This paper examines the processes through which the values relating to construction projects, with particular reference to sustainability, are determined and operationalised. Those values are fundamental in governing the performance of both the project, as a product in occupation and use, and project management, as processes of realisation of the project involving design and construction. The values determine what performance variables are considered and their relative importance which, within the applicable parameters, controls and constraints, yield the performance targets for the project—against which realised performance will be evaluated. Those values are derived from the value structures of the project participants and so must be elicited and collated under the influence of the evolving membership and power structure of the project temporary multi-organisation (TMO). The TMO, as a shifting, multi-goal, power-based coalition, promotes fluctuations in the values employed to drive the project as it develops and so makes evaluation of performance highly problematic. Given that the values are human-determined, they are grounded in culture. Thus, understanding culture, as an operative construct in the project value system, enables the concepts and practices relating to the sustainability of construction projects to be understood and developed.

I. INTRODUCTION

Sustainability is arguably the topic discussed most in connection with construction activities today, confirming the rightful place of that subject as of paramount importance. Its importance is not only in relation to construction but to all activities, human and otherwise; and not just for the local, current population but for all current and future generations. It is the most global of issues.

A major problem, however, is that often, ‘sustainability’ is no more than a label used in discussion. What is really being debated is not sustainability but a related and much less demanding topic—‘greening’. The ‘green’ performance of buildings may be assessed in relative/comparative terms, perhaps including benchmarking, but ‘sustainability’ performance assessments use absolute measurements (of energy embodiment, consumption, etc.). While ‘greening’ is worthwhile, it is only a move towards the potential achievement of sustainability and, on many occasions, it is only a very small step.

A report by the World Commission on Environment and Development (the Brundtland report) defines sustainable development as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’. While such a definition is laudable in express intent, it raises problems over implementation, not least due to embedded definitional and, consequential, measurement problems.

The issue of the extent of (true) knowledge of resources, inter-relationships, future developments and the entire gamut of needs of persons and all other life-forms is absolutely central to the determination of actions regarding current deployments and uses which, totally and inevitable, affect all possibilities for the future—both short-term and long-term. As it is amply evident that humanity does not have anywhere near that level of knowledge, maximum caution in its actions over consumption of resources, pollution, decimation of species, and so on, seems to be the only sensible path. The problem is that pursuit of such a path generates huge value conflicts.

At the 1992 United Nations Conference on Environment and Development (The Earth Summit) in Rio de Janeiro, participating countries agreed an action plan for the 21st century—Agenda 21, which recognised that humans depend on the Earth to sustain life and that there are vital linkages between human activity and environmental issues if such developments are to be sustainable. Thus, Agenda 21 has created a wide and all-encompassing concept of sustainability that forms the basis of value conflicts. For instance, chapter 7 of Agenda 21 specifies the overall objective of human settlement to be ‘to improve the social, economic and environmental quality of human settlements’. Such statements invoke the notions of different values manifested in various forms of sustainability—social, economic, environmental, and so on. This paper argues that such an approach is highly dangerous and detrimental to the underlying concept of sustainability.

Science, at present, asserts that everything is composed of matter and energy and that they are related in the form $E = mc^2$. Thus,
from a scientific point of view, it seems appropriate to investigate sustainability in terms of the fundamentals of matter and energy. Regarding planet Earth, it is but one component of the universe and, as a sub-system, gains energy from and loses energy to its environment. At present, increased energy gain and energy entrapment, caused by atmospheric pollution resulting from human activities, are significant sustainability issues for Earth and for the life it supports. Such human activities are a manifestation of our value-laden behaviours (behaviours driven by values); for instance, if economic growth in terms of GDP increase is valued above quality of human livelihood in developing countries, then pollution may easily be ‘absorbed’ by those countries as an acceptable by-product of their increased industrial activities.

