VALUES, POWER AND PERFORMANCE ON CONSTRUCTION PROJECTS: A PRELIMINARY INVESTIGATION

Richard Fellows[1], Anita Liu[2] and Colin Storey[3]

[1, 2] *Department of Civil and Building Engineering, Loughborough University, Loughborough LE11 3TU, UK*
[3]*Library, The Chinese University of Hong Kong, Shatin, Hong Kong*

Seeking means for improving performance on construction projects remains a universal endeavour; in part, because project performance is linked to organisational performance. However, in the vast majority of cases, such endeavours relate to 'traditional', 'hard' measures of project management performance (realisation efficiency / effectiveness) and project performance (in-use operation). The realisation process is commonly characterised as a 'shifting, multi-goal coalition' based upon a fluid power structure in which participants tend to pursue values relating to self interests. Given that performance criteria may be classified as generic business, technical, and relational, questions of the strengths and directions of influence amongst them arise, with particular emphasis on potential causalities (as, for instance, in 'partnering'). Thus, this paper reviews theory and literature relating to personal and organisational values, power sources, structuring and exercising, and performance constructs and metrics with application to construction projects. A convenience sample of three case study projects is employed for empirical investigation. Power is determined to be the primary consideration in determining project realisation.

Keywords: performance, power, values.

INTRODUCTION

A common view of performance in construction is that organisational performance is the sum of performances on the projects which the organisation has undertaken during the period. Although that is a rather simplistic perspective, it is important in emphasising the links between the organisation and the projects which it executes. A host of variables intervene to both moderate and mediate the performance relationship.

The emphasis in measuring performance remains on the 'hard', 'traditional' metrics of time, cost and quality for projects and financial metrics of growth and profitability (for survival) for organisations; use of such metrics is reinforced by the extending impact of market capitalism via changes in economic-socio-political systems and privatisation, in all its guises (including public private partnerships - PPPs). The prevailing focus on such metrics preserves the fuzzing of measures of project performance (product) and project management performance (process).

Metrics of performance follow the typology of technical, relational and (generic) business - in which financial metrics remain overtly dominant. Indeed, it is widely apparent that other categories of performance are considered only because, and to the

---

[1] r.fellows@lboro.ac.uk

extent that, they impact on primary financial measures; or, at least, are perceived so to impact by organisations' managers - as in corporate social responsibility (CSR), etc.

For organisations, the performance imperatives - what they are and the essential levels of achievement - are often beyond the control of the directors and managers but, instead, vest in 'fund managers' of financial organisations - the institutional investors who constitute the globally active and dominantly powerful owners of most of the world's corporate organisations (Hutton, 2002).

Despite rhetoric to the contrary, it remains extremely common that the lowest, capital sum, bid wins - i.e. 'the firm which made the biggest, negative mistake in its tender' - thereby preserving the industry's claims orientation, 'culture of conflict', etc., ever more complex contract forms and enrichment for claims 'lawyers'. Of course, the caricature applies far more extensively than to the construction industry alone - the driving forces are ubiquitous - and so, apply to client organisations and other stakeholders too, thereby exacerbating the consequent difficulties by fostering a perceived-necessary zero-sum game perspective.

CONSTRUCTION PROJECT REALISATION

Construction project realisation commences with 'conception' - recognition that a construction project may be required to facilitate some end purpose by providing suitable accommodation; usually, the recognition is by the 'commissioning client'. Values, advice, constraints, confidence, quantification of requirements, alternatives and a host of further considerations input to the decision of whether to commission a project. The better-known aspects of briefing (e.g., Green and Simister, 1999) and feasibility studies then input to establish the performance criteria for the detailed realisation processes - design and construction.

The realisation process is, almost universally, deterministic, even acknowledging possible innovations in design and construction. Architects envisage a scheme which they analyse in progressive detail whilst engineers analyse detail and synthesise. Constructors employ both approaches in producing work breakdowns, method statements, programmes and estimates. Construction and in-use feedback is minimal.

