Addressing Stakeholders and Better Contributing to Sustainability through Game Theory

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In recent years, corporations have become a key focus of attention in the sustainability debate. Their leaders are increasingly recognising the relations and interdependences of economic, environmental and social aspects and the short-, long- and longer-term effects, i.e. the four dimensions of sustainability. This paper discusses corporate responsibilities and the role that collaboration has in moving towards sustainability. It examines different approaches taken for corporate social responsibility (CSR) and corporate sustainability (CS). It proposes a new typology aimed at providing a starting point to help detect where they are influencing, and where they could better influence, different stakeholders. The paper then uses game theory to show how company leaders can better engage in this process. Finally, it proposes that, to ensure better contributions to making societies more sustainable, a company needs to understand where it is now, and then develop a plan to arrive at where it wants to be, taking into consideration current interactions with different stakeholders and planning for the future. Companies and their leaders need to engage in this process continuously, checking where they are, whether their plans are having the expected effects, and reappraising the plans accordingly or to better suit changing circumstances.

- **Corporate social responsibility (CSR)**
- **Corporate sustainability (CS)**
- **Corporate responsibilities**
- **Game theory**
- **Collaboration**
- **CSR/CS typologies**

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THE LAST TWO DECADES HAVE seen the expansion of corporate economic and political power, mainly driven by privatisation, deregulation and liberalisation, which have reduced trade barriers and facilitated globalisation (Korten 2001; NGLS and UNRISD 2002; Amoroso 2003; Dunphy *et al.* 2003). These changes have in many cases been detrimental to the environment and societies' welfare (WCED 1987; Reid 1995; Carley and Christie 2000; Dunphy *et al.* 2003).

In recent years, corporations, especially large ones, have become a key focus of attention in the sustainability debate (Cannon 1994; Hart 2000; Elkington 2002, 2005). Increasingly corporations and their leaders are recognising the relations and inter-dependences of economic, environmental and social aspects (CEC 2001; Elkington 2002) and the short-, long- and longer-term effects (Lozano 2008b): that is, the four dimensions of sustainability (economic, environmental, social and time) and their interactions.

The paper starts with a brief discussion of corporate responsibilities and the role that collaboration has in moving towards sustainability. There follows an overview of corporate social responsibility (CSR) and corporate sustainability (CS), examining the different approaches and strategies taken for CSR and CS, in order to propose a new typology aimed at providing a starting point to help managers detect where they are influencing, and where they could better influence, different stakeholders. The paper then uses game theory to show how company leaders and managers can better engage and influence their different stakeholders. Finally, it proposes that, in order for a company to ensure better contributions to making societies more sustainable, it needs to understand where it is now, and then develop a plan to arrive at where it wants to be, taking into consideration current interactions with different stakeholders and planning for the future. Companies and their leaders need to engage in this process continuously, checking where they are, whether their plans are having the expected effects and reappraising the plans accordingly or to better suit changing circumstances.

Corporate responsibilities, collaboration and sustainability

Over many years now, various authors have debated the responsibilities of corporations. Historically and culturally more corporate rights than responsibilities have been identified, at least in Western societies (McIntosh *et al.* 1998), where the two most recognised expectations from corporations are wealth and job creation (Cannon 1994; CEC 2002). According to McIntosh *et al.* (1998), the corporation has responsibilities that 'go beyond compliance with legislation, economic prudence, ethical behaviour and philanthropy'. Carroll (1991) argues that companies have four kinds of responsibility, where the base layer is economic responsibilities (i.e. generate profits), followed by legal responsibilities (complying with laws and regulations), then by ethical responsibilities (those activities expected or prohibited by societal members, although not codified in law) and finally philanthropic responsibilities (responses to society's expectation that businesses behave as good citizens).

Although the corporation's fundamental obligation is to ensure its own survival, it has to do this by benefiting and balancing the needs of multiple stakeholders (Farmer and Hogue 1973; Freeman 1984; Hill and Jones 2001; Freeman *et al.* 2004). Stakeholders can be internal (e.g. stockholders and employees, including management) and external (e.g. customers, suppliers, banks, environmentalists and government) (Freeman 1984; Argadoña 1998; Biscaccianti 2003; Freeman *et al.* 2004; Verdeyen *et al.* 2004). Stakeholders can also be divided into primary and secondary (McIntosh *et al.* 1998; Lindfelt 2002). Table 1 shows some of the different stakeholders.