Our values underpin our behaviour. The values are grounded in our fundamental beliefs of what is right and what is wrong and are used to express relative worths of objects and actions. Thus, values are subjective and may be highly individual, although, through social systems and institutions, commonality of beliefs and values emerge. Especially in relation to sustainability, awareness of the issues involved is likely to have significant impact on value systems—notably what issues are featured in peoples’ value hierarchies and the relative positionings of these issues within those hierarchies. For instance, are privileged individuals ready to give up/modify their value-laden behaviours that are detrimental to the environment? Quite possibly a huge tax increase in car purchase or vehicle fuel may cause disturbance in the social/political system, which may result in a change of government officials in the next election.

The current economic growth in developed countries entails high rates of consumption of natural resources that nature is unable to restore, and great amounts of residues that cannot be absorbed.4 It is suggested that this situation is applicable to all countries, not only ‘developed’ ones. The questions are what can we do and what are we prepared to do to identify and address the issues involved?

This paper endeavours to be provocative in order to stimulate more fundamental (and meaningful) ways of examining issues of sustainability, with regard to the realities of the construction industry, and to foster the development of an agenda for holistic, process-based research into construction sustainability.

2. ORGANISATIONS IN CONSTRUCTION

Construction includes main (management) contractor, subcontractors, suppliers and plant hire organisations. Design includes architects, structural/civil engineers, services engineers and quantity surveyors. Clients include commissioners, owners, occupiers, users and financiers. For all but the smallest projects, each main function is a composite in which each primary component is executed by at least one specialist separate organisation.

As projects increase in size and complexity, more specialist participants (increasingly drawn from a variety of countries) are involved to form a temporary multi-organisation (TMO)—the project organisation—to realise the construction process. Those TMOs constitute constantly changing conglomerates of individuals and organisations that have differing values and objectives and which operate through fluid power structures.5 A generic, systems-based model of the functional organisation for the realisation of a construction project is shown in Fig. 1.6

That TMO organisational form is argued to be generic throughout the world’s construction projects, almost irrespective of the procurement approach adopted. However, complexity varies between projects—especially international projects—as do the underpinning values of the participants and the expected/perceived outcomes. Such complex construction processes require integration of the task activities involved.

Complex processes are analysed with attention to integration of the independent activities in modern businesses.5 Furthermore, increased transaction costs are due to information requirements for interdependent working, including cross-boundary coordination requirements.5 Whilst integration remains a feature of research into business processes and practices, it seems to have remained rather peripheral in an examination of the relationships between design and construction.

Even the allegedly holistic examination of realisation of construction projects, despite attention to ‘partnering’, and so on, tends to adopt a simplistic and command approach to integration and ‘team’ formation. For instance, the most commonly articulated main objective for project participants, ‘to satisfy the client’, seems far too simplistic for meaningful application. First, we must determine ‘who is the client?’ Then, the criteria, constraints and project parameters must be identified and quantified, accurately and both absolutely and relatively to

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Fig. 1. The project realisation process. The performance–success–satisfaction relationship is explained by Liu and Walker.6 Performance–success–satisfaction also produces feedforward in the cycling of project data and information to aid realisations of future projects through participants’ perception–memory–recall filtering (experiences). The participants will be able to bring forward their experiences of past behaviours to enhance their performances in subsequent projects, thereby securing likely attainment of project goals (success) in future.
determine what will engender satisfaction in the (identified) client at handover of the realised project.

Bennett et al. determined a ‘wish list’ of generic client requirements regarding the performance of construction projects. These requirements, filtered by Latham, led to the five drivers for change in construction as expressed in the Egan report:

(a) committed leadership
(b) focus on the customer
(c) integrated processes and teams
(d) quality-driven agenda
(e) commitment to people.

Not a lot about sustainability, but rather a lot about wealth enhancement for clients. Moreover, as the number of client functionaries extends, the complexity and difficulties of that exercise grow geometrically. Thus, it is hardly surprising that, in practice, simplistic solutions are pursued.