But realities of both design responding to client performance requirements and construction activities are different - they are stochastic processes. Further, people often delude themselves over the extent of control which can be exercised together with the gamut of fallacies which flow from such delusions accompanied by issues of passing on responsibility of realising predicted events to others (see, e.g., Tversky and Kahnemann, 1982; Kahnemann and Lovallo, 1993).

Briefing is criticised for being incomplete, clients for not knowing their requirements (and changing them frequently), designers for not knowing what information is required for complete design (Mackinder and Marvin, 1982), constructors for being opportunistic; all of which may be exacerbated by regulators and other environmental variables/constraints in reducing performance achieved.

Cherns and Bryant (1984) characterise construction projects as executed by temporary multi-organisations (TMOs) in which membership is transient, non-repeating across projects and so, produces a fluid, multi-goal power coalition. That leads to "Adversarialism and opportunism…at all stages as low barriers to entry maintain the high degree of fragmentation and low levels of profitability and investment…" (Ireland, 2004). Further, construction companies ('main contractors') "…are effectively the 'integrator' for a myriad of construction supply chains…" (ibid.).

Hence, the importance of the dual perspectives of differentiation and integration – both are required adequately (Lawrence and Lorsch, 1967). The construction project literature is replete with evidence and discussion of the problems / failures of integration through lack of coordination and comprehensiveness which is exacerbated by pursuit of individual objectives amongst project participants; i.e. the absence of congruence amongst objectives (or/and goals). That is extended by lack of identification, communication and acceptance of performance goals (often confused with performance targets). Lack of, and resistance to, feedback are further detriments.

"Essentially, business is about appropriating value for oneself…only by having the ability to appropriate value from relationships with others…can business be sustained.…[there]...must…be conflicts of interest between vertical participants in supply chains, just as there are between those competing horizontally…" Cox (1999), [] added. In many situations value measurements and perceptions are based upon comparisons of forecasts/expectations with performance realisations. Consequently, cognitive dissonance (Festinger, 1957) is likely to occur and constitute an element of the value perceived (for both suppliers and consumers). Such comparisons and their consequences constitute significant risk for project participants.

VALUES

Kotler (1972) notes that "A transaction is the exchange of values between two parties. The things-of-value need not be limited to goods, services, and money; they include other resources such as time, energy and feelings". Rokeach (1973) suggests that values are deeply held, enduring beliefs of people (individually/collectively) whilst value is the benefit resulting from an exchange and arises from peoples' preferences. Thus, Kotler is referring to exchanges of things (tangible / intangible) to which the parties attach values both in exchange and in use (or appreciation - Holbrook, 1994).

Rokeach (1973) defines values as a signifying enduring belief in a way of behaving or a preference for a state in the future. Thus, a value has positive connotations by providing worth to the individual(s) and leads to the concept of values being desirable attributes. Such notions underpin the labour theory of value in that only the application of socially necessary labour power contributes value to artefacts and services. Usually, value is considered as usefulness (functionality, as in value management) - use value - which underpins exchange value - price at which a transaction occurs. Neo-classical economics asserts that every person is rational and pursues the objective of utility (satisfaction / profit) maximisation for self. That leads, e.g., Williamson (1985) to assert that, usually, people behave opportunistically.

Schwartz and Bilsky (1987) advance "…five features that are common to most…definitions of values…(a) concepts or beliefs, (b) about desirable end states or behaviors, (c) that transcend specific situations, (d) guide selection or evaluation of behavior and events, and (e) are ordered by relative importance." They note several motivational domains of values and so, support the correlation between people's values and those expressed for tasks/projects having a positive effect on performance (see, e.g., Nicolini, 2002; Dainty, Bryman, Price, Greasley, Soetanto and King, 2005). Finally, they distinguish between values which relate to terminal situations (outcomes - the functioning of a project in use; effectiveness) and instrumental values (processes - project realisation efficiency; productivity; project management performance).