Nonetheless, stakeholder theory can be critiqued for a number of reasons: it is difficult to recognise and differentiate stakeholders (Langtry 1994; Buchholz and Rosenthal 2005) and to meet the expectations of all stakeholder groups simultaneously (Argadoña 1998; Dyllick and Hockerts 2002); because of the challenge of including the natural environment as a stakeholder, which lacks many of the characteristics of conventional stakeholders, e.g. specific identity and conscious decision-making capacities (Mitchel *et al.* 1997); and because of consideration of a large number of stakeholders, where the only ones to be considered as valid are the stockholders (Friedman 1970; Argadoña 1998; Coelho *et al.* 2003; Henderson 2004, 2005).

Table 1 Examples of primary, secondary, social and non-social stakeholders

Source: adapted from Carroll 1991; McIntosh *et al.* 1998; Hill and Jones 2001; Lindfelt 2002; Waddock and Bodwell 2007

	Primary stakeholders	**Secondary stakeholders**
Social	• Owners, shareholders and investors • Employees and managers • Customers • Unions • Suppliers and other business partners • Local communities • Future generations	• Government and regulators • Civic institutions • Social pressure groups • The media and academia • Trade bodies • Competitors • General public • Public at large
Non-social	• The natural environment • Non-human species • Future environmental effects	• Environmental pressure groups • Animal welfare organisations

Collaboration can help to better engage with stakeholders (Lozano 2007). Kaku (2003) proposes the Japanese *kyosei* (spirit of collaboration) concept to focus on working collaboratively; first among peers, then with other groups, with other groups in other organisations engaging in the same activity, and finally in organisations of different activities. *Kyosei* is built on five layers:

1. **Economic survival.** 'Companies . . . work to secure a predictable stream of profits and to establish strong market positions in their industries'
2. **Co-operating with labour.** '. . . when managers and workers begin to co-operate with each other. Each employee makes co-operation a part of his or her own code of ethics'
3. **Co-operating outside the company.** 'Customers are treated respectfully and reciprocate by being loyal. Suppliers are provided with technical support and, in turn, deliver high-quality materials on time. Competitors are invited into partnership agreements and joint ventures . . . Community groups become partners in solving local problems'
4. **Global activism.** 'By co-operating with foreign companies, large corporations can not only increase their base of business but also address global imbalances'
5. **The government as a *kyosei* partner.** 'Fifth stage companies are very rare. Using their power and wealth, fifth-stage companies urge national governments to work toward rectifying global imbalances' (Kaku 2003)

Thus, the first stage for any company is to become economically self-sufficient, or viable. Once a company is economically viable, its labour force should work collaboratively to learn and to change feelings and behaviour (stage 2). A lack of collaboration can result in sabotage, low productivity and even violent strikes. When the internal stakeholders have been thoroughly engaged, then the focus should be broadened to include external stakeholders (e.g. customers, suppliers, subcontractors and competitors) (stage 3). *Kyosei*'s stage 4 demands that the company collaborates with organisations that are located in different regions or countries. The last stage encompasses all of the different macro-players, by linking companies and governments, and helping in the transition towards sustainable societies (Lozano 2008a).

It should be noted that in Kaku's (2003) approach, *kyosei* is biased towards social aspects while environmental ones are not explicitly addressed. As indicated previously, sustainability is composed of four dimensions; therefore, the *kyosei* approach should be expanded to accommodate the environmental dimension (Lozano 2008a) as well as the time dimension.

When companies manage to work with governments and civil societies they can, usually, improve economic, environmental and social well-being in ways that a government or society would not have been able to do without the company's input (Lozano 2008a), whether for the present or the future.

Corporate social responsibility and corporate sustainability

Corporate social responsibility (CSR) can be considered to be one of the first initiatives to contribute to sustainability (Lozano 2009). There is no clear consensus in the literature as to when the CSR concept originated. While CSR practices can be traced back almost as far as the French Revolution (Frankental 2001), the origins of the 'modern' form of CSR are subject to debate. Some argue that it began in the wake of the Great Depression, during the late 1920s (Dodd 1932; Millon 1990; Carroll 1999; Lantos 2001). One of the first academics to explicitly mention CSR was Dodd (1932). Since then, several CSR discussions and debates have arisen. This has mainly resulted in two divergent interpretations of the concept. In the USA, CSR is usually considered a synonym for corporate philanthropy (Porter and Kramer 2003; Smith 2003). In Europe, CSR tends to be more open and flexible, encompassing, in general, environmental and social aspects, and thus CSR tends to be less controversial (CEC 2001, 2002).

