

# UNDERSTANDING STAKEHOLDER REQUIREMENTS ON AN NHS HOSPITAL PROJECT: APPLICATION OF SEMIOTICS-ROOTED THEORIES

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Hospitals represent complex and difficult contexts for AEC (architecture, engineering and construction) professionals to engage with due to their functional complexity and diversity of stakeholder interests (i.e. patient, visitor, medical specialist). Hospital designers need to take note of changing NHS policy contexts (e.g. the possible empowerment of general practitioners to shape services), technological advances in medical equipment design and the potential health needs of future generations. It is imperative for hospital designers and architects to align their processes and methodologies (e.g. briefing and requirements capture) to the needs and desires of their clients so that a medical facility design is produced which is truly aligned to the requirements of the hospital stakeholders. Semiotics, the “study” or “discipline” of signs aims to investigate the nature of signs (their inception, representation and meaning), whilst semiotics-rooted theories are concerned with investigating how meaning and understanding is mobilized between persons and between organisations. This paper details a semiotics-rooted research approach for investigating the interactions between hospital designers and stakeholders on a forthcoming NHS hospital project in the UK. A semiotics grounded study will potentially provide a deeper understanding of how meaning and understanding is established between hospital project stakeholders and construction professionals.

Keywords: briefing, hospitals, requirements, semiotics, stakeholders.

## INTRODUCTION

Hospitals represent difficult arenas for AEC (architecture, engineering and construction) professionals because of the functional complexity of the medical services within and the diversity of stakeholder interests to be catered for (e.g. patients, clinicians, visitors, administrators). This complexity makes each separate hospital project uniquely challenging, especially as different hospitals specialise in distinct medical areas (e.g. cardiovascular care, oncology, paediatrics). Additionally, designers need to be mindful of the multiple influential forces that shape health service delivery today (McKee and Healy, 2002). Modern hospital designs should reflect the needs of future generations (e.g. demographic changes and an ageing population), technological advances (e.g. MRI scanners may become less heavy and bulky in the future) as well as the politically-sensitive nature of the NHS itself, which means changes to services often result from politically-driven policy campaigns. Such influences have associated implications for the structures built to accommodate health

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services, thus making hospital projects both challenging and difficult (Brownrigg, 2008).

A hospital project brings together multiple stakeholder interests, each of which must be acknowledged and catered for by the construction professionals engaged on the project (Prasad, 2008). The establishment of meaning and understanding between the project stakeholders and the construction professionals is critically important if a design is to be produced fit for purpose, but the diversity of stakeholder interests and the functional complexity of the hospital building make understanding and balancing stakeholder interests potentially problematic. It may be conjectured that issues of meaning and understanding between construction professionals and stakeholders resonate throughout the entire hospital construction project life-cycle process, and not just in the design phase.

Issues of meaning and understanding may be investigated and explored through the discipline of semiotics, the “study” or “discipline” of signs (Innis, 1986), and through associated academic disciplines such as structuralism and post-structuralism. Semiotics investigates the nature of signs and how they function effectively. A sign is something which conveys a meaning or idea to a receiver via a medium such as a spoken word, photograph, symbol or noise. Semiotic rooted ideas (mobilized via associated theorizations of structuralism and post-structuralism) have been applied rigorously to fields such as anthropology, linguistics and advertising to analytically examine how meaning, understanding and knowledge is established.

This paper aims to review the potential value of applying a semiotics rooted analysis of the design phase interactions between hospital designers and project stakeholders in order to elucidate how meaning and understanding is established between parties. The paper initially examines how issues of meaning and understanding permeate the entire construction project process before exploring in further detail how semiotics and its associated fields of research may assist the academic community and practitioners in the field to clarify the processes at work. The paper then presents some specific semiotic rooted methodologies and potential approaches for application on an existing NHS hospital project collaboration in the UK.