In endeavours to increase utility in the provision of artefacts, the techniques of value engineering (VE) and value management (VM) have developed formally. Here, value

relates utility to expenditure (function for cost). That leads to the three level categorisation of value as 'essential/primary', 'secondary/supplementary', and 'unnecessary'. Costs are measured against each value item as the monetary expenditure for its provision. Thus, the concern of any VE/VM exercise is to maximise the surplus of values over costs (equity and monetary valuation issues).

An example of VE/VM in construction is cost planning by consultant quantity surveyors. Usually, the focus is on minimisation of the initial capital cost for the commissioning client (within a pre-determined budget); value considerations and full project life evaluations are attempted increasingly. Here, it is important to be aware that it is a forecasting exercise and so, subject to the errors, variabilities, risks and uncertainties inherent in forecasting. Further, as it is stochastic processes which are being forecast, their usual representation as simplistic, deterministic, single-figure predictions can be highly misleading (see, e.g., Reugg and Marshall, 1990)!

"…the discrimination between values as serving the individual's own interests or those of the collectivity is universally meaningful" (Schwartz and Bilsky, 1990). That perspective is critical to issues of project management and project performance as it is evident that behaviour founded in individualistic values is a performance hazard.

Roccas, Sagiv, Schwartz and Knafo (2002) note Schwartz' (1992) determination of "…ten types of values, each of which expresses a distinct motivational goal: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security." and confirm the "…relative stability of…values…across context and time…". However, Schwartz and Bardi (2001) find that "…groups that exhibit high overall similarity in their ratings of values may nonetheless differ substantially and meaningfully in their specific value priorities." That finding indicates that, even if there is the potential coherence amongst actors for team formation, the values to be applied must be identified, communicated and accepted to provide the goal congruence essential for team-based behaviour.

POWER

Commonly, power is regarded as the ability to pursue own desires in preference to those of others, including overcoming any resistance - i.e., the ability to control own environment. As such, power is an attribute of an individual in relation to other people or/and things. Influence concerns how power is exercised; power may be latent/potential or active. Thus, power may be viewed as comprising three elements - objective(s), influence (behavioural modification, etc.), and outcome(s), usually supplemented with policing and sanctioning to secure compliance.

French and Raven (1959) note five sources (forms) of power - positional (legitimate), referent, expert, reward, and coercive; information has been added. Dowding (1991) articulates a rational choice theory of power in which individuals or groups choose from a set of possible actions to try to achieve desired outcomes. A person's incentive structure comprises perception of the costs associated with different actions, the likelihoods that different actions will lead to desired outcomes and the desirability of alternative outcomes and paths to them. Hence, power comprises outcome power (the ability to secure outcomes) - product - and social power (the ability to change the incentive structures of others in order to achieve outcomes) - process.

Gramsci (1992) develops the concept of cultural hegemony in which a ruling group (class) becomes dominant. The ideas of the ruling group are perceived as the norm, the universal ideologies that benefit everyone whilst, in reality, benefiting the ruling

group only. Such dominance may become embodied in social institutions and, thence, in norms of practice (traditional procurement of construction; RIBA Plan of Work?).

Toffler and Toffler (1990) consider power to comprise and be exercised through violence, wealth and knowledge; historically through violence, post industrial revolution through wealth, and recently through possession and use of knowledge. The two overt forms of power in construction are wealth (as in ability to commission work) and knowledge - as in realisations of projects by designers and constructors.

An important aspect is that powerful persons are both more likely to take action and are less susceptible to influences from the environment - suggesting that they seem to be more in control towards realisation of their own objectives.

Power models may be classified as (1) causality (e.g. Dahl 1968, Hobbes 1960, Hume 1902) (2) structuration (e.g. Lukes 1974, Giddens 1984) and (3) post-structuralism (e.g. Foucault 1977, Clegg 1989). In the causality models, power of C over R is interpreted as "C's behaviour causes R's behaviour" (Dahl 1968:410). Understanding of causation and hence, power, is underpinned by the notion of matter in motion, collisions, of bodies pushing and being pushed (Hobbes 1960). Power is interpreted as a cause which can be inferred only from observable change, movement or motion. In structuration theory power is "the capacity to achieve outcomes" (Giddens 1984:257), thus relating structure to action (Bachrach and Baratz 1962, Lukes 1974). In post-structuralism, Clegg (1989) develops a framework of 'circuits of power' from Callon *et al.* (1986) and Laclau and Mouffe (1985), based on power discourse analysis (Foucault 1977).

While Lukes (1974) seeks to build 'structure' on the foundations of 'action', Clegg (1987) suggests that it is not possible to take the simple A-B notion of power as a foundation upon which to build second and third dimensions. (Lukes' (1974) three dimensional power model is explored by Lovell (1993) in construction management.)

Supplementing Cherns and Bryant (1984), Clegg (1987:66) analyses the construction site as "a complex play of interorganisational relations" in which indexicality - the interpretation of meaning and language - is important. He alleges that interorganisational relationships are constituted by a single discourse, the contractual document, therefore conflict issues (over which A-B type power plays are exercised) have a rationality which is inhered within the framework of construction projects.

In post-structuralism, Clegg (1989) develops a circuits of power framework in which the concepts of system integration, social integration (e.g. Parkin 1972) and episodic power relations are woven into a power network to offer a basis for analysis of facilitative, dispositional and agent power. Episodic power relations (in agents) model is applicable for analysis of the project operation level.

PERFORMANCE

Performance constitutes outcome - usually (falsely) assumed to be measured accurately and objectively, for product and process. First, nothing can be measured absolutely accurately; second, people choose what, when and how to measure. In construction, many outcome measures are negotiated quantities, such as final accounts and contract durations; further, there is extensive confusion between process and product measurements - the 'iron triangle' of time, cost and quality are measures of construction process, whilst fitness-for-purpose measures relate to product-in-use.

Performance dissonance occurs, in part, due to failure to acknowledge variability inherent in forecasts underpinning performance expectations as well as actual performance variations and changes in task contents, structures and circumstances.

Today, performance requirements - constructs and metrics - are extending far beyond traditional, 'hard' measures (primarily, financial), to include an array of 'soft' measures - morally-grounded ethical behaviour, such as aspects of CSR, organisational justice, cooperative behaviour. Thus, the categories of business, relational and technical performance variously aggregate to yield satisfaction of stakeholders, where high levels of satisfaction are derived from/indicate good performance. Different stakeholders are likely to experience different levels of satisfaction depending on whether the levels of performances achieved against the metrics accord with their own value structures (such as owners, managers, operatives, customers, environmentalists).

Whatever performance is achieved, it is, inevitably, a consequence of 'shared creation' - i.e., collaboration (Schrange, 1990) - and so, it may be hypothesised that the more coherent are the values of the project participants, the greater is the collaboration and, in consequence, performance is enhanced (see also Anvuur, 2008).

CASE STUDIES

Participant observation is employed to conduct the empirical study. A convenience sample of three case studies of library-related projects carried out by a single, experienced client provides client-oriented ethnographic data. Given the importance of early decisions, the study examines projects at the early stages of design.

University librarians are one group of non-construction specialist participants who have often found themselves in TMOs. The rapid growth of universities has necessitated many new library buildings. The huge increase in the availability of electronic Web-based information with a consequent decline in the use of print has made many university administrators wonder if their libraries really need great space for book-stacks and, in turn, has forced librarians into radical rethinks towards zoned and flexible learning spaces. Typically, a senior academic librarian will have been involved in at least one new build, and many refurbishments.

The cases illustrate the kinds of challenges involved when the professional objectives, interests and values of TMO participants - architects, builders, academics, academic administrators, and librarians - interface. There are no 'good' or 'bad' guys in the cases described, merely multiple project participants each with views and priorities.

Each case study involves new or refurbished library buildings and space within a publically-funded university. All the projects are in Hong Kong and are at the design stage. Consultant architects are to be hired soon, or have just been hired. The main participants in the three TMOs are: the 'librarian-client'; the internal university commissioning architects; the university Vice-Chancellor; the university senior administrators; professors and researchers; students; external consultants for the university – usually architects; the external consultant architect.

The case study projects are:

- 'Shenzhen Project': a new university post-graduate research facility to be built in Shenzhen, China, with $500m^2$ of library space, to open in 2010.
- 'Architecture Project': a new building for the Department of Architecture. The existing $560m^2$ Architecture Library is to move into the new building in 2012.

- 'Main Library Project': a 6,000 usable m^2 extension to a main university library building, to open in 2012.

When will the librarian-client be brought in? Commonly, as a librarian is neither an academic nor an architect, senior educational administrators assume that he/she knows little or nothing of the factors involved in any building's design or commissioning. Often, if the librarian is brought in very early, he/she is merely asked, how much space will you need in m2? However, senior librarians often have a great deal of experience in these matters. For the Main Library Project, the librarian was involved at a very early stage, by being asked to contribute to a written paper on proposed usage for government funding for the project. Usually, the librarian is brought in much later - when a project management committee of the various university project participants is formed. On the Shenzhen and Architecture Projects, the librarian was the last to be informed that the buildings would be built, perhaps because library space formed only part of each building. For the Shenzhen Project, the librarian was not a member of any project management committee. Indeed, a rectangular space on the fourth floor of the proposed building had simply been identified as 'library'; the implication being, "Only when the space is built, need the librarian be involved".

Who will design the buildings and do they know what a library should look like? For the Architecture Project, it appeared that external architects would do the design, rather than the academic architects who would inhabit the building. Would the librarian be caught in the middle as an external architect argued with internal architectural professors? Sensible librarians never try and influence the external design. However, interior designs are a different matter. The design concept in the existing Architecture Department is open-plan, bare concrete. Would that be replicated in the new building? Could/should the librarian influence aesthetics?

In the Shenzhen Project, the designer is a Shenzhen, Chinese architect. Thus, to some extent, the Project was being managed remotely across a border. When would the librarian meet the architect, since the building was about to be built with an allocated space on the fourth floor, windows facing East (orientation for light and heat)? What did this architect know, or need to know, about libraries?

The librarian was on the university managing committee for the Main Library Project, along with four architects, a computer professional and four academics. It would involve a Hong Kong architect. The footprint of the building over an existing car-park had been radically changed from the original idea, because no-one liked the thought of a high, thin, rectangular building as in the architects' submissions. One 'world-class' architect was wooed to make a further submission, but refused to alter the design. Half the building in the Project would now be underground (for the Library), so that a low-rise building would be visible above ground. The people around the table tended first to listen to the architects on the judging panel, but then did take into consideration the strongly-held views of the librarian.

From observations at project meetings, architects usually want to make a statement about libraries in terms of form, but are less interested in function. Platitudes abound from potential consultant architects, for example, "the library is the heart of any university, so a clear statement is needed to signify the importance of this building!". This 'clear statement' is usually an atrium rising through the library building where valuable potential floor-space is jettisoned for mostly aesthetic reasons.

There are 'fashions' in architecture, so it can be predicted what architects will propose for internal library design - often boringly similar to one another. Thus, it is best for

the librarian to take a more proactive view and move towards the architects with a revolutionary internal design. A library could be open 24/7, with self-check units for issue and return of books etc., allowing students to treat an 'open' library as an extension of their workrooms/laboratories. Only exceptionally foresighted members of the TMO would ever consider being so radical, unless the librarian takes the time to educate them gently but forcefully. Students might take to such an idea, but they are usually not invited to the frequent TMO meetings.

How much space will the library get in the final building? Although the Main Library Project was an "extension to the main library", would all 6,000m^2 be library space? If the space is allocated, would it be a single- or multi-storey library? The concept and usability are quite different for each. This can be a lottery, depending on the footprint of the building. In the Architecture Project, the library was originally 560m2 but the footprint of the new building indicated only 500 m2 per floor. In addition, what space for Library staff and offices – would this be dictated, as other things were, by space norms that bore little relation to function?