However, given the research into briefings and the levels of (dis-) satisfaction reported from commissioning clients and sometimes users/owners of realised construction projects, even the simplistic approaches are not simple to follow or to get right. Major problems appear to be embedded in identifying requirements and constraints, communicating them, understanding them and assessing their applications and consequences in the construction environment. Essentially, a significant proportion of the problem is translation because the (commissioning) client world is different from the construction world. Indeed, at the next level of detail, each project participant operates in their own ‘world’ boundary of values, meanings, structures, processes, and so on. In systems terms, there are boundary-spanning issues involving these differences; hence teamwork becomes the focus for consideration.

Essentially, the teamwork required for project realisation within the TMO, and expressly so under formal joint-venturing and partnering arrangements, requires two social processes to operate—bonding between participants within the organisation, and bridging to and bonding with new participants—to yield a coherent and cohesive whole that is then likely to behave and perform as an in-group. The commonality of values, objectives and processes of the in-group, while likely to enhance its own performance may, conversely, be detrimental to any participants who remain outside and so have negative performance elements that reduce aggregate performance gains for the project as a whole. That leads to the desire for extensive inclusion of participants.

There remains debate within the field of organisational behaviour over whether an organisation can have a ‘personality’ and behaviour different from those of its representative agents, either individually or as a collective; currently, the consensus suggests that it can. So, corporate visions, missions, goals, targets, and so on, and morals and ethical behavioural standards are separate from those of the corporate members and stakeholders. One consequence is that members may perceive, and act on, a plurality of objectives and behavioural ethics under which individuals usually perceive their own morals and behaviour to be superior to those of peers and organisations. At least the (perceptions of) a duality of standards between an individual and an organisation is enhanced by separation of the legal identity of many organisations from its members and by indemnities given by organisations for behaviour of members (see, e.g., the discussion of ‘personal shielding’).

3. VALUES IN CONSTRUCTION

A value may be defined as signifying enduring beliefs in particular ways of behaving or preferences for states in the future. Thus, a value has positive connotations in that it provides worth to the individual(s) and leads to the concept of values constituting desirable attributes. Such notions underpin the labour theory of value as espoused by David Ricardo and Karl Marx in that if we adopt the egalitarian basis that each and every human has an equal ownership stake in the world and its resources, then only the application of (socially necessary) labour (power) contributes value to the artefact produced.

There are ‘...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 behaviour and events, and (e) are ordered by relative importance. Thus, values are often depicted as constituting the layer of culture that is intermediate between fundamental beliefs at the core and manifestations at the surface—behaviour, language, symbols, heroes, and so on. They note a variety of motivational domains of values and so support the perspective of congruence between people’s values and those expressed for tasks/projects having a positive effect on performance. Finally, they distinguish between values that relate to terminal situations (outcomes, as in the functioning of a project in use) and instrumental values (processes, as in project realisations that consume less resources and produce less pollution).

Dimensions have been determined for examining national cultures that form a basic underpinning of organisational cultures (and climate) and thus the context for organisational behaviour. Hofstede isolated four dimensions of national culture: power distance, individualism/collectivism, masculinity/femininity, uncertainty avoidance. He later, added long-termism/short-termism following studies in Asia that detected important impacts of ‘Confucian dynamism’. For organisational cultures, Hofstede employs the six dimensions of: process—results orientation; job—employee orientation; professional—parochial; open—closed system; tight—loose control; and pragmatic—normative. These dimensions of culture may be viewed as ‘competing values dimensions’.

In the context of organisational effectiveness, investigations of values and their behavioural consequences has led to the postulation and testing of competing values models. Quinn and Rohrbaugh proposed a three-dimensional model of competing values: control and flexibility; internal focus and external focus; ends orientation and means orientation. However, that model has been criticised due to its ‘potential negative consequences of overemphasising certain values and excluding others’.

Economics employs two basic concepts of value. Use value is the subjective determination of the utility of a good or service and is contingent upon situations. Exchange value is the (money)
market price of an item as expressed in a transaction. Logically, under alternative forms of rationality and market mechanisms, use value underpins exchange value and those relationships for potential sellers and buyers determine whether transactions occur and, via bargaining and market operations, at what money amounts any transactions do occur.

If values give rise to objectified end states and to behaviour (processes) perceived conducive to their achievement, then those end states may be regarded as the primary behavioural drivers (via motivation, commitment) with the processes acting as facilitators and parameters founded in morals and manifested in ethics. Many disciplines employ basic assumptions of rationality of human behaviour, whether complete or bounded. Economics is underpinned by the belief that ‘rational homus economicus’ has the objective of utility (satisfaction/profit) maximisation for self (whether individual or collective). That leads to assertions that, usually, people behave opportunistically—self-seeking with guile—thereby reinforcing competition.26

In endeavour to increase utility in the provision of artefacts, the techniques of value engineering (VE) and value management (VM) have developed formally.37–21 Here, the concept of value tends to relate utility to expenditure, commonly expressed as value as a function of cost (‘value for money’). That leads to the three-level categorisation of value—essential value as a function of cost (‘value for money’). That leads to the three-level categorisation of value—essential/primary, secondary/supplementary, unnecessary—with each function being concisely described by one verb and one noun only. Costs are measured against each value item as the monetary expenditure for its provision and thus the concern of any VE/VM exercise is to maximise the surplus of values over costs. However, such implicit positivism of VM22 is over-simplistic. In contrast, soft systems methodology emphasises VM as the way in which groups of individuals participate in the creation of a shared social reality.31, 32 VM cannot be understood in isolation from the institutional network(s)32 that, through interconnectivity between people, institutions and socially constructed technology, lends itself to analysis through the lens of actor–network theory.33, 34

Although in many such cases the focus may be on minimisation of the initial capital cost for the commissioning client (and/or ensuring the cost will not exceed some pre-determined budget amount), value considerations and full project life evaluations are increasingly being attempted. Here, as in many other cases, it is important to be aware that this is a forecasting exercise and is thus subject to the errors, risks and uncertainties inherent in forecasting. Furthermore, it is stochastic processes that are being forecast,35 such as the dynamic scope of possible changes and variability cannot be captured in a deterministic figure of cost at the stage of cost planning.

As in any decision chain, early decisions (e.g. design decisions) have most effect (on budgeting), although such effects decline geometrically through the project realisation (initiation, design and construction) period. However, there has been an over-emphasis on how the cost reduction potential reduces (with a corresponding increase in the cost to change) as the project progresses.36–39 That emphasis serves to reinforce the perception that VM is primarily about cost reduction, while marginalising alternative conceptualisations of VM based on learning,40 sense-making,41 participatory goal setting41 or consensus building amongst stakeholders.42 Usually, construction projects are not realised by a team but by a transient conglomerate of individuals (and individuals representing organisations) who have diverse interests and objectives and varying types and amounts of power and influence. Hence, a construction project is more appropriately characterised to be realised via a TMO where the interconnectivity and interdependency of people, institutions and social networks are emphasised.

For a project TMO, membership increases incrementally as the realisation process proceeds (and changes further during occupation and use, adaptation, and so on, and final disposal). Given the functionally diverse specialisations of the evolving members, the values that are brought to bear on the project design and construction are numerous and diverse. Many values are expressed in some way but many others remain implicit—left to be intuited from behaviour of the participants. This is because people are not always aware of their own values until issues that impinge upon them, most obviously as threats to them, arise.

Thus, it is apparent that, even if participants’ values are determined at the initial stages of a project and an accurate hierarchy is communicated and accepted,43 the value structure is likely to be ‘threatened’ subsequently as the TMO power structure changes, membership evolves, and participants’ appreciation of project management and project performances develop. The result is that the values applicable to determination of desired performance change, so generating differences in the basis for performance evaluations. Further, early value structures may have been fixed by early decisions and project realisation processes such that subsequent amendment may incur huge costs financially and otherwise.