From the many CSR definitions that have appeared, it is possible to extract the following common elements:

- It is by nature voluntary (CEC 2001)
- It goes beyond legal expectations and compliance, investing more into human capital, the environment and stakeholder relations (CEC 2001, 2002; Frehs 2003)
- CSR is about the way businesses are managed, and not an optional 'add-on' (CEC 2002)
- It integrates social and environmental concerns, and stakeholder interactions, into business's operations (CEC 2001; Frehs 2003)
- CSR is not a substitute for governmental regulations and legislation (CEC 2001; Raynard and Forstater 2002; Swift and Zadek 2002)
- It is about the long-term prosperity of the corporation (Holme and Watts 2000)
- CSR is about ethical behaviours (Frehs 2003)

The myriad CSR definitions have resulted in several critiques, such as:

- It is difficult to demonstrate its positive correlation with the 'bottom line' (Langer and Schön 2003; Avi-Yonah 2005)
- It is difficult to evaluate performance against the issues required by CSR (Avi-Yonah 2005)
- It is considered a panacea for world problems (van Marrewijk and Hardjono 2003)
- It is confusing because of the large number of definitions and interpretations (Lozano 2009)

- It is equated with corporate philanthropy (see Porter and Kramer 2003; Smith 2003)
- It is engaged in only by profitable companies (Laffer *et al*. 2004)
- It is not well defined (Frederick 1994; Frankental 2001; Welford 2005)
- It is focused only on social issues, i.e. not explicitly mentioning the environment in the CSR term (Willard 2002; Fukukawa and Moon 2004)
- In general, it is focused on strategy and management (Lozano 2012)

Although CSR has considerable potential to contribute to sustainability, it is limited by three major issues: having been defined and interpreted many times, so that the definitions are sometimes confusing and at others contradictory; being, in many cases, equated to philanthropy; and being perceived, usually, as referring only to the social dimension.

Recently, the term corporate sustainability (CS) has emerged as an alternative to CSR, where CS is being considered to be a precondition for doing business, as a 'business case' (Dyllick and Hockerts 2002) and the desirable path for organisations (Dunphy *et al*. 2003; Weymes 2004).

An analogy to the sustainable development concept posits CS as: 'meeting the needs of a firm's direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups, communities etc.), without compromising its ability to meet the needs of future stakeholders as well' (Dyllick and Hockerts 2002). This definition, as with Brundtland (WCED 1987), has the advantages of being simple, powerful and appealing, but the disadvantages of being vague, having little emphasis on consumption, not specifying whether meeting stakeholders' needs is to be based on competition, whether the needs of tomorrow would be different from those of today and, most importantly, making no explicit reference to stakeholder feedback.

Although CS aims to solve the conceptual and historical crises of CSR, it borrows much of its vocabulary and principles from the latter. This follows the ideas of Kuhn (1970), who indicates that new paradigms retain much of the vocabulary, apparatus and semblance of the old one, even though they use borrowed elements in a different way and may be entirely different from the old one.

For the purposes of this article, CS should be understood as: corporate activities that proactively seek to contribute to sustainability equilibria, including the economic, environmental and social dimensions of today, as well as their interrelations within and throughout the time dimension (i.e. the short, long and longer term), while addressing the company's system—operations and production, management and strategy, organisational systems, procurement and marketing, and assessment and communication.

A caveat is in order; CS should not be confused with the term 'sustainable corporation', which refers to sustaining practices and corporations that are simply long-lived (Hill and Jones 2001; Afuah 2003), or with the term 'viable', but not necessarily the integration of sustainable development principles.

Approaches and strategies to address stakeholders

There has been a range of approaches and strategies proposed on how CSR and CS can help managers engage with their responsibilities to company stakeholders. These approaches and strategies can be grouped into four overarching typologies arising from differences in position and focus: (1) company responsibility choice; (2) benefits to stakeholders; (3) stakeholder emphasis; and (4) stakeholder scope.

The work of Carroll (1991, 1999), complemented by Lantos (2001), can be categorised as the **company responsibility choice** typology. It is divided into three: (1) ethical, based on avoiding societal harms by fulfilling the corporation's ethical duties; that is, the corporation is morally responsible to its stakeholders; (2) altruistic (or philanthropic), which demands that corporations help to alleviate societal problems, even if it reduces shareholder profits; and (3) strategic, based on benefiting society through activities that will bring benefits to the corporation in the long term. This categorisation approach is mainly an administrative exercise. It fails to engage with the different stakeholders.