A sure result is that whatever space is asked for, and however many statistics are produced to back a librarian's claim for the right mixture of staff/public space, electronic/print provision, furniture/stack space, and so on, senior university administrators allocate what space they want to give libraries. This political dimension – in actuality, the very limited amount of power the librarian possesses to influence a university's decision – needs to be understood by the librarian.

For an academic librarian, the first common lesson drawn from the experiences in the three cases is: "Power over form over function". Professional architects, while noting the requirements of the end-user, are always firm on what is really wanted: "a signature building"! Form over function every time. Yet, in the final analysis, which participant in a TMO decides? Despite the predominant value culture evident in any discussion forum in Chinese society for "getting to yes", given the dynamism and contradictions inherent in the personal aesthetics and participant values of any design project, it ends up on the desk of the university's Vice-Chancellor. So, months of discussions and re-designs can hinge upon the final decision, the power, of the Vice-Chancellor, whose views will, inevitably, dominate.

The second lesson is: "The devil is in the detail". Despite all the decisions that have been made by multiple project participants in any TMO, the finished space will be handed over to the librarian to operate. If the librarian is to be "delighted", the librarian will need to concentrate on clear advocacy of the library's needs whenever a TMO is discussing the scheme or detailed designs. If this lesson is not learned early and fully appreciated by librarians, and (hopefully) by all other project participants, the resulting spaces in which the librarian will live and work for long into the future will be impractical, even unworkable, as functioning, state-of-the-art library buildings.

CONCLUSIONS

Performance metrics for construction projects comprise hard and soft variables; generally, hard, especially financial, performance dominates. That perspective extends to the aggregation of project performance to yield organisational performance. Although relational variables are recognised as important, along with technical variables, they are managed and fostered due to their impact on business performance.

The empirical results reflect the findings of Cherns and Bryant (1984): projects which reach the industry (often) reflect the 'resolution' of internal conflicts within the client.

In the cases studied, the power-structuring, both within the client (in which the mission and values are common) and as perceived and acted upon by external design consultants, is paramount in deciding the nature and content of a project.

The multi-participation of diverse stakeholders in construction project TMOs is neither egalitarian nor, necessarily, rational in yielding decisions determining product and process outcomes but, instead, facilitates pursuit of individual interests according to power-structuring within the coalition. Thus, despite potential use of value determination tools to secure high value-in-use products, fundamental decisions which affect such outcomes are made according to the desires of the power hierarchy. Clearly, there is a strong case for research into management of the entire realisation process but with major emphasis on the design phase, especially its early stages.

REFERENCES

Anvuur, A.M. (2008) Cooperation in Construction Projects: Antecedents and Strategies, PhD Thesis (unpublished) Hong Kong: The University of Hong Kong.

Bachrach P., Baratz M.S. (1962) Two faces of power. *American Political Science Review*. **56**, 947-52.

Cherns A.B., Bryant D.T. (1984) Studying the client's role in construction management. *Construction Management and Economics*. **2**, 177-84.

Clegg S.R. (1987) The language of power and the power of language. *Organisation Studies*, **8**(1) 61-70.

Callon M., Law J., Rip A. (eds.) (1986) *Mapping out the dynamics of science and technology: sociology of science in the real world*. London: Macmillan.

Clegg S.R. (1989) *Frameworks of power*. London: Sage.

Cox, A. (1999) Power, Value and Supply Chain Management, *Supply Chain Management*, **4**(4) 167-175.

Dahl R.A. (1968) *Power. International Encyclopaedia of the Social Sciences*. NY Macmillan Free Press. Vol. XII, 405-15.

Dainty, A.R.J., Bryman, A., Price, A.D.F., Greasley, K., Soetanto, R. and King, N. (2005) Project affinity: the role of emotional attachments in construction projects, *Construction Management and Economics*, **23**(3) 241-244.

Dowding, K. (1991) *Rational Choice and Political Power*, Cheltenham: Edward Elgar.

Foucault M. (1977) *Discipline and punish*. Harmondsworth: Penguin.

French, J.R.P., Raven, B. (1959) The bases of social power, In Cartwright, D. (ed.) *Studies in Social Power*, Ann Arbor, MI: University of Michigan Press.