Usually, a trade-off, or zero-sum-game, model of performance is assumed; this dictates that the values that generate the desired performance attributes must also follow the trade-off model. However, a non-zero-sum-game (‘win–win’) is also a possible model,44 as epitomised in the ‘continuous improvement’ philosophy.

Intuitively, from a generic point of view, we might expect that positive perspectives on sustainability would be stronger amongst people with a more collectivist and longer term orientation in their culture. However, Hofstede’s dimensions of national culture are not without criticisms45 and advocated amendments/refinements. The collectivist construct (on the individualism–collectivism dimension) is, now, inadequately sensitive such that collectivism comprises two components—horizontal and vertical. Those components are related to individualism, as Hofstede’s dimension

individualism (low concern for collectivity and low concern for in-group others) at one end of the spectrum of the two dimensions with vertical collectivism (high concern for the collectivity) and horizontal collectivism (high concern for in-group others) at the other two ends. ... Because the vertical scale items refer to work situations and the horizontal scale items primarily refer to non-work situations, one may speculate that the Chinese are becoming ‘organizational individualists’ even though they are still cultural collectivists in other domains46

Especially for wealthier countries, Hofstede47 reports a negative correlation (99%) between long-term orientation and individualism; this is likely to be detrimental to sustainability.
Following further research regarding the cross-cultural applicability of the model of motivations underpinned by values, Schwartz and Bilsky state ‘the cross cultural evidence clearly supports the universal existence of the seven basic motivational domains tested’ (see Fig. 2).48 Their studies indicate that ‘the discrimination between values as serving the individual’s own interests or those of the collectivity is universally meaningful’.48 That perspective is critical to issues of sustainability as it seems abundantly clear that behaviour founded in individualistic values cannot foster sustainability—a collectivist approach is essential.

4. SUSTAINABILITY AND CONSTRUCTION PROJECTS

It is abundantly evident, from definitions adopted, from pollution and from depletion of resources, that sustainability is the most global of issues. Given evidence of the ‘state’ of this planet with respect to its resources and potential for sustaining life, the issues of sustainability are collective and long term. Thus, construction should not be considered alone but as a part of a holistic global system. Short-term and local initiatives may yield valuable contributions and indications but, without global measures, can provide only incremental/marginal contributions towards any solution. Thus, greening initiatives fall into such incremental categories—often to the extent that the consequence of green initiatives is a (marginal) reduction in the rate of arriving at the unsustainable apocalypse!

The International Centre for Sustainable Cities (ICSC) states ‘a sustainable city enhances and integrates the economic, social, cultural and environmental well-being of current and future generations.’49 A sustainable community is one which continues to thrive from generation to generation because it has

(a) a healthy and diverse ecological system that continually performs life sustaining functions and provides other resources for humans and other species
(b) a social foundation that provides for the health of all community members, respects cultural diversity, is equitable in its actions, and considers the needs of future generations
(c) a healthy and diverse economy that adapts to change, provides long-term security to residents, and recognizes social and ecological limits.50

The UK government has sought to articulate the principles of sustainable development to comprise51

(a) maintenance of high and stable levels of economic growth and employment
(b) prudent use of natural resources
(c) effective protection of the environment
(d) social progress that meets the needs of everyone.

These principles have been developed into the following principles for sustainable construction52

(a) constructing projects that are more cost-effective to produce and run as they have been constructed with less and yield more
(b) constructing projects that contribute positively to the surrounding environment, using materials and systems that

are easily replenished and perform better over their full life cycle
(c) promoting high standards of living for people.

A particular concern over the endeavour to produce sustainable construction, sustainable developments, communities, cities, and so on is fragmentation—one of the enduring problems of construction project management performance. While the specialisation aspects of fragmentation are, for many reasons, desirable, the resulting separation necessitates conscious coordination and cooperation to integrate the individual, specialist activities to achieve a synergistic whole—it is that integration imperative that gives rise to the problems.7, 10, 53 A similar situation occurs in practices relating to sustainability—different groups have different perspectives, agendas and definitions (economics, sociology, ecology, biology, town planning, developers, constructors, etc.)—with the result that what fulfils sustainability from one perspective may fail miserably from another.

The consequence for construction and development practice is that legislation is piecemeal and addresses ‘greening’ rather than sustainability!

The issues are highlighted in the competing values framework54, 55 applied to sustainable development56 (see Fig. 3 and Table 157). For sustainability (and greening), the time dimension is of obvious import while the flexibility/control axis reflects that restraint is often required over actors’ potential opportunistic behaviour. The integrative effect of the axes yields the four systemic quadrants and the vectors noted.

There is, however, a widespread tendency for analyses of projects’ likely consequences to reduce all inputs and outputs to financial
measures. Such quantifications tend to obscure resource complexities and interdependencies and further, employ simplistic trade-offs. At the micro level, the analyses have strong internal foci (as in cost planning); it is only when more macro analyses are employed that ‘externalities’ are included (as in planning applications, cost–benefit analyses). Although such quantification techniques include identification of ‘externalities’ (size and incidence), the methods are subject to well-known pricing problems including the use of ‘shadow prices’ and issues of equity over whose evaluations should be used. Economics concerns the use of scarce resources—while currency as a measurement scale may be convenient, it is the real resources that are represented which constitute the essence of analyses.

One important aspect of sustainability is efficiency—to achieve maximum useful output(s) from minimum inputs; that, necessarily, involves minimising ‘waste’. ‘Waste’ is not identified in the same way across all systems, for example socio-economic, socio-environmental, economic, legal. While maximising ‘plot ratio’ comes as a natural business decision, increase of open space and circulation space can be regarded as ‘waste’ depending on the perspective taken. Given that efficiency is a paramount operating objective for businesses, if not all organisations and individuals, the pursuit of waste minimisation is natural. However, the meaning of efficiency and the processes involved require value judgements—industries’ production efficiencies (one industry versus another) may vary and, even, conflict each other when their resources are common or inter-related. This then creates issues of sustainability, most obviously, over the incidences of ‘externalities’, for example the choice of variables to be used in cost–benefit analyses involving externalities.

5. DISCUSSION

Motivations of companies to obtain ISO 14001 certification can be categorised as ethical (response to perceived ecological responsibility), competitive (desire to secure advantage over other firms in the market) and relational (desire to achieve legitimisation and improved relationships with stakeholders). The initiation of certification tends to be triggered by ethical and competitive factors—in particular, operational considerations. In Hong Kong, for example, contractors must have ISO certification to maintain a place on the list of contractors eligible to tender for government projects.

Such motivations for environmental certification are reinforced iteratively by environmental protection legislation and influences of institutions that both encourage ethical, including environmental protection, behaviour and discourage the reverse via social, leading to economic, sanctions. In such mutually reinforcing systems, detected transgressors may be subject to...
transparency international indicates the forms and extents of for global considerations, information published by responsibility. the effects of such measures depend on thresholds of acceptability, likelihood of detection and sanctions—thereby constituting the ‘normal’ decision components for determining whether to ‘cheat’ (e.g. trying to get away with non-compliance with pledged ISO procedures).

All the aspects of sanctions depend upon the values of society, especially as perceived and acted upon by legislators and those who are influential in social institutions.

