Chapter X
Tracing the Many Translations of a Web–Based IT Artefact

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ABSTRACT

This chapter adopts an interpretive, case based research strategy to discuss the centrality of meaning in implementing an Internet-based self-service technology. Actor-Network theory (ANT) is used to describe the complex evolution of a Web-based service at a healthcare insurance firm. Using processes of inscribing, translating and framing, this chapter explores the emergence of the technology from 1999 – 2005 using three technological frames, ‘channel of choice’, ‘dazzle the customer’, and ‘complementary channel’ as episodes of translation. ANT demonstrates that the Internet-based self-service technology at this particular healthcare context emerged out of many unplanned negotiations and mediations with both human and non human actors. Finally, this chapter argues that ANT’s socio-technical lens provides a richer understanding of the meaning of Internet-based self-service technology within a multi-channel context.

INTRODUCTION

The rational and conventional view of e-commerce suggests that Internet-based self-service technologies are poised to provide potential added value to a healthcare firm’s business goals as well as service delivery to customers (Dabholkar, 1996; Dabholkar and Bagozzi, 2002). After all, such technologies enable healthcare firms to reach beyond traditional boundaries, thus providing myriad administrative and commercial opportunities. However some research suggests that potentially valuable customers may perceive barriers to interaction with technology-enabled service systems (Uzzi, 1999). Advocates of this view argue that the electronic service delivery
process often does not address the various needs, capabilities and concerns of the user, as they are designed mainly with the aim of achieving operating efficiencies for the firm. Furthermore, organisations appear to be paying little attention to existing relationships which the technology wishes to replace. In addition, a number of investigations reveal that customers are unwilling to replace face-to-face contact with electronic alternatives. It is not surprising that another stream of research indicates that face-to-face relationships may be more cost effective than virtual relationships (Granovetter, 1985). Clearly, recent studies show that rational and economic models of e-commerce are an oversimplification of what actually happens in the socio-technical environment. It appears that firms tend to ignore important contextual dynamics which may provide a deeper understanding of self-service technology implementation. Therefore the main premise underlying this chapter is to emphasise that the subjective insights of designers and users are crucial if we are to understand human conduct in the use of Web-based IT artefacts.

This chapter presents results from an interpretive case study investigation at a major South African healthcare insurance organisation, focusing on 1999-2005 as the years most crucial to its SST implementation. The chapter is organized as follows: The section on the conceptual framework explores various concepts and theoretical elements from Actor-Network theory (ANT) that suit the exploration of complex IT artefacts. The next section describes the case study approach for understanding the emergent nature of SST implementation. The results lead to an analysis of the SST implementation phenomenon. Finally, the last section discusses the implications of these findings for the study of Web-based IT artefacts and assesses the utility of the ANT approach for understanding the implementation of innovative Web-based self-service technologies.

**CONCEPTUAL FRAMEWORK**

A conceptual framework can be defined as the structure, the scaffolding, or the frame of a study (Merriam, 1998). Some researchers refer to it as the lens through which we view the world (Walsham, 1995; Orlikowski and Baroudi, 1991) or the territory to be explored (Caroll and Swatman, 2000). As already alluded to, an SST implementation has both technical and social merits and it might be more appropriate to try to overcome the distinction between technical and social to improve our understanding of this phenomenon. Drawing on key concepts and assumptions from the social shaping of technology this chapter draws on the actor-network (ANT) approach to understand the heterogeneous and interrelated character of social and technological components (Callon and Law, 1982). ANT contends that both social and technical determinism are flawed and advocates a socio-technical account in which neither the social nor the technical are privileged. According to ANT, what appears to be social is partly technical and what appears to be technical is partly social (Law, 1992).

In this way, ANT differs sharply with views purporting purely technical or purely social relations. Structuration, another popular social theory used to understand IT artefacts is unable to unpack how technology regulates society and society’s reaction to technology with the same level of precision as ANT (Schultze and Orlikowski, 2004). ANT assumes that when humans interact with other humans, these interactions are mediated through non human artefacts of various kinds, and asserts that such interactions are mediated through additional networks of non human artefacts and humans. Hence, if material artefacts in these networks disappear, so to would “social order”. ANT also investigates how actors enlist other actors into their world and how they bestow qualities, desires, visions and motivations on these actors (Latour, 1996). Thus ANT offers a unique approach to theorising innovations such as self-
service technologies and their implementation; an approach that resists essentialist notions inherent in the conventional treatment of self-service technologies.

Recently, Faraj, Kwon and Watts (2004) built on actor-network theory a basis for studying the complex evolutionary processes of modern information technologies. A particular appeal of this approach is their attempt to reveal the interdependencies between actors and in particular how processes of inscription, enrolment, and framing dynamically enabled and constrained the implementation of information technology.

Figure 1 demonstrates that the implementation processes consists of recurring operations in which networks of actors continuously act, react and interact, creating a spiral of technology implementation. Processes of inscription, enrolment and framing are shown to operate recursively within a social context. It is envisaged that analysing these processes bound in a particular social context will draw greater attention to the dynamics of SST.