Giddens A. (1984) *The constitution of society*. Cambridge: Polity Press.

Gramsci, A. (1992) *Prison Notebooks*, New York: Columbia University Press.

Green, S.D., Simister, S.J. (1999) Modelling client business processes as an aid to strategic briefing, *Construction Management and Economics*, **17**(1) 63-76.

Hobbes T. (1960) Leviathan, Oakeshott, M. (ed.) Oxford: Blackwell.

Holbrook, M.B. (1994) The Nature of Customer Value, In: Rust, R.T., Oliver, R.L. (eds.) Service Quality: New Directions in Theory and Practice, Newbury Park CA: Sage.

Hume D. (1902) *An enquiry concerning human understanding*. Oxford: Clarendon Press.

Hutton, W. (2002) *The World We're In*, London: Abacus.

Ireland, P. (2004) Managing appropriately in construction power regimes: understanding the impact of regularity in the project environment, *Supply Chain Management*, **9**(5) 372-382.

Kahneman, D., Lovallo, D. (1993) Timid Choices and Bold Forecasts: A Cognitive Perspective on Risk Taking, *Management Science*, **39**(1) 17-31.

Kotler, P. (1972) A Generic Concept of Marketing, *Journal of Marketing*, **36**(2) 46-54.

Laclau E., Mouffe C. (1985) *Hegemony and socialist strategy*. London Verso.

Lawrence, P.R. and Lorsch, J.W. (1967) Organisation and environment: managing differentiation and integration, Boston: Division of Research, Graduate School of Business Administration, Harvard University.

Lovell R.J. (1993) Power and the project manager. *International Journal of Project Management*. **11**(2) 73-78.

Lukes S. (1974) *Power: a radical view*. London. Macmillan.

Mackinder, M., Marvin, H. (1982) Design Decision Making in Architectural Practice, Research Paper 19, Institute of Advanced Architectural Studies, University of York.

Nicolini, D. (2002) In search of 'project chemistry', *Construction Management and Economics*, **20**(2) 167-177.

Parkin F. (1972) System contradiction and political transformation. *European Journal of Sociology*. **13**, 45-62.

Reugg, R.T. and Marshall, H.E. (1990) *Building Economics: Theory and Practice*, New York: Van Nostrand Reinhold.

Roccas, S., Sagiv, L., Schwartz, S.H., Knafo, A. (2002) The Big Five Personality Factors and Personal Values, *Personality and Social Psychology Bulletin*, **28**(6) 789-801.

Rokeach, M. (1973) *The Nature of Human Values*, New York: Free Press.

Schrange, M. (1990) *Shared minds: the new technologies of collaboration*, New York: Random House.

Schwartz, S.H. (1992) Universals in the context and structure of values: Theoretical advances and empirical tests in 20 countries, *In:* Zanna, M. P. (Ed.) Advances in experimental social psychology (Vol. 25) New York: Academic Press, 1-65.

Schwartz, S.H. and Bardi, A. (2001) Value Hierarchies across Cultures: Taking a Similarities Perspective, *Journal of Cross-Cultural Psychology*, **32**(3) 268-290.

Schwartz, S.H. and Bilsky, W. (1987) Toward a Psychological Structure of Human Values, *Journal of Personality and Social Psychology*, **53**(3) 550-562.

Schwartz, S.H., Bilsky, W. (1990) Toward a Theory of the Universal Content and Structure of Values, *Journal of Personality and Social Psychology*, **58**(5) 878-891.

Toffler, A., Toffler, H. (1990) Powershift: Knowledge, Wealth and Violence at the Edge of the 21st Century, Bantam Books

Tversy, A., Kahneman, D. (1982) Judgement under uncertainty: heuristics and biases, in Kahneman, D., Slovic, P., Tversky, A., (eds.) *Judgement under Uncertainty: Heuristics and Biases*, Cambridge, Cambridge University Press, 3-20.

Williamson, O.E. (1985) *The Economic Institutions of Capitalism*, New York: The Free Press.