The results of several studies of behaviour in organisations in the USA indicate that about one in three employees...said they had witnessed misconduct either often or occasionally in the previous year...; three out of four employees...said that they had observed violations of law or company standards during the previous 12 months... Depending on the issues presented, the percentage willing to misreport some aspect of their company’s finances ranged from 14 percent to 47 percent.39 These findings, assuming generalisability in the USA (and potentially elsewhere in societies of similar cultures and institutions), strongly indicate that there are many more transgressions of law, behavioural codes and standards than are detected and acted upon and further, that, because codes and legislation are breached commonly, a great deal of information on corporate performance is unreliable.

It is helpful to consider those findings in the context of perceptions of our own and others ethical standards of behaviour17 in which others are viewed as adopting lower standards. Given ‘personal shielding’ of own behaviour, it is quite logical for transgressors to place the blame on ‘the organisation’ by arguing that they would not have transgressed but did so only at the (perceived) behest of the organisation (or their superior in it). Such blaming and common reluctance to take responsibility for one’s own actions has been addressed in safety and other logical for transgressors to place the blame on ‘the organisation’—both the individual transgressor and the organisation carry the responsibility.

For global considerations, information published by transparency international indicates the forms and extents of corruption in many countries and the perpetration of corruption by organisations from various countries. The findings suggest that, for many (representatives of) organisations, the business values that they practice are both context and consequence dependent. So, we may espouse support for sustainability but are we prepared and able to put such support into practice? And do we have sufficient knowledge to do so well?

6. CONCLUSIONS

In every country, construction is a major net consumer of non-renewable resources both in the realisation of projects and their (useful) operation. Many of the resources embodied in projects are discarded at the end of the economically useful life and so contribute to global resource wastage and depletion. The current confusion wherein the relativist perspective of ‘greening’ is passed off as the absolute perspective of ‘sustainability’ is unhelpful by fuzzing the essential issues and thereby detracting from possible efforts to move towards sustainability. Because of the divergence in value judgements of the various systems in the completing values framework (Fig. 3), only a real convergent value shift, supported (at least, initially) by strong and enforced legislation is likely to get to grips with the problem. The convergent value shift has to occur over time while adjustments are constantly made to the value divergence in the short to medium term.

Currently, development (especially speculative) remains a process that is highly capitalist in nature and so pursues immediate individual gain (wealth), coupled with efforts to secure ever more growth. The consequent procedures and, largely, competitive requirements in the construction supply chain lead to a ‘concreting’ of the problems and hamper changes to longer term, environmentally protective approaches. That situation receives extensive legitimising support from the body of legislation requiring market (price) competitive work allocation systems to be used, thereby emphasising the final decision criterion over what is to be designed and constructed, how and by whom to be price rather than sustainability or other important variables.

However, at the same time, partnering—in which the virtues of long-term perspectives and collaboration are advanced—is receiving extensive advocacy. Such dichotomies often lead to suspicions and so detract from commitment, rigorous and thorough examination of operations. It may be difficult for practitioners to separate propaganda from research findings in such circumstances for their practices, if not in their beliefs.60, 61

Thus, at the level of the individual project, it is understandable that the values applied for project realisation are unstable and that sustainability is pursued by participants to comply with legislation, to assist ‘marketing’ and because it is ethical.

Thus, it is suggested that short-term and individual orientation is the antithesis of sustainability. Such cultural dimensions are strong in Western developed societies, which also constitute, virtually by definition, the ‘hot-bed’ of opportunistic behaviour.28 Thus, it is amply evident that some Western developed economies/cultures/societies are antithetical to sustainability. However, evidence is mixed. If we consider national legislation and international action, Sweden and Australia pursue sustainability, the UK is rather (too) neutral51, 52 and the USA is a barrier (as a non-signatory of the Kyoto protocol).4 China, however, a long-term oriented society, is a huge polluter and consumer of non-renewable resources. So, wealth and economic development do not, overtly, indicate causal underpinnings for sustainability legislation and practices. However, examination of the values underpinning cultures may prove more useful in moving towards sustainable designs, construction processes and resultant projects.

REFERENCES


49. See http://www.icsc.ca

50. See http://www.olywa.net/roundtable


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