Table 1. A synthesised analytical framework using actor-network theory

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<tr>
<th>Conceptual Component</th>
<th>Associated Conceptual Elements</th>
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<tr>
<td><strong>Inscribing</strong></td>
<td>Entities that make up a network are often converted into inscriptions of devices such as documents, reports, models and software. This process is concerned with how ideas, values and intentions of social actors become inscribed in technology. Inscriptions prescribe a program of action for other actors, which the latter may or may not follow, depending on the strength of the inscription.</td>
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<td><strong>Translating</strong></td>
<td>Translation describes a variety of ways in which actors actively seek to interest others in supporting the construction of a claim, enrolling them directly or indirectly in a coalition dedicated to building a fact or a machine. The process of creating these actor-networks, consists of four major stages: problematisation, interessement, enrolment, and mobilization. Translation processes do not pass through all these stages and may fail and halt at any stage.</td>
</tr>
<tr>
<td><strong>Framing</strong></td>
<td>The framing process describes the emergent outcome of technology meeting practice. Key actors engage in actions in support of a certain vision or pattern of design and usage. However unexpected uses are developed leading to a new perspective on what the technology does and is expected to do.</td>
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Figure 1. ANT process model for SST Implementation (Adapted from Faraj, Kwon and Watts, 2004, 190)
Figure 2. The four moments of SST translation (Adapted from Callon in Law, 1986, p. 196-223)

Table 2. The stages of SST translation

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<tr>
<th>Translation Stages</th>
<th>Stage Definitions</th>
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<tr>
<td>Problematisation</td>
<td>In the problematisation stage, a group of one or more key actors define the problem and suggest solutions that make them indispensable to the solution.</td>
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<tr>
<td>Interessement</td>
<td>In this stage, the key actors build interest and lock key allies in, by finding ways to (re)formulate the problem or solution in such a way that key allies will associate their own interest with the formulation</td>
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<tr>
<td>Enrolment</td>
<td>In this stage, the problem or solution is established as an accepted fact, that is the problem or the solution is legitimised, by controlling or influencing the production of facts, by using allies and spokespersons, and by inscribing problem or solutions in the organisational memory (e.g. documented agenda, minutes).</td>
</tr>
<tr>
<td>Mobilisation / stabilisation</td>
<td>Finally, during mobilisation, the solution gains wider acceptance. Compliance is ensured by monitoring the network and addressing dissent as and when it arises. The key actors use the stability in the network to enact solutions.</td>
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implementation and provide rich insights into their emergent consequences. To complement the above ANT process model for SST implementation, Figure 2 will be used to describe the translation sub-processes in more detail.

Figure 2 shows that actor-networks are configured by the enrolment of various human and non-human allies, via a series of negotiations where one group of actors attempts to impose definitions and roles on other actors (Callon, 1986). Callon (1986) discerns four ‘moments’: problematisation; interessement; enrolment; and mobilisation. The model above demonstrates the notion of weak ties (depicted by broken, thinner and disconnected lines) and strong ties (depicted by darker and connected lines). Whereas actors during problematisation are characterised by fragmented alliances and instability (weak ties), through the process of translation, actors are progressively locked into stronger alliances, whereupon they come together and the network stabilises (strong ties). The depiction of the orderly sequence of the translation sub-processes is merely an analytical convenience. It provides us with
the ability to construct an understanding of the SST implementation process by focusing on the sequence of events that leads to its outcome.

During the first moment of problematisation one actor, the initiator makes an effort to make other actors subscribe to its own conceptions of the solutions or definitions of the problem. Initiators try to demonstrate their quality of being indispensable to the solution of the problem during the initial stage (Bloomfield and Best, 1992). In ANT parlance initiators attempt to establish themselves as an ‘obligatory passage point’. Introna (1997) defines an obligatory passage point as a rhetorical device that presents the solution to the problem in terms of the resources of the agency proposing it. To pass through the obligatory passage point, the other actors must accept a set of specific conventions, rules, assumptions and ways of operating laid down by the focal actor (Tatnall, 2000). During the second moment of interessement, an attempt is made to impose and stabilise the identities and roles defined in the problematisation on the other actors, thereby locking other actors in the roles proposed for them (Callon, 1986). Gradually existing networks are replaced by the new network (Grint and Woolgar, 1995). The third moment is enrolment. Enrolment occurs when a stable network of alliances is formed and the actors yield to their defined roles and definitions. This involves a multilateral political process where the initiator seeks to convince other actors. It is for this reason that Callon (1986: 211) states: “To describe enrolment is thus to describe the group of multilateral negotiations, trials of strength and tricks that accompany the interessements that enable them to succeed”. The final moment is mobilisation. Mobilisation is a set of methods that initiators employ to ensure that allies do not betray the initiators interests. During mobilisation the proposed solution gains wider acceptance and achieves stability. Stability implies that the technologies content is institutionalised and is no longer controversial. In other words the technology becomes taken-for-granted and is “black-boxed”. From an ANT perspective, material artefacts are significant in the structuring of these relations. As Lowe (2001:82) so lucidly puts it: “Objects provide receptacles for human knowledge and vastly enable the process by which facts become accepted”.

Following ANT, translation is seen as necessary for stability in these networks since actors from the outset have a diverse set of interests (Monteiro, 2000). Aligning these interests causes a network to become stable and durable. However, according to Mahring, Holmstrom, Keil and Montealegre (2004), the translation processes does not necessarily pass through all the stages described above. It is plausible that the translation processes may fail and halt at any stage, depending on the strength of the network’s inscriptions. In contrast to diffusion models which assume technologies to be immutable, actors in ANT not only reshape technologies, but are themselves changed as the changing artefact spreads through the social network.

Besides the four stages of translation, the process of inscription is critical to building and stabilising actor-networks as most material artefacts within a social system embody inscriptions of interests. Inscriptions refer to the way technical artefacts embody certain viewpoints, values, opinions and rhetoric such as reports, documents, scientific papers, software code or computer applications (Bowker and Star, 1994). In other words technological artefacts can also embody a worldview (inscription) that reflects the socio-economic context and rationality in which it is created. For example Chilundo and Aanestad (2005) found that in the implementation of technologies in developing countries, the potential for a clash of rationalities is greater were the values inscribed in Western technologies conflict with values of developing countries. So, inscription implies that a material or technological artefact never begins as a blank slate. In other words artefacts
always embodies the designer’s beliefs, social and economic relations, previous patterns of use, and assumptions as to what the artefact is about (Akrich, 1992). Since inscription can guide users to behave in a way that forces a definition of the form and function of the technology, many actors actively seek to inscribe their vision and interests into the artefact (Faraj, Kwon, and Watts, 2004). Inscriptions may also lead to irreversibility. Irreversibility refers to the degree to which in certain contexts it is impossible to go back to a point where alternative possibilities exist (Callon, 1991). Irreversibility is often the result of the inscription of interests into technological artefacts that become increasingly difficult to change (Hanseth and Monteiro, 1998; Mahring et al., 2004). As ideas are inscribed in technology artefacts and as they diffuse in their relevant contexts, they help achieve socio-technical stability (Latour, 2005). Walsham (1997) notes that inscriptions developed in software as ‘frozen discourse’ may resist change and display signs of irreversibility. Hanseth and Monteiro (1997) suggest four notions of inscription and translation that should be emphasised in an ANT study:

- The identification of explicit anticipations or scenarios of use held by the various actors during design;
- How these anticipations are translated and inscribed into materials;
- Who inscribes them; and
- The strength of these inscriptions (i.e. the effort it takes to oppose or work around them).

Another important concept related to translation and inscription is framing. Framing is defined by how key social actors engage in actions in support of a certain vision or pattern of usage. This examination of how social actors frame criteria for selecting and stabilising features is essential to our understanding of the evolution of technology.

According to Faraj et al. (2004), inscribed patterns of use can be deemed as unsuccessful when actors do not conform to their assigned program of action. In many new technologies, actors modify and adapt the technology artefact into new forms of use. Based on actual practice, unexpected uses are developed and new functionality is envisioned, leading to a new perspective on what the artefact does or is expected to do. When studying the user of technical artefacts, one also necessarily shifts back and forth between the designer’s ‘projected user’ and the ‘real user’ in order to describe this dynamic process of negotiating the design (Akrich, 1992). Thus it is crucial to measure which of these superimposed inscriptions actually succeeds in shaping the pattern of use in order to measure the strength of an inscription (Monteiro, 2000).

To summarise, ANT views implementation as an emergent process initiated and guided by actors with specific interests. Their agendas are enacted through processes of inscription, translation, and framing. Inscription and the sub processes of translation are used to enrol dissidents who oppose the new agenda. By inscribing the agenda in material artefacts, actors enable material artefacts like internet-based self-service technologies to assume the role of actors in the network; that is, they stand in for the agenda setters. However, unexpected uses may occur leading to a new perspective on what the technology does and what it is expected to do. The framing process describes the emergent outcome of the technology meeting practice.

**Methodology**

The main research strategy selected was an in-depth case study of a single organisation. This research could have been approached using surveys designed to examine changing patterns in the firm and the various stakeholder communities. However this might not have revealed in
detail the unique experiences of the individual organisation and other human and non human actors influencing the change. Yin (1999) also endorses the study of single facilities arguing that a single case can often produce a more penetrating study. Semi structured interviews and secondary source analysis were the main data collection mechanisms. Individual interviews carried out on site were the primary technique used to elicit information from the SST’s designers. The field research for the case study was carried out in three main periods, consisting of 3 months in mid-2005, 3 months in late-2005, and another month in late-2006 (It should be noted one of the authors also spent three years prior to this actively involved in the SST implementation project). In total a total of 55 formal interviews were conducted during this period (Table A1). All 55 interviews were tape recorded and extensive research notes were taken. This practice ensured that everything said was preserved for analysis.

**Data Analysis**

Data was systematically coded into as many themes and categories as possible. As the categories emerged and were refined, they were evaluated as to how they related to one another and what the theoretical implications were. This pattern is sometimes called “grounded theory” (Strauss and Corbin, 1998). However unlike grounded theory we used the theoretical framework to guide this process. We also used version 5 of ATLAS.ti to code and store these themes and categories at the textual and conceptual level (See Figure A1) (Muhr and Friese, 2004; Darke, Shanks, and Broadbent, 1998).

**THE HEALTHCARE INSURER CASE STUDY**

This section presents the empirical heart of the case study and is presented in historical sequence.

It starts with a brief sector background followed by a short description of the demise of a healthcare insurer’s information portal and the rise of the e-business. Next, the integration of the e-business into the IT department and the eventual disbanding of the e-business department by integrating it into the various business and system functions, specifically the front-office applications, are discussed. The reflections of the user community are also interwoven into these discussions to describe the complex web of events.

**Sector Background**

Many healthcare insurance firms are now modelling their business on the so-called “consumer-driven healthcare” concept. These healthcare firms frame this emerging concept as one were the consumer plays a greater role in making decisions on their healthcare, have better access to information to make informed decisions, and share more in the costs (Cannon and Tanner, 2005). Consequently proponents of consumer-driven healthcare view the Internet as a source of information and support that can potentially make a significant contribution to the efficient and effective delivery of healthcare services. A number of these firms are implementing online self-service applications to reduce the cost of servicing customers and to improve customer relationships (Kolsky and Bivin, 2001). These online self-service applications provide consumers with interfaces to access a firm’s data, enabling consumers to serve themselves with the information they need or the service they require. During the latter part of the 90’s, a major South African health insurer known for reasons of confidentiality as HIC, integrated elements of wellness into their product design and was keen on making these available both through a Web-based portal. This initiative is reviewed in the next section.
The Online Self-Service Project

Phase 1: From Information Portal to E-Business

In 1996, HIC began its use of Internet technologies. The initial solution began with a hosted service delivering static content that was predominantly product focused. It soon emerged that the e-commerce channel could equally provide online services in the form of transactions to customers. As a result a bolder project was conceived during 1997 at a time when many other organisations were exploring the transactional potential of Internet technology. With just over 5% of the member base having registered, the team was facing an uphill battle to justify commercial viability of the technology. However the general optimism of the Internet at the time combined the competitive threat of a pure play dotcom insurer usurping the healthcare insurance market prompted the insurer to radically improve its online offerings. The development of eHIC began in the latter part of 1999, when excitement about dotcoms was at its zenith. As the Head of eHIC put it: “Initially it was just to be part of the space and no one really could draw a more rational reason than that. You have got to be part of this play. The whole world was going to go online”. On the 10th of May 2000, HIC formally announced the formation of its e-commerce subsidiary known as eHIC. eHIC was to operate as a separate entity within the HIC stable with the purpose of delivering the e-commerce needs of the firm on the assumption that the e-commerce arm would deliver better solutions more efficiently to its client base.

However from the outset the newly formed e-business team faced a constant struggle for attention from the systems and business areas. The way the online channel wanted to offer services to customers brought in into conflict with the way in which HIC had traditionally architected the same services for the existing service channels. To add to the growing consternation the online SST was slow and difficult to use. At the time business connectivity levels offered by the predominantly state-owned monopoly telecommunications provider were very poor and consumer broadband was almost nonexistent. One user mentioned that the “the site looks great but is painfully slow to use”. When dotcoms started to falter worldwide in the middle of 2000, it became increasingly difficult for eHIC to defend its position as an autonomous business unit. Upon losing its credibility, eHIC was struggling to maintain its legitimacy as an appropriate service channel.
Phase 2: From E-Business to E-Department

Shortly after the world was hit by the dot-com crash and Silicon Valley firms came crashing down around the globe, HIC’s senior management expediently absorbed eHIC back into the business. eHIC began operating as one of the several functional areas of the IT department. eHIC was still treated as a foreigner. This treatment extended into the business areas. One illustration is the inconsistency in how communication prepared for other mediums or channels were tailored for the online world. In adapting content for the Web, Marketing often accused eHIC of being too techno-centric, while eHIC viewed Marketing as being to territorial about the firm’s brand. Staff generally felt that despite the structural change to eHIC, the department still maintained a superior attitude and a dismissive and arrogant culture.

Nevertheless the launch of eHIC was followed by a very effective marketing campaign. The website was promoted in various mediums from call centre awareness campaigns, e-mail campaigns to magazine articles. During this period, some of the key functionality that were provided online included claims submissions, claims status tracking and viewing health savings account balances to enable consumers to manage their health plan finances. On the wellness and lifestyle segment, there were travel bookings with which users were able to plan and book their hotel accommodation, flights and car hire, online. Furthermore, there was access to health and medical information; accredited information on a vast number of medical conditions and diseases. The site also offered a variety of useful tools and content for members to ensure that they stay healthy.

As opposed to health plan specific transactions, it was the innovation in the wellness program that provided all sorts of opportunities to utilise the online medium. Wellness members had access to selected health and fitness facilities and eHIC offered their customers incentives to use them. Two major tools that were developed during this period were the online nutrition and stress centres. Meanwhile by October 2003, more than 25% of all interactions with HIC were now being achieved via the online channel. The goal was to move the interactions to 51% as this would imply in some circles that the SST was now the dominant channel. Despite this, only 26% of the total membership base had registered to use the online service. And even though there were major site redesigns as part of the valiant effort to move this ratio to 40%, the ratio of active registered members would hover around the 25% mark for the next 2 years. Further analysis revealed that many of the 25% had a higher servicing need than the average consumer. These users either tended to be high claimers or loyal followers of the wellness programme. The loyal user base consisting of 25% represented a minority of the member base.

Of more concern, over time as many as 60% of the users who registered never returned to use the website. This is in stark contrast to the health member base churn or lapse rate of 3 to 4%. Furthermore the remaining segment of the user base showed only sporadic use. On the other hand, the use of the traditional call centre channel remained relatively high with repeat calls accounting for a significant component of the call volume. Internal statistics showed that 40% of insured customers were phoning more than once during a month. Furthermore only 10% of the registered user base had registered to use wellness applications like the nutrition centre. Given the steep tapering of use among the majority of the users who signed up to join the nutrition centre, there was this impression by the design team that many users were joining merely to obtain the wellness incentives. As the online nutrition expert put it: “The advantages of going to a dietician, you go into a professional environment, you are having that contact with the dietician who can read you and build a relationship with you and become a partner in this process”. Meanwhile, another research conducted internally
suggested that the electronic service intended to proactively address members’ concerns were instead closely associated with calls. It emerged that the call rate increased significantly in the proximity of an eHIC site visit. Not surprisingly the e-department entered another episode of further scrutiny.

**Phase 3: From E-Department to Front-End Development Team**

There were a number of further organisational changes within HIC during 2005. Operational efficiency was becoming an important driver of cost savings and profitability for the firm. There was an intensive focus on streamlining the operational aspects of the business specifically in the service and operational infrastructure arena. The aim was to create a platform for ongoing efficiencies and more specifically to provide a framework for HIC’s back-office operations. Back office support for the two recent international joint ventures was to operate from South Africa. Similarly the call centre service and Web development projects for the two joint international ventures were to operate locally. Therefore there was a huge drive to restructure the existing IT infrastructure so that it could support the two international expansion initiatives.

Furthermore instead of developing channels that competed with each other the focus now shifted towards integrating the different channels. The firm was attempting to merge these channels in the back-office organisation where the core operational processes were being managed. During this period new technology platforms were touted by various steering mechanisms as being able to provide web services, component based modelling, and communication for implementing a service-oriented architecture (SOA). In other words it was more plausible to achieve this level of channel integration by enrolling other ground-breaking technical allies for the recoding of existing and new functionalities into atomic services that could be reused by other services. Problems relating to front-office and back-office integration were also high on the agenda. There was also an attempt to refocus eHIC’s capabilities and competencies related to this. One of the aspects that eHIC had executed particularly well on over the years was the “softer” elements of the online channel. These include “how to position, how to message, and how to design a user interface”. There was an increasing need for these skills throughout the firm, including within the traditional systems environment which used to build “unfriendly” user interfaces for the internal users. As part of improving IT’s overall performance, there was this notion of separating back-end and front-end development. The IT leadership team viewed this as an avenue to avoid duplication of effort and to facilitate greater alignment and matching of team priorities. In the meantime, there was a general feeling that the SST would play a more prominent role in the UK and the US markets than it had done in South Africa. Moreover, there was greater emphasis on understanding online behaviour using research houses and reporting tools. On reflecting on the evolution of the SST, one of the senior managers told us: “I think, if we look today at where we have come, our initial objective was to convert a channel (call centre) into another channel (online self-service). And lessons are learnt, that you know, this is a social environment, okay. There is no dominant channel. It’s apparent to me that the channels are interlinked, merged, and one will use whatever is closest in proximity”.

**Analysis**

Technological frames are used as episodes of translation as suggested by the work of Bijker (1995) as a means for linking the enrolment process of ANT with broader social and cultural processes. The subjective nature of the Internet-based SST in this particular case gave the designers and users room
to invoke three particular technological frames, from that of a channel of choice, to a channel that dazzles, to a complementary channel.

**Channel of Choice**

**Inscription**

Until 1999, the technological frame of disseminating “static content” dominated HIC’s website implementation. A new technological frame for the SST to become the “Channel of Choice” or in other words the preferred channel was emerging at HIC as the ability to transact online became more plausible. At the time a rapidly growing customer base resulted in increasing capital expenditure on call centre technology. Furthermore the call centre high fixed cost base combined with the high labour cost attributed to the growing number of call centre consultants all gave strength to this internal inscription of improving service efficiency through automation. This inscription was also strengthened by the dotcom hype created by various steering mechanisms. An organising vision emerging from a heterogeneous collective consisting of the academic world, media, consultants, software vendors, and dotcom start-ups bestowed a lot of appeal upon the “substitution claim” and other “efficiency” inscriptions (Hannemyr, 2003). Swanson and Ramiller (2004) assert that this “bandwagon” phenomenon is especially prevalent where an innovation achieves a high public profile, as with the Internet and e-commerce. Planned action is typically dismissed by the urgency to join the stampeding herd, despite the high costs and apparent risk. Clearly the larger community’s organising vision was the embarking point for HIC’s sense making journey with e-commerce. The primary intent of HIC’s e-business designers was to replace or substitute traditional channels. More specifically there was this desire to substitute the call centre agent with the Web front-end (See Figure 3). This major inscription to take on the role of the call centre
agent was based on the assumption that the self-service technology would be able to save calls by having answers to key call reasons programmed and made available on the website using the Web and related technologies.

Translating

To show support for the new channel, the leadership of the organisation provided autonomy to the self-service channel to transform the way customers interacted with the organisation and the way customers were to be serviced. Furthermore, the firm invested significantly in hardware and software such as the state-of-the-art technology in the ATG Dynamo suite of applications, which was then the leading and premium Web server technology. Other leading tools such as Documentum for document management and Verity as a search engine also formed part of envisaged solution. The firm also chose Java as the development platform instead of .NET as this was deemed to be the best technology for constructing Web applications at the time.

However there was great resistance by certain Exco members towards any attempt to sell HIC’s healthcare products online. The problematisation in this scenario is overtly concerned with the power relationship between brokers and employers in the South African context. In effect, brokers sold health insurance directly to employers and employees had to select from a group of health plans as part of their “employee benefit”. So as not to jeopardise the relationships with these powerful intermediaries and hence future sales, the SST initiative had to realign with the interests of these actors. For these reasons, the seduction of the Internet as a direct sales channel could not be used to coax some of the dissidents sitting on the Exco committee. The OPP towards a shared view of a service-centric online channel was established. Furthermore the lack of skills and newness of these technologies impinged on the team’s ability to deliver on time, with as few “bugs” as possible and thus contributed to poor translations of eHIC. In addition, political battles being fought at other levels. After all there were fears in other areas that the role of the SST was to squash legacy practices embedded in traditional channels. The predominantly batch mode of processing between internal systems, the use of a non-standard database platform, poor data quality and integration issues also made for weak (ties) inscriptions. The internal system, a robust client-server application used by the internal operational areas for high volume data capture was at odds with the Java based application for developing Web based applications. Furthermore a number of the functionally driven applications were built as one monolithic piece of code and therefore could not be easily adopted for a component-based Web environment. As a result of the conflict between the two technologies and resultant unsteady support from both system and business departments, the implementation of the project was completed much later than envisaged. In addition the frequent system failures created a flood of phone calls to the call centre. These queries to the call centre did not help the reputation of the online service internally.

For users, interessement was positioned in the various promotions by way of convenience, secure and real-time information in various media. However the poor ICT infrastructure supplied by the monopoly telecommunications firm, the speed and cost of bandwidth, the corporate standard to verify user name and password through a call-centre validated process were major barriers to using the new system. For instance, since firms can be held liable for granting consent to users for accessing a customer’s information, trust is a concept that applies equally to the firm and the user. In supporting relationships via SSTs the firm delegated trust decisions to verify and authenticate the identity claimed by the user to both human and technical systems. The SST was liable for any breaches of trust or negligence in its use. Therefore a policy for controlling access
to the SST via new roles and profiles had to be established. These were stored in a database. Linked to these new identities were a variety of attributes describing specific relationships so that the SST could grant the correct privileges to the user. Many users expressed their frustration that this process was protracted.

Framing

From this discussion, it might be concluded that the translation of the actors in eHIC, the obligatory passage point (OPP), failed to achieve the desired outcome as the preferred channel or the channel of choice. The initial network and its loosely formulated OPP – “to become the channel of choice” – was readily accepted internally by a few of the key senior executives, but remained too weak to mobilise a sufficiently strong enough network to become the dominant channel. One of the reasons for this unintended outcome was that the advocates of sales via an intermediary were aligned to powerful networks inside and outside the organisation so that the vision of direct sales had to be reformulated. The loose formulation of goals such as “the preferred channel” were also naturally not sufficiently convincing for those managers and staff that represented the traditional channels the SST was attempting to substitute. More specifically, the interactions with both human and non human actors supporting the traditional channels would during this long implementation journey be more contentious than collaborative. In this spiralling innovative climate and increasingly demanding service environment as a result of rapid market growth, achieving synergy between departments would prove to be particularly problematic largely due to the various actors having to facilitate multiple and conflicting agendas. As a result negotiations were often beset by ‘clashes’ of interest and these conflicts often became irresolvable.

Successful translations depend on how faithful key actors are towards their alliances. Certainly, the local ICT infrastructure was not supportive of a self-servicing environment for a majority of the customers. Furthermore standards and security were impeding the Web channel when compared to alternative channels. In addition, the poor interoperability with systems designed to support internal processes and the lack of technical skills of the newly appointed development e-business team translated into unsuccessful and unstable translations between internal actors. Attempts to mobilise, expand and stabilise the majority of users also turned out to be complex and frustrating. For the user, the telephone clearly had a better inscription than the web. Allied to telephone was the customer’s membership card, inscribed with a membership number and telephone number, which could easily fit into a customer’s wallet, as opposed to a user name and password which remained a cognitive challenge. Importantly the evolving consumer-driven healthcare product was becoming laden with jargon. Apart from understanding the Health Savings Account (HSA) mechanism and how it works, customers needed to understand a plethora of unfamiliar concepts related to the mechanics of the HSA. On the other hand a call centre consultant has the ability to retranslate these terminologies based on their impression they formulate of the client. In other words they have the “interpretive flexibility” to retranslate consumer-driven healthcare terminology to facilitate client understanding. This capacity of the human agent in this instance was beyond that of a resource such as an SST. There were simply too many things attached to the use of the call centre channel. The competing call centre channel in alliance with the frozen network element of the telephone was demonstrating features of irreversibility.

Consequently, weak inscriptions demonstrated by the allies of the SST and their inability to act in ways that maintained the network, led to the majority of customers persisting with the use of the traditional call-centre channel. Given the properties of irreversibility demonstrated by the
traditional channel, there was this realisation among the senior management team that the “substitution claims” may have been farfetched.

**Dazzle the Customer**

Inscription

When the dotcom bomb started, the role of e-commerce in the organisation was subject to further internal evaluation. The inability to deliver the initial projects on time and the failure to convert a majority of the customers to the online channel had compromised the SST’s intention to substitute the call centre and become the channel of choice. This led to a shift in strategy as well as re-organising the way that e-commerce organisation was structured to improve internal alignment as well as inter-departmental relationships. While there was still a focus on efficient servicing, major emphasis was being placed on a new paradigm that was emerging, one were the organisation sought to “dazzle users” with online tools designed to support its wellness programme. Meanwhile to get acceptance internally and externally a stronger form of enrolment was needed. The e-business was reintegrated into the IT division and was now operating as one of the many systems department. Senior Management were hoping that the closer relationships with rival systems department and a location change will resolve some of the political and alignment issues experienced during the previous phase. The “dazzle” metaphor describes the shift that reveals the second major inscription of the on line self service technology. The role of the self-service technology was fundamentally driven by the firm’s new focus on its wellness offering. Within this technology frame the emphasis was on hedonic aspects as opposed to merely health plan transactional features as during the “preferred channel” era. Customers were now being incentivised to stay healthy and the wellness team was interested in establishing whether the Web could be an appropriate mechanism to promote a healthy lifestyle. Loyalty points and other forms of rewards would be offered to customers for following a healthy lifestyle with the aid of online tools.

Translating

Economist, John Kenneth Galbraith (1984) distinguishes between three kinds of power: Coercive power wins submission by inflicting or threatening sanctions; compensatory power by offering incentives and rewards; and conditioned power by changing beliefs through persuasion or education. The firm was attempting to inscribe the right mixture of these forms of power in order to resolve conflicting interests between itself and its customers. At the time, the wellness business unit was powerfully positioned and was becoming a major part of the firms’ actor-network. Consequently the online channel was being viewed by business proponents of wellness as an important ally to their success. Both the wellness business unit as well as the e-business department shared similar views on the “cost savings” argument as the rhetorical device to enrol users to self-service using online wellness applications as opposed to using more costly wellness practitioners. With these redefinitions of the SST concept came shifts in the enrolment strategy of eHIC.

Framing

As the SST started to play a major role in the wellness programme it was slowly being validated internally as a novel and exciting way to interact with the clients and promote wellness. However, although HIC is known in the marketplace for offerings that are inventive, attempts to engage customers in managing their health through the online channel when compared to the size of the customer base showed only moderate success. It appears that translating the wellness innovation and engaging style to the online world appealed to only a minority of users than had been envisaged.
by the designers. The wellness programme itself while proving to be an effective product differentiator for the health insurer and an attractive selling point for brokers, was not effective at enrolling a majority of its customer base and effecting actual behavioural change. Many users used the points for online use in an unanticipated way. Rather than followed the assigned way of using the online channel as an obligatory approach to “improve their health”, the anti-program of “points chasers” emerged as a result of the online incentives. Many users appeared to be more interested in moving statuses with minimal behavioural changes to their lifestyles to obtain incentives. The designers had been betrayed by the users they thought they were representing. With the appointment of a new head for the wellness programme, there was a “push” to drive customers towards the organisation’s wellness partners. As the majority of customers showed a preference for using the call centre to resolve administrative related queries, similarly of the two networks, face-to-face consultation would prevail over the use of virtual wellness diagnosis and consultations. In the end despite moderate use by end users, the SST was an oversimplification of what wellness practitioners do. It appears for now that only “real world” wellness practitioners can deal with the full complexity of the wellness practice.

The Complementary Channel

Inscription

Eventually there was this realisation that at best the self-service tool was a complementary channel for a small captive audience. This current technological frame emerged as current social, technical and political contexts made the inscriptions for other channels stronger. During this phase there was a notable shift in alliances with the wellness team away from the SST to networks of healthcare professionals. Despite attempts by the self-service’s team management to persuade key actors that wellness online “worked”, the third major inscription that emerged was one in which the self-service channel was regarded as a complementary channel.

Translation

As was evident in this case the path of translation of technology is seldom smooth. There was a shift towards a physical network of partners for fitness, nutrition and stress. In a sense like the call centre channel, wellness led by health practitioners remained “black boxed”. The self-service technology had lost a key ally and had to alter its conception as a key driver in the wellness programme and was now confined to a supporting role. As a result there was a definite shift in how the online wellness tool fitted into the bigger picture of the wellness programme. For one, there was this “figuring out” that the tool could not operate as a “real-world” wellness practitioner. There was still a need for a wellness practitioner-patient interaction even though there were wellness tools available online. There was also a prevailing view that the SST was one of many ways of communicating with customers. Today the wellness programme has a network of practitioners and customers seeking guidance in this area are referred to those practitioners.

Framing

The initial organisational metaphor guiding the development of the self-service channel was a “channel of choice” technological frame. Given the early furore about the Internet, it was conceived that the SST would replace the call centre consultant for a broad population of the firm’s customers. When contradictory social facts emerged this frame was retranslated to “Dazzle the Customer” were the technology was used for more hedonistic purposes. Internally the drive had shifted towards novel ways of interacting with customers to promote their well-being. In its most recent translation
the SST was framed as a complementary channel. In its mutation as a complementary channel, it became a stock of usability experts that could deliver front-end development expertise for the rest of the organisation including all systems and channels. Eventually the online channel itself was fully integrated in the firm’s business functions. Not surprisingly the use of this technological frame evoked a less grand conclusion about the self-service technologies capabilities and led the eHIC team to become anxious about their own roles in the organisation. Many of the experienced team members left to the firm to pursue careers in other organisations.

This case reveals that a seemingly endless improvisation with its role characterises Internet-based self-service technologies. It appears that in this particular case no particular role was permanent specifically in an environment of alternative channels. As such ongoing negotiations characterises SSTs better than the ‘black box’ metaphor. The most recent translation as a complementary channel is likely to remain an immutable mobile for a while. After all, with this broader conception of a complementary channel, the interests of other actors could fall in with the SST’s schemes without too much controversy. However in tracing the various actors it was evident that this “complementary” translation was emergent and not planned. Clearly, becoming the preferred channel and thus reducing administrative costs was the planned perspective, but many actors did not come together to make this possible.

**DISCUSSION**

The concept of a non-human “actant” (technology), in this case being the self-service technology and related technology allies, influencing the social context and social process on the basis of the interests and assumptions (meaning) inscribed within them, is one of the undeniable appeal for using ANT to understand web-based IT artefacts. Many researchers consider SSTs as neutral objects with no politics. ANT has demonstrated that SSTs are far from neutral or objective. As ANT has illustrated, an SST is a social construction inscribed with many bias assumptions and notions of its designers. In the case study, the designers inscribed the interests of the firm into the technology. The first dominant notion that designers locked into the SST was the notion of substituting the call centre consultant. While the use of the Web site as a replacement channel was in some respect a rational decision based on internal efficiency goals, it neglected the socially rich context of the external user and their already inscribed routines with existing traditional channels. Unlike internal users who are subjects of the governing structures of the organisation, external users appear to possess substantial discretion in their use of channels. This context of substantial “interpretive flexibility” makes the process of attracting, converting and retaining external users a major challenge for firms seeking to implement SSTs. Failing to see the intricacies of interacting with traditional channels as a social construction results in a misconception that an SST can somehow take on the role of traditional channels. Similarly delegating the role of a wellness practitioner to the channel dismissed the interpersonal roles that are so essential in a wellness practitioner-patient interaction. As a result, diversity in interpretation by different social actors and therefore what the SST “is” to these different actors. Therefore although we may talk about self-service as a singular, the identity of the SST itself is dissolved into multiplicity. After all, the SST is performed by multiple objects and subjects. The translations of managers, academics, software vendors, developers, designers, users, analysts, marketing departments, traditional healthcare practitioners, application servers, software programming languages, browser versions, joint venture partners, the health insurance membership card, the telephone, the ICT sector, traditional channels such as call centres, call centre consultants, intermediar-
ies, dieticians, clinicians, incentive schemes all intertwine in translating the emergent outcomes of the SST.

While meaning is often viewed as a cognitive non material phenomenon, ANT asserts that meaning is shaped and inscribed in technology. According to ANT, SSTs are also subject to their social contexts for their continuous adaptations. Designers of SSTs shape SSTs but cannot control them in a deterministic way and SSTs that do not match the demands of their social contexts are unlikely to evolve in ways inscribed by designers. Furthermore SST designers have to face external users as well as internal business and traditional systems staff interests and alignments that are often contingent and unstable. ANT also reveals that the implementation phenomenon is not just socio-political but technical as well. In other words the SST demands or depends on the mobilisation of several technologies. In this case, the SST was consistently reinvented by both designers and users. The different conceptions of the SST emerged as more ‘facts’ about the SST was produced overtime and how actors reflexively altered their stance. In this way ANT was very effective at teasing out those socio-technical relations that we need to explicate to come to terms with the role of self-service technology systems together with human actors in constituting contemporary organisations. From a practical standpoint, many late implementers of SSTs can benefit by considering the use of SSTs within a broader framework that focuses on the convergence of multiple channels. Apart from ensuring closer integration between technologies implicated in the process, a convergence strategy may lead to lower resistance and hence the mobilisation of multiple interest groups within the organisation. More importantly this will enable customer empowerment in the true sense of the word, since the customer can ultimately choose the channel that best suits their circumstance in a particular moment.

Internet-based self-service technologies are beginning to change the way customers interact with firms. The increasing depersonalisation of services through self-service technologies like with all human designs is prone to both opportunities and challenges. Despite the incongruency in meanings inscribed in SSTs as the chapter illustrated, this new channel has showed a high degree of robustness and sustainability. It is rooted in inscriptions and values that is both a fundamental and an alarming feature of our society and economy. The Internet-based SSTs resilience despite its vulnerability is rooted in an interwoven social-technical web of politics and values that are beyond the Internet, designers or the users (Introna and Whitley, 1999). Therefore, instead of trailing in the shadows of superfluous
notions such as success or failure, social scientists should pursue those social-technical webs that are often elusive in order to develop a better understanding of technology artefacts such as Internet-based SSTs.

REFERENCES


**KEY TERMS AND DEFINITIONS**

**ANT:** Actor-network theory  
**ATG:** Applied Technology Group  
**eHIC:** The e-commerce subsidiary of United Assurance Group  
**HAS:** Health savings account  
**HIC:** Health Insurance Company  
**ICT:** Information and communication technology  
**IT:** Information technology  
**OPP:** Obligatory passage point  
**SOA:** Service-oriented architecture
APPENDIX

A fieldwork design was conducted early in the research process. It was decided to interview as widely as possible among the different stakeholders of the SST project. The table does not account for informal, written or email contact with the design team during the course of the case study.

Figure A1. A snapshot of a conceptual network with nodes of memos and quotes (Note: Coding using ATLAS.ti Version, 5.0)

Table A1. Summary of interviews conducted with design team

<table>
<thead>
<tr>
<th>Nature of Group</th>
<th>Number of Interviews</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Field trip 1</td>
<td>Field trip 2</td>
</tr>
<tr>
<td>Management Team</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Business/Systems Analysts</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Usability Analysts</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Java Developer</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>System Architects</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Graphic Designers</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Subject Matter Experts*</td>
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<td>1</td>
</tr>
<tr>
<td>Marketing</td>
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<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

Note: The category ‘other’ refers to progress and clarification meetings with key stakeholders. The team responsible for ‘Customer intelligence’ assisted in the co-ordination of the interview process. The Stress and Nutrition Experts were subject matter experts on the implementation team.