that time demanding Internet delivery of content. However, the web site did allow customers to place orders online for subsequent delivery of paper reports (these sell for a typical price of £1500). Two of the most successful features of the site were the online conference booking forms and the Chairman's newsletters. In summary, the site was typical of a cyber-brochure, informational site, with elementary order taking facilities. Although there was no significant impact on the company's strategy or on its day-to-day operations, the project did create awareness of (and confidence in) how the Internet could be used to shape and further the organization's strategy in the future.

#### **4.1. The Zenith Global Drinks e-commerce project 1999-2001**

Analysis of competitors showed that the larger market research companies were making reports available online (e.g., Gartner, Datamonitor) and issuing user identification and passwords to customers. The success of the company Web site launched in 1998 gave the company the confidence to explore e-commerce and the online delivery of market research content. In October 1999 Zenith and a UK University established a two-year Teaching Company Scheme (TCS). The aim of the TCS programme was to develop the skills of the Teaching Company Associate (a recent MSc graduate of the University), to transfer knowledge from the academic institution via the Academic Supervisor to the company (Zenith), and to achieve a tangible business benefit for the company. The Associate was employed on a full-time basis by the University for the two-year life of the project, but based in the company's offices taking day-to-day direction from the Industrial Supervisor, a manager at the company. The lead academic was available to the project half a day a week and was expected to play a hands-on role supporting the Associate and the company. The project team therefore consisted of a full-time system developer (the Associate), a business user (the Industrial Supervisor), and a system development consultant (the Academic Supervisor).

The objective of the TCS programme was to build an online Global Drinks Service (GDS). In 1999 the GDS was a paper-based survey of beverage consumption data, together with textual analysis, for all countries with analysis across product groups (e.g., soft drinks) and products (e.g., bottled water, fruit juices). This information is of value to the marketing and planning departments of organizations involved in the drinks industry, including ingredients suppliers, manufacturers, retailers, and packagers. In its paper form a customer was expected to buy the complete survey – all countries, all products, all years – and to renew a subscription on an annual basis if it wanted a new report with updated consumption data. By making this information available online Zenith would be able to supply information in 'byte-sized' chunks on demand. For example, a customer could purchase bottled water figures for Taiwan or coffee figures for Eastern Europe. Customers would be able to cut and paste research data into their reports, rather than having to manually re-key it from a paper version. More importantly, with the online GDS it would be possible to make instant comparisons between countries and products – this was impossible with the paper version due to the large number of potential combinations. For example, with an online GDS it is possible to compare beer consumption in Germany and France year by year. With the paper-based GDS customers were required to buy the complete report; with the online GDS they could buy the data they needed, when they needed it. The online pricing structure that Zenith arrived at allowed customers to buy a single country/product combination for US\$50 or to gain access to all countries and all products for \$4500. In between are many pricing possibilities reflecting the combinations of countries/regions and products/product groups.

The formal organization of the GDS project required regular steering committee meetings and technical meetings. Steering committee meetings were held every three months and attended by the Chairman of the company (the programme facilitator), a representative of the Teaching Company Directorate, and all the members of the project team. Technical meetings were held monthly by the project team to review progress and to document actions and decisions. The original TCS project proposal, minutes of steering committee and technical meetings, company documents, project reports and deliverables (e.g., design documents), the GDS application itself, and the personal diary entries of the academic supervisor were drawn on in reflecting on and writing up this research.

#### **4.2. Outcomes of the intervention**

The project plan anticipated version 1.0 of the GDS being complete 12 months into the two-year project with a further 12 months for monitoring and iterative development through prototyping. In Internet time 12 months might well seem to be excessive, but the time-scale had to reflect the training requirements of the Associate, who was a novice developer, and allow the Associate to gain experience and confidence through technically less demanding pieces of work, such as a redesign of

the company's main Web site. Pre-production prototypes were delivered frequently culminating in the first production version of the GDS being delivered 10 months after project commencement, thus putting the project two months ahead of schedule. The first version of the GDS allowed for end-to-end purchasing: customers could select the data they wanted to purchase, pick a user id and password, pay by credit card using a secure third party, and have immediate access to the data purchased ([www.globaldrinks.com](http://www.globaldrinks.com)). Once the initial version of the GDS was delivered, new releases followed at roughly eight to ten week intervals. New facilities included: more sophisticated calculations (e.g., country to country comparisons of percentage growth in beverage sales per capita) and graphical presentation, a report store allowing textual commentaries to be purchased in pdf file format, a database of more than 1500 links to drinks manufacturer sites, an email news service, daily news available by mobile telephone using WAP (wireless application protocol), and real-time generation of user selected data in the form of an Excel spreadsheet. A revenue stream of GDS sales was created in the first year of the project and the financial targets for revenue generation specified in the project proposal for the two year period were exceeded. From a TCS and company perspective the project was adjudged to be a success. In the context of an e-commerce Web application, the GDS project led to some significant changes in the methods matrix that will now be considered in turn.

## **5. THE CONTENT OF THE WEB IS DEVELOPMENT METHODOLOGY**

The methods used in the development of the GDS are presented using the four quadrants of the Multiview methods matrix in figure 1. The aim is to contrast the indicative and stereotypical methods of Multiview with what actually happened in practice to gain an insight into the effectiveness of a pre-Internet IS development approach to a Web-based application.

### **5.1. Organizational analysis**

The primary method for organizational analysis in Multiview is the soft systems methodology, SSM (Checkland & Scholes, 1990). SSM is particularly relevant in situations characterized by complexity and pluralism of stakeholder interests (Flood & Jackson, 1991). By contrast, the GDS project was perceived by the client organization to be simple/unitary. In organizational terms the project was 'simple' – it was an e-commerce bolt-on to existing operations (i.e., another channel for marketing and sales). Stakeholder interests were unitary, i.e., there was agreement on both the ends - success would be measured chiefly by the ability to generate revenue – and the means. Given this reading of the situation, the introduction of 'mode 1' SSM would have been inappropriate. In mode 1 the analyst is "using SSM to do a study", a formal stage-by-stage application of SSM (Checkland & Scholes, 1990, p. 281). The users would not have perceived mode 1 SSM as meaningful in the GDS context and as a result genuine participation would have been difficult to achieve. We decided, therefore, not to use SSM overtly in the project. However, some form of visible organizational analysis was required to ensure that the project had a sound business context. For an e-commerce project an external orientation is essential, since the aim is to sell products and services to customers. The organizational analysis consisted of building an e-commerce strategy for Zenith and conducting a market survey. The e-commerce survey was concerned with aligning the development project with Zenith's wider business strategy in the context of industry forces (Porter, 1980). The market survey focused on customers and included a postal and telephone survey to determine attitudes to the Internet, e-commerce (particularly payment online), and research information needs. The outcome of this analysis was the identification of the GDS as a suitable area for e-commerce development.

In the Multiview methods matrix organizational analysis is shown to be generically concerned with value creation. In Multiview this has been the traditional province of SSM, where a systemic transformation creates benefit (or disbenefit) for a Customer. Of course, this is 'below the line' thinking in SSM (i.e., it is not a model of a real world transformation), but all the same the aim is to give insight into purposeful activity and meaningfulness, which can be broadly constituted as value creation. Strategy models such as Porter's Five Forces and Timmers' (1999) e-commerce models are

pre-packaged guides to thinking about purposeful activity. Thus, the overall aim of organizational analysis is the consideration of how value will be created. The approach taken might be to use soft methods, such as SSM, or hard methods, such as pre-packaged strategy and e-commerce models.

## 5.2. Information analysis

The stereotypical methods for specifying requirements from the technical rationality perspective is the unified modelling language, UML (Booch et al., 1999). Use cases were developed to describe the major functionality of the proposed system, including registration and purchase, research queries, and maintenance. Given that this is a data-intensive application that would be implemented around a relational database, it is not surprising that the heaviest use of UML was in the development of class diagrams. Limited use was made of OO principles, such as encapsulation and inheritance, because it was known that the implementation environment had no explicit support for OO mechanisms. Although the analysis was approached from a logical stance, i.e., independent of the implementation platform, the methods used were influenced by the choice of technical platform for implementation. Some use of UML sequence diagrams was made, but again, the target environment meant that these were perceived as having less value due to a knowledge that the implementation would take the form of Web pages – an environment notoriously antithetical to OO (Connallen, 2000).

## 5.3. Work design

In classic form, Multiview draws on the ETHICS approach to sociotechnical design (Mumford, 1995). ETHICS is concerned with achieving a suitable match between job satisfaction – the fit of an employee's job expectations and the job requirements as defined by management – and efficiency objectives of the organization. The GDS project was conceived as a standalone initiative that would target external customers and have minimal impact on working practices within the organization. In practice, this was not entirely the case. The initial load of the GDS data to the database was a typical development activity, i.e., data conversion. However, 9 months later (18 months into the project) it was necessary to load in the next year's data. This was a routine business process that did impact on the internal business processes of the research department, i.e., the GDS project had implications for work that had not been accounted for. If the annual updates had met with user resistance from the research staff who were not involved directly in the GDS then the project may have faltered. Although a full-blown ETHICS investigation would have been inappropriate to the GDS project, the experience served as a reminder that even the most independent seeming of projects can have an impact on work practices.

The primary user of the GDS was the external customer. Customers use the GDS to support their own work practices, such as marketing and production planning, and in that sense ETHICS could be applied to understanding how the GDS might contribute to the quality of work life of customers. However, given the access difficulties we decided to treat the customer's organization as a black box and to assess user satisfaction through the WebQual instrument. WebQual (Barnes & Vidgen, 2002) is a questionnaire-based method for assessing the quality of an organization's e-commerce offering in three dimensions: usability, information quality, and interaction (service) quality. The WebQual instrument has been under development since the early part of 1998 and has evolved via a process of iterative refinement in different e-commerce domains, such as Internet bookshops and online auction houses. The method turns qualitative customer assessments, such as "*I find the site easy to learn to operate*" (usability), "*Provides believable information*" (information), and "*It feels safe to complete transactions*" (interaction), into quantitative metrics that are useful for management decision-making. Typically, the tool allows comparisons to be made between organizations in the same industry or for the same organization over time. As part of the TCS programme the Zenith main Web site was redesigned and WebQual was used to assess the quality of the site before and after the redesign (Barnes & Vidgen, 2001). Where it is inappropriate or too expensive to do a detailed work-study, as may be the case with external customers, the WebQual questionnaire approach is a suitable instrument

for the assessment of user satisfaction. Thus, the aim of work design has been broadened from job satisfaction to a more general concern with user satisfaction – e.g., customers and employees - in the e-commerce environment.

#### **5.4. Technical design**

The physical requirements of the implementation were clear: a database was needed together with some technology to link the database to the Web. The project team selected Allaire's ColdFusion server together with Microsoft Access (later upgraded to MS SQLServer) database. Graphical presentation of database query results was achieved using Seagate's Crystal Reports and Web site design was accomplished using Macromedia DreamWeaver with Fireworks and Flash for graphics and animation. The choice of platform was driven by a mixture of the technology available on a limited budget and the previous experience of the team members. The academic supervisor had experience of ColdFusion and Access and steered the project in this direction rather than acquire a different technology (e.g., PHP and mSQL) that would require learning for all team members. The budget affected the hosting decision insofar as an ISP (Internet service provider) would be needed since the option of Zenith hosting its own dedicated server, or even co-hosting with an ISP, were not viable options. In the end, a US-based ISP was chosen (advances.com) on the basis of the range of services provided, such as database hosting, scripting, and charting, and the cost of those services.

From a logical design perspective, the GDS started as a relatively straightforward application. The database did not have a lot of tables and the program logic was simple. As the project progressed and more functionality and tables were added the application gained in complexity. It became clear that some structure was needed to manage this complexity. The structure came in the form of a three-tier architecture that allowed database, business logic, and presentation layers to be separated out. By building the business logic in Cold Fusion using custom tags it was possible to achieve a pseudo-OO implementation. Unfortunately, the scripting approach to Web development does not sit well with OO, which meant that the UML diagrams became less relevant as the design moved from the logical to the physical. However, use was made of UML-style interaction diagrams to model the interaction and flow of Web pages.

Possibly the greatest challenge was in the design of the Web user interface. The academic supervisor, a traditional system developer, had little aptitude for this area of development. Fortunately, the TCS Associate proved to have a flair for graphics and Web aesthetics. If this had not been the case, the project would have had to be supplemented with the skills of a graphic designer. We also found that the best way to learn about Web page design and Web navigation and flow was to copy exemplars. For example, the Amazon registration and ordering flow proved an excellent template – Amazon are consistently rated highly for their ease of use and are also well-known by many users. Imitation of well-known sites might not be innovative, but it does provide a tried and tested route to follow, as long as proprietary methods, such as Amazon's "one-click ordering" are not infringed.

### **6. REFLECTIONS**

#### **6.1. Is IS development for the Internet different?**

In a review of three companies working in Internet time, Baskerville & Pries-Heje (2001) used grounded theory to arrive at ten concepts relevant to IS development for the Internet. Causal chains, driven primarily by 'time pressure' and 'vague requirements', link the concepts. The remaining eight concepts are: 'prototyping', 'release orientation', 'parallel development', 'fixed architecture', 'coding your way out', 'quality is negotiable', 'dependence on good people', and 'need for structure'. As will be seen, these concepts applied in the main to the GDS project.

The GDS project was running on Internet time with high expectations of functionality and early and repeated delivery to requirements that were vague – at least in the sense that at the beginning of the

project no one had any concrete idea of how the data would be packaged and presented, charged for, and delivered to the user.

Traditional IS projects	Internet projects
The strategic dimension is addressed indirectly, possibly through a broad notion such as strategic alignment. Often it is not addressed explicitly at all.	Strategy is addressed directly, particularly in e-commerce projects where a revenue stream is generated. The strategic dimension is visible and relates closely to business goals.
The typical user is an employee. Users can be trained and consulted directly. Job satisfaction is a key aim.	The typical user is a customer who makes payments for goods and services. The customer won't attend training sessions and needs to be understood using sales and marketing methods. Customer satisfaction is a key aim.
The development focus is on the internals of the design: the database, the programmes and an architecture (e.g., three-tier). The user interface is almost an afterthought.	The development focus is on the Web site as a visual artefact. Development often starts with a mock-up of the user interface. Graphic design skills and a feel for Web aesthetics are essential.

**Table 1: differences between traditional IS development and Internet projects**

The response to this definitional uncertainty was to build prototypes, which were put together quickly and discarded as necessary. Release orientation allowed a basic system to be delivered ahead of time, with a continuous flow of new releases following on. Parallel development is a basic theme of Multiview; analysis and design are done in parallel, each informing the other, with the traditional waterfall lifecycle being considered a restricted and special case. Baskerville & Pries-Heje found that all three of their case study organizations adopted a fixed three-tier architecture as a way of dividing work - this architecture was also adopted as a way of managing the growing complexity of the GDS application. Coding your way out is a fact of life when working under Internet time and tight timescales – ‘hacks’ have to be made and documentation is left to catch up later, ‘when things are quieter’. The benchmark for quality is customer perceptions, rather than the internally focussed perspectives of the product and the software development process. Given the timescale and the small project team, dependence on good people was an absolute requirement. An able Associate who is quick to learn was an essential prerequisite to the success of the project. However, it is particularly difficult to predict the learning ability and aptitude of a novice developer and to a rather worrying extent the project is largely dependent on the ‘luck of the draw’. With larger projects there might be some resilience to developer variability – with Internet time projects with small numbers of specialized resources (e.g., graphic design, database design) getting the personnel resources wrong has catastrophic implications. Lastly, Baskerville & Pries-Heje identify the need for new structures of IS development teams. This may be the case where there is a traditional systems development department in existence, but in the case of the GDS project the team were working in a green field situation and created working structures and routines as the project unfolded.

Although the ten concepts capture the emergent WISDM and our experience on the GDS project well, do the concepts really capture the differences between Internet-based IS development and traditional IS development? If the term ‘business urgency’ is substituted for the concept ‘Internet time’ then it is clear that the ten concepts have a more general relevance to understanding the IS development process. In situations characterized by time pressure and definitional uncertainty the response of IS developers has long been to adopt a flexible strategy to IS development using techniques such as rapid application development and prototyping. However, there are differences between Internet projects and traditional IS development, but these differences are more to do with concrete content than with abstractions (table 1).

As Internet projects become broader in scope requiring greater integration with front office, back office, and legacy IT systems of all sorts, then Internet projects will become yet more difficult to distinguish from traditional IT projects. Traditional IS projects would also benefit from being giving

more attention to strategy, customers, and design aesthetics and therefore the distinctions in table 1 should, over time, become less pronounced and soon disappear altogether.

## 6.2. What is the role of methodology?

Turning to the role of methodology, figure 1 shows that methodology is generated locally through the struggle of the change agents with the situation and the methods. The emergent methodology only becomes visible through engagement and practice. During the early stages of an IS project there is lack of agreement about what the IS does, scepticism from users, uncertainty about the impact of technology, variation of aims, and changing coalitions:

*The trail is still hot. Information is scarce, contradictory, asymmetrical, and difficult to interpret and use. Uncertainty rules the day. (Callon 1991, p. 154).*

We know when a methodology has been successful, because there is a clear but artificial separation of what is required, how it will be achieved, the role of technology, and the role of people. According to actor network theory, a convergent and irreversible network (Callon, 1991) has emerged through a local process of translation, and a mixing of humans and non-humans in a process of mutual definition. This seeming separation is the end point of methodology rather than the start. Methodology in this sense is a verb rather than a noun; methodology is created and recreated through mediation and the day-to-day practice of system development. Although methodology as contingent and locally situated practice might be described as amethodical (Truex et al., 2000), it is not a series of random actions. There are structures that guide and shape the creation of methodology, such as the IS methods and the problem situation in figure 1. These structures are drawn on by human actors and contribute to the interpretive scheme that guides practice in structuration theory (Giddens 1984). Because there are multiple human actors involved in system development there are multiple meanings formed from the structures as people interpret the IS methods and the problem situation in different ways. To understand IS methodologies in practice it is therefore absolutely necessary to draw on theories of the social, such as structuration theory, that help us explain the role of human agency. We also need to ensure that the role of the things – the technologies and technical artefacts – is not forgotten. This suggests that any theory of IS methodology should also be a sociotechnical theory that will help us account for material agency (Pickering 1995).

## 7. SUMMARY

The Multiview framework has been used to explain how a Web IS development methodology (WISDM) emerged on an e-commerce development project, the Global Drinks Service (GDS), in a UK-based SME. The methods used in the development project reflected the experiences and skills of the developers, the situation, and the type of project. Three key areas where an e-commerce project differs from traditional IS development were identified: a strong and direct link with business strategy, the need to incorporate sales and marketing skills to address the needs of the user as customer, and a bolstering of traditional IS development skills with a graphic design sensibility. The project also gave insights into the nature and role of methodology in IS development, suggesting a shift from a view of methodology as structure to one of methodology as doing and practice. Future work will centre on a second two-year project that began in October 2001. The new project involves extensive business process redesign for Zenith and is expected to provide a rich setting for further investigation into the role of methodology in IS development.

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