Avi-Yonah (2005) and *The Economist* (2005) have complementary propositions with regard to **benefits to stakeholders**. Their work can be integrated into six types:

- **Harmonic.** Activities that clearly demonstrate benefit to shareholders in the long term and advance stakeholders', including societal, well-being (Avi-Yonah 2005; *Economist* 2005). This is the most beneficial type
- **Mitigating.** Activities that mitigate stakeholder harm caused by the corporation, even without a legal responsibility or clear benefits to shareholders (Avi-Yonah 2005)
- **Philanthropic.** Activities which the corporation has no obligation to perform and which do not benefit shareholders, e.g. promoting AIDS prevention (Avi-Yonah 2005)
- **Extrinsic.** Activities that reduce profits but improve stakeholder welfare (*Economist* 2005)
- **Pernicious.** Activities that increase profits but reduce stakeholder welfare (*Economist* 2005)
- **Delusional.** Activities that reduce both profits and stakeholder welfare (*Economist* 2005)

From these six types, the **harmonic** promises to be the most beneficial. While the **mitigating** and **philanthropic** types do not bring immediate benefits to shareholders, grateful communities would recognise the benefits of these activities, and the associated gain in reputation could mean that the company's future business would be improved by today's actions. The **delusional** type would be the most detrimental for the company and its stakeholders.

The benefits to stakeholders categorisation provides a broader inclusion of different stakeholders than the corporate responsibility choice categorisation. However, it does not provide a detailed list, nor does it indicate what the motivations of the company might be to engage with CS. It also fails to explicitly include the environment as a stakeholder.

A combination of the ethical and strategic types (from the company responsibility choice category) would result in harmonic CS.[1] Table 2 shows how the benefits to stakeholders and corporate responsibility choice categories relate with regard to profit, and their influence on stakeholders. It shows that the harmonic type is the most beneficial for stakeholders and shareholders, by going beyond fulfilling a firm's economic and legal obligations through strategic consideration of the efforts. These two categories do not explicitly consider impacts on the environment, and it is doubtful if either altruism or ethics weigh heavily on the minds of the principals.

Table 2 Corporate responsibility choice and benefits to stakeholders' category correspondence

Benefits to stakeholders category	**Stakeholders**	**Profit**	*Corporate responsibility choice category* **Ethical**	**Altruistic**	**Strategic**
Harmonic	Benefits	Benefits	Included	Not included	Included
Mitigating	Benefits	No clear benefit or legal responsibility	Included	Included	Not included
Philanthropic	Mitigates harm not caused by the corporation	No clear benefit	Included	Included	Not included
Extrinsic	Benefits	Reductions	Not included	Included	Not included
Pernicious	Reductions	Benefits	-	-	-
Delusional	Reductions	Reductions	-	-	-

The **stakeholder emphasis** typology is concerned with attention given to stakeholders. It is subdivided into three categories. First, **inward-looking**, dealing mainly with internal issues and stakeholders, such as human capital, health and safety, managing change, quality employment, lifelong learning, information, consultation and participation of workers, equal opportunities, integration of people with disabilities, anticipation of industrial change and restructuring (Levitt 1958). Second, **outward-looking**, dealing mainly with external issues and

1 The pernicious and the delusional types are not considered under Lantos's (2001) categorisation.

stakeholders: for example, involvement with local communities, business partners, suppliers, customers, public authorities and non-governmental organisations (NGOs) (CEC 2001, 2002; Avi-Yonah 2005; Waddock and Bodwell 2007). Such efforts are usually linked to reputation. Third, **broad perspective**, dealing with both internal and external stakeholders (Holme and Watts 2000; Hopkins 2002; Frehs 2003; Kaku 2003; Welford 2005). This typology fails to include the motivations to engage with CSR and CS, and to explain who should be responsible and accountable within the company, and it omits the environment as an explicit stakeholder.

The **stakeholder scope** typology refers to the aspects that the corporation dwells on. It can also be divided into three categories. First, **corporate giving or philanthropy** considers the corporation's responsibility to the community, where it operates or is located, to be fulfilled by charitable efforts (Porter and Kramer 2003; Smith 2003). Second, **mainly dealing with social aspects**, where the company aims to maximise its long-term profits (see Dodd 1932; Farmer and Hogue 1973; Fukukawa and Moon 2004; Laffer *et al*. 2004; *Economist* 2005). Third, **addressing environmental and social aspects**, where companies integrate those social and environmental concerns into their operations, with participative stakeholder engagement, that are deemed to be beneficial for the company's long-term interests (Holme and Watts 2000; Holliday *et al*. 2002). Although this typology appears to be the most inclusive, it does not indicate why the company should engage with CSR, or who in the company should be responsible and accountable for such efforts.