## **STAKEHOLDER MANAGEMENT, BRIEFING AND COMMUNICATION**

All construction firms recognize the importance of engaging effectively with their client and other project stakeholder groups. Hospital projects bring together a large number of stakeholder interests (e.g. medical staff, administrators, cleaners). When their requirements are combined with those of external stakeholder entities (e.g. patients, visitors, building regulators, health and safety assessors) and fellow construction project participant needs (e.g. sub-contractors), a significant body of interests, opinions, needs and desires need to be managed. As Hyett and Jenner (2008: 115) note,

*“Hospitals are considered to be highly sophisticated technical environments with an abundance of regulatory controls...the organisation of the space is complicated as a result of having to respond to the needs of three groups of users – patients, staff and visitors.”*

The challenge of balancing out stakeholder requirements is indicated by the simplified schematic chart (figure 1) of hospital project connections. The chart was formulated following a preliminary meeting with design team representatives of a forthcoming

NHS hospital project. The diagram illustrates the pre-eminent role of meetings between project participants.

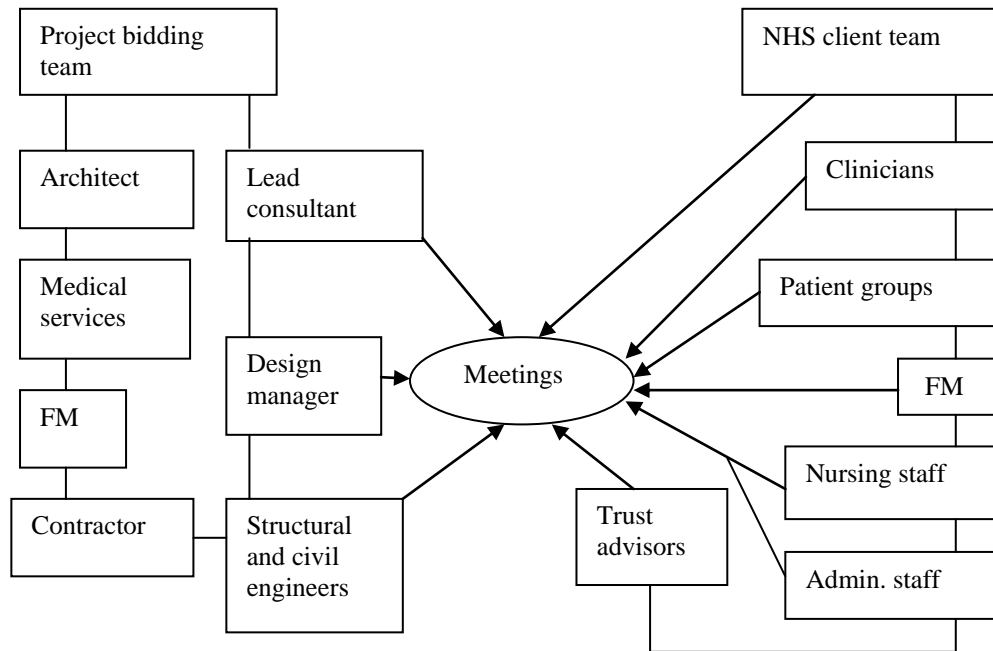


Figure 1: Simplified schematic of hospital project design stage connections

As figure 1 indicates, a typical hospital project will consist of multiple meetings between the project team and client team representatives. However, how effective are such meetings for the establishment of stakeholder needs and requirements? It is a valid research question to query the efficacy of existing practices such as design-phase meetings. The methodologies and dynamics by which stakeholder requirements are established are worthy of investigation if a true appreciation of the requirement capture process is to be obtained.

Briefing is the key activity when a client communicates their desires to a professional qualified and able to translate these requirements into workable concepts for subsequent construction project activity. The briefing discourse will be shaped by the communicative channels used (e.g. meetings, web conferencing), the artefacts employed (e.g. drawings, images) and the languages articulated between parties. Such intrinsically important aspects of the briefing discourse should be examined, analysed and questioned as to their effectiveness. Although Barrett and Stanley (1999) have noted that the onus is upon the construction industry to understand the client more, perhaps this will only be achievable if a more sophisticated understanding of the briefing process itself is undertaken.

The collaborative nature of construction project work means that effective communication is essential (c.f. Dainty *et al.*, 2006; Emmitt and Gorse, 2007). However, most studies fail to engage with a central aspect of the communicative act: an analysis of how meaning and understanding between project actors is established through the mechanisms, practices and artefacts of communication itself. Dainty *et al.* (2006: 59) emphasize the pre-eminent importance of meaning when they say,

*“Communication may be effective but unsuccessful because of misunderstandings over meaning”*

Communication is an intrinsically semiotic act: ideas and concepts are mobilized and transmitted to a receiver through signs and sign systems. Dainty *et al.* (2006: 59) re-emphasize this point,

*“Whereas the process perspective sees communication as the transmission of messages through which one person seeks to influence another (and hence focuses on how transmitters and receivers encode and decode messages), the semiotic method sees communication as the development and exchange of meaning.”*

The same authors also emphasize the semiotic nature of the communicative act:

*“Although (schematic models) are useful for conceptualizing communication as a process, this masks the complex interplay of signs, meanings and symbols (semiotics) which are often more important than the explicit communication itself”* (2006: 59).

Effective communication depends upon the establishment of clear meaning between two or more parties through the use of signs or sign systems (e.g. spoken words, images, videos). Whilst the choice of communication media can critically shape and dictate how actors interact, the establishment of understanding through mobilization of meaning via information artefacts is central to any communicative act.

Additionally, the interfaces existing between stakeholders and project actors can either help or hinder understanding between parties, so their role in the communicative process should not be taken for granted. As Brown (2001: 2) notes,

*“A building project creates a number of transient communication interfaces. Identification of those interfaces, and their relationship to the nature of the communication gap between expectation and realisation, is essential.”*

Therefore, it would be potentially empirically valuable to turn the research lens towards instances of semiosis evident in the construction project design process itself, as multiple dimensions, such as briefing and communication, hinge upon the establishment of mutual understanding between parties.

## **SEMIOTICS**

Semiotics is the study of signs: their formulation, generation, utilization and manipulation. It aims to investigate how signs work and why. Human communication is mobilized through signs (e.g. spoken languages, written texts, moving images, fashion trends). Signs are formulated to convey a meaning (message) to somebody (or something) else. Early semiotic thinkers such as Peirce (Innis, 1986), made a direct link between a sign and the object it represented. For any sign to function correctly, the interpretant (the one interacting with the sign) must possess an “understanding” of the concept which the sign represents (for example, a European car driver would understand a red traffic signal to mean "stop"). However, these ideas soon evolved further through the work of Saussure. He argued that a sign does not consist solely of a name and an object of reference, but instead, consists of a sound-image and a concept (a signifier and signified). As noted by Scholes (1982: 24),

*“Signs do not refer to things, they signify concepts, and concepts are aspects of thought, not of reality”*

Semiotics theory has fed into several other significant intellectual currents, most notably structuralism and post-structuralism (or postmodernism). Structuralism contends that a sign works within a structure, so exploration of the surrounding structure itself (context, actors) will throw light on the “meaning” of a sign.

A structural approach would endeavour to investigate the context within which signs function in order to fully understand their operation. By contrast, post-structuralism rejects the central premise of structuralism that meaning must be founded upon organized "structural" principles. Leading thinkers in post-structural analyses such as Foucault and Derrida (Calas and Smircich, 1999) led the way for scholars to critically engage with accepted academic theories and beliefs from a fundamentally different perspective. As Calas and Smircich (1999: 653) state,

*“Poststructuralist approaches suggest that there is no stable or original core of signification and, thus, no foundation, no grounding, and no stable structure on which meaning can rest.”*

Poststructuralist (or postmodern) studies questioned how knowledge and meaning is constituted via the institutions and languages used: the operations of legitimating knowledge and theory being of especial interest (Calas and Smircich, 1999: 654). For example, deconstruction analyses focus upon the "hidden" or "concealed" meanings inherent in any discourse to give another perspective of interpretation that would not normally have been considered. As Kilduff (1993: 15) states,

*“Deconstruction is used not to abolish truth, science, logic and philosophy, but to question how these concepts are present in texts and how they are employed to systematically exclude certain categories of thought and communication.”*

Structuralist, poststructuralist (or postmodern) and deconstructivist studies have evolved and refined the study of how meaning and knowledge is constituted in multiple contexts to various fields of enquiry (e.g. advertising, linguistics, human behaviour and photography). These semiotics rooted paradigms have endeavoured to establish how signs, meanings, knowledge and understanding is established in multiple contexts. In so doing, they have evolved and developed semiotic theories to new levels of refinement.

## **ISSUES OF “MEANING” AND “UNDERSTANDING” IN CONSTRUCTION**

The establishment of shared understanding between stakeholders and construction project actors is critical to project success. The importance of understanding the “meaning” of any communicative artefact is self-evident: misunderstandings may result in frustration, confusion and delays to project completion. Published research work in the field suggests that both the communicative interfaces chosen (e.g. meetings, e-mails, video-conferencing) and the artefacts mobilized to share ideas (e.g. images, spoken words, schematics) may either assist or hinder the design process (c.f. Gorse and Emmitt, 2003; Harty and Whyte, 2010; Luck, 2007). Project activities such as briefing critically depend upon different parties clearly understanding the intent and meaning of others with whom they engage. Similarly, discipline spanning artefacts utilized in the design process (such as schematics and models), often referred to as "boundary objects" in the construction management literature, have been recognized for their potentiality to share or transform knowledge (c.f. Bresnen and Harty, 2010).

Eco (1979) explored through his “model-reader” concept how the producer of an artefact or piece of information needs to understand, design and align that artefact to the interpretive ability of the person receiving the artefact (figure 2). Eco argued that a sign-generator should have a clear understanding of the interpretive abilities of the sign-receiver (or “model-reader”): understanding falters when the meaning of a sign is not understood by the message receiver. Appreciation (or understanding) of how the

interpretive framework of a sign receiver is constituted is the concept Eco formulated. Construction projects are information intensive arenas of activity where data and information exchange occurs intensively. Certainly, briefing is an obvious example of where information exchange occurs between actors and where sign interpretation, understanding and utilization is very real and important (which equates to semiosis in action).

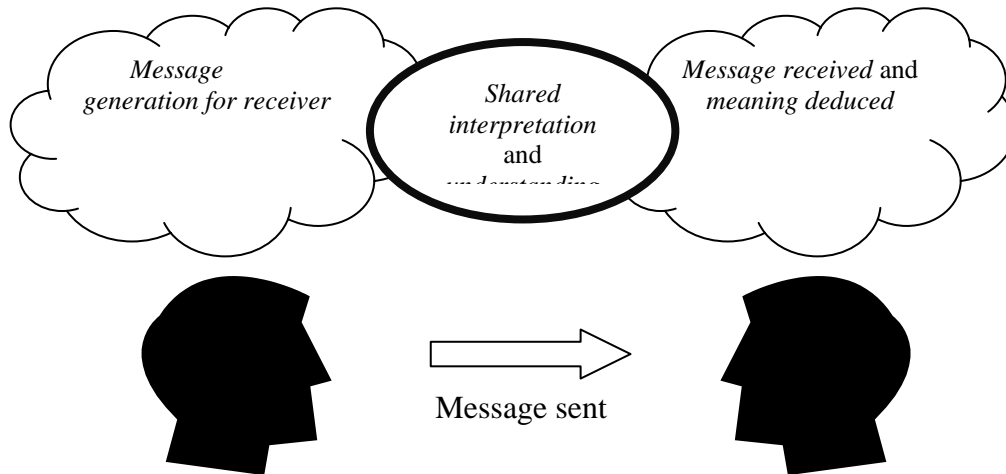


Figure 2: a model-reader concept visualization

But how is meaning mobilized? According to McHoul (1996: 20),

*“Meaning is never fixed or fluid. Which of these it is, how it comes to be so, and in what specific ways, all depend crucially on the work practices performed on signs by specific communities.”*

Similarly, Garfinkel argued that sign meaning is always reflexively related to the type of situation (context) it is used in: the sign and the situation type mutually elaborate each other (McHoul, 1996: 92). Signs are, therefore, “methodic” activities because they are used in specific community activities where specific methods/practices of working are evident. The meaning of a sign, therefore, cannot be divorced from the context of its use. The context and community of use within which any signs are mobilized is critical to their functionality.

It is possible that a sign may have a meaning which is not apparent to some people interacting with it (e.g. an electrical supplies floor plan for an office may be dangerous, but only will be apparently so to an electrical services technician and not an architect or company manager). Recognition of how signs (e.g. any element of a construction plan) may have utility or usefulness for others in the construction lifecycle (thus aligning with their interpretive frameworks) is a valid research question to pursue. However, any research study aiming to elucidate how meaning and understanding is mobilized with semiotics-rooted theories must be aware of theoretical and practical limitations. As McHoul (1996: 63) notes,

*“The local (or community) use of signs and the underlying principles should not be forced into universal schemas, as each sign usage is unique”*

This cautionary comment reminds us that the limitations of the academic enquiry should be recognized and referenced where applicable.

## **MOBILIZING SEMIOTICS IN A CONSTRUCTION PROJECT CONTEXT**

To mobilize semiotics ideas in a construction context, a number of specific approaches and techniques could be employed. This section details some of the potential semiotic methodological approaches to be used.

### **Artefact analysis**

Various artefacts (e.g. design schematics, visualisations, models) are used in the design discourse between designers and stakeholders to facilitate discussion and establish understanding between parties. Ewenstein and Whyte (2009) have indicated how such artefacts mediate the design discourse and become "epistemic objects". Such artefacts can conceivably be viewed as signs with inherent meanings attached to them. However, certain "meanings" may only be apparent to certain stakeholder groups. For example, a design drawing for a public waiting area in a hospital may have a blank wall marked upon it, and this wall will have little significance to an architect or nurse viewing the schematic. But the same wall may be viewed by managerial staff as an ideal location for advertising: a revenue generating mechanism ready for operation on day 1 of the hospital opening if identified as such early enough in the project lifecycle. Recognition of how building elements possess intrinsic "meanings" for various stakeholders and project actors should be explored further.

Signs are used throughout the design discourse. Words are spoken to describe building elements, diagrams and schematics are referred to and models may be utilized. Different signs possess different properties. Peirce (Innis, 1960) formulated the basic tripartite distinction of icon, index and symbol: an iconic sign resembles that which it represents in a distinct way (e.g. a photograph, a map); an indexical sign has a direct link with its object (e.g. smoke indicates fire, a footprint represents a person); a symbolic sign functions by convention, belief or custom (e.g. a flag represents a country, a cross represents Christianity). Research in the construction management field (e.g. Luck, 2007) suggests that certain design artefacts mobilized to facilitate discussion and understanding between stakeholders and construction professionals fail to function effectively. A typological analysis of design discourse signs would aim to analyze an artefact for its "semantic strength". For example, if a designer wishes to discuss the plan of a new ward to a group of nursing staff, should he use photographs (iconic signs) or words (symbolic signs) to facilitate discussion? Additional parameters could facilitate such an analysis. For example, sign temporality (when was it produced?); sign source (origin of sign?); sign utility (can it be used again?); sensory strength (does it convey visual, sound, touch sensations?)

Additionally, the "meaning" of a sign can also be enhanced or diminished in practice by the medium or interface through which it is mobilized. Designers communicate with stakeholders using a variety of methods (e.g. e-mail, video-conferencing, face-to-face meetings). Choice of communication methodology will directly affect the discussion that transpires. Scholars such as Menchik and Tian (2008) have researched the semiotic properties of various communication media (e.g. e-mail) to establish their effectiveness in communication contexts. A semiotic orientated analysis would aim to study the media utilized in the design discourse to elucidate how the meaning of artefacts can be directly affected by the media of mobilization.

## **Process analysis**

Fieldwork will examine the processes evident when designers and stakeholder groups on a typical NHS hospital project come together. A narrative-based analysis would potentially examine the briefing discourse between client representatives and the design team using a deconstructivist approach. Following the principles of Derrida (Kilduff, 1993), it would be possible to analyse the design discourse objectively to question how certain concepts reveal themselves and are utilized in the briefing and requirements gathering process. As noted by Kilduff, a deconstructivist analysis would reveal the complexity of issues previously ignored or suppressed,

*“deconstruction is used not to abolish truth, science, logic, and philosophy, but to question how these concepts are present in texts and how they are employed to systematically exclude certain categories of thought and communication”* (1993: 15)

Alternatively, a semiotic orientated narrative analysis of the design discourse could engage a variety of techniques such as content analysis, procedural mapping or cognitive mapping (Carley and Palmquist, 1992) in order to extract the deeper issues at play when stakeholders and designers meet to discuss building requirements. Semiotic rooted narrative analysis has been used previously in research. For example, Floch (1988) conducted a semiotic analysis of shopper opinions to formulate the design of a future hypermarket, thus illustrating the potential value of conducting a semiotic analysis of spoken discourses.

However, the briefing process consists of more than a series of conversations. To objectively critique the stakeholder and designer processes observable on a hospital project necessitates that all phenomenon should be open to rigorous analysis and query. How many meetings are held between the parties? Are there enough? How is the briefing process conducted? Are Trust advisors the best people to represent stakeholder interests effectively? It is important to ask such fundamental questions if the briefing process is to be effectively critiqued.

## **Organisational / Institutional analysis**

A semiotic analysis of project design phase interactions would allow a clear conceptualization of the organisational and institutional rules which govern the processes. Barley (1983) demonstrated, using the work of funeral parlour, how careful analysis of work processes can elucidate the rules by which members of a work culture generate meaning: the underlying forces which shape occupational and organizational cultures being thus revealed. Barley employed ethnosemantic techniques (i.e. multiple interviews and semantic coding) to create semantic taxonomies, from which both the working practices and culture of the funeral parlour were comprehensively and convincingly semantically deconstructed.

To explore organisational and institutional realities from a semiotic angle has validity. Strati (1998: 1382) comments,

*“Almost every organizational phenomenon can be studied in order to understand symbols and cultures in organizations. The main purpose of symbolic study is to produce knowledge about organizations: their every feature becomes a field to explore”.*

## **Stakeholder analysis**

On a hospital project, many stakeholder interests are represented by individuals through delegation or by appointment (e.g. Trust advisors represent the interests of



multiple persons). This representative reality means engaging with the ideas and thoughts of actual hospital users may be problematic. However, to analyze a delegated individual would itself be valuable. Although the cognitive perspective of semiotics is less researched, it is still important in facilitating an understanding of how persons think and behave. Work engaging with this research angle would attempt to explore how meaning and understanding is established between different project actors by examining interpretation processes, psychological abstractive habits and internal comprehension processes. Carley and Palmquist (1992) formulated abstract mental models of individuals from analysis of spoken discourses. Such work follows in the tradition of such thinkers as Barthes and Levi-Strauss, where the cognitive processes of the conscious mind was the focus of academic enquiry.

Stakeholder perspectives could also be analyzed through their collaborative work with the hospital designers. Bechky (2003) has illustrated how different occupational groups can improve understanding between themselves by focusing upon and invoking their differences in shared communicative exchanges around certain identifiable design and engineering problems. It is feasible that the different occupational groups which come together for the realisation of an NHS hospital project may similarly engage in such shared knowledge exchanges to both improve project effectiveness and their own efficiencies. Examination of such exchanges may shed light upon the briefing process itself, and how various project participants view it.

### **Future Work**

A forthcoming hospital project in the UK will be the object of study. The design phase interactions between hospital designers, architects and the various stakeholder groups will provide the focus of research investigations. Interviews with project actors will be supplemented with attendance at design stage meetings, whilst discourse analysis and documentary examination will provide a comprehensive picture of design stage interactions. The gathered evidence will be critiqued against the existing academic literature on stakeholder management, communications and requirements capture in order to provide fresh insights into the mechanisms and processes of designing a modern hospital facility in the UK. Semiotic analysis techniques will be employed to explore issues of meaning and understanding between stakeholders and construction project professionals.

This paper has outlined a semiotic rooted strategy for investigating stakeholder and construction project actor interactions on a forthcoming NHS hospital project. In adopting a semiotic approach to investigate construction project dynamics, this study will be exploring the feasibility of applying certain theories not previously mobilized in a construction context. However, because the theories and ideas surrounding meaning, and how it may be extrapolated from any domain, are so varied, the study will endeavour to remain allied to the empirical data gathered from the case study hospital project.

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