Proposing a corporate strategic influence typology to better contribute to sustainability

Most of the approaches and strategy typologies discussed focus mainly on social stakeholders (e.g. employees, shareholders and community). They tend to be motivated by altruism, ethics and strategy, or any combination of these. The typologies proposed, with the exception of the 'addressing environmental and social aspects', seem to suffer from a lack of inclusivity; they do not explicitly consider the environment. Each typology, on its own, tends to be fragmentary, but when taken together, they can be combined to provide a better coverage of CSR and CS.

The following CS strategic influence typology is aimed at integrating the typologies discussed, thereby providing a starting point to help managers identify how they are influencing, and where they could better influence, the different stakeholders, and their explicit motivations in doing so. (For simplicity, all external stakeholders have been grouped together, but in reality they are quite different.) Table 3 illustrates this typology:

- The **holistic** type generates profits, and it benefits the environment, the company's employees and its external stakeholders

- The **anthropocentric** type generates profits and improves the welfare of all the social stakeholders (employees and external ones). It does not consider influences on the environment
- The **insular** type refers to activities that focus only on improving profits and employees' welfare. The effects on external stakeholders and the environment are neutral. It is driven mainly by strategy
- The **green indulgences** type focuses on improving profits and the welfare of the environment. It is generally driven by environmentalism.[2] The effects on employees and external stakeholders are neutral. It is driven mainly by strategy and environmentalism
- The **philanthropic** type includes those activities aimed at improving the welfare of external stakeholders, such as the communities where the company operates. It is based on the precept that the company generates profits. The effects on employees and the environment are neutral. Employees and shareholders may be involved in such activities. It is mainly driven by ethics and a quest for indulgences[3]
- The **Fordian** type (following Henry Ford, who used brute force to break picket lines) refers to a focus solely on maximising shareholders' profits, but this ends up being detrimental to the welfare of employees. It may be motivated by strategic decisions
- The **Enronian** type refers to those company activities that reduce shareholders' profits, the welfare of employees, external stakeholders and have negative impacts on the environment. These activities promote the profit of the few, in general the ones managing the corporation, by misleading/cheating the other stakeholders. In a great majority of cases it is used for public relations, but it generally backfires. Two key examples of this type are Enron (see Mardjono 2005), and WorldCom (see Frehs 2003)

From these seven strategies, the **holistic** type has the most beneficial influences. The **anthropocentric** tends to be closer to the majority of the CSR types previously discussed, benefiting both employees and external stakeholders, while

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2 'Environmentalism' refers to the protection and improvement of natural capital. When combined with the relations to social stakeholders it takes the perspective of weak sustainability, which utilises negotiation among the different stakeholders to make incremental economic, environmental and social improvements, while avoiding decreases in total wealth over time. When there are no relations or benefits to the social stakeholders it takes the form of strong sustainability, which proposes greater emphasis on the conservation of natural capital (i.e. keeping it constant), while rejecting the creation of economic value from its use (for further discussions refer to Atkinson 2000; Daly 2002; Milne *et al.* 2003).

3 'Indulgences' follows the medieval concept, which had the function of remitting time to be served by a sinner in purgatory by paying money to the representatives of the church (Goodin 1994). In this paper's context they refer to providing money through charitable activities for the improvement of social welfare. The extent of involvement does not include any further involvement or engagement with the stakeholders.

generating profits. The **insular**, **green indulgences** and **philanthropic** types are only beneficial to two stakeholder groups. Among the seven, the ones that companies should expressly avoid are the **Fordian** and **Enronian**, especially as company claims tend to be mere PR exercises, for the most part, and will be exposed as such sooner or later.

Table 3 Corporate sustainability strategic influence typology

	Influences			
Strategy	**Profit generation**	**Environment**	**Employees**	**External stakeholders**
Holistic				
Anthropocentric				
Insular				
Green indulgences				
Philanthropic				
Fordian				
Enronian				

Cell coding

Beneficial influences

Neutral influences

Negative influences

Game theory as a means to help move towards more holistic strategic decisions

Game theory can help company leaders and managers to better engage and influence different stakeholders. Game theory considers two types of game: zero sum and non-zero sum. A zero sum game is one in which in an interaction between actors one chooses strategies in order to obtain maximum gain; however what one actor gains the other, or others, lose. In short, the sum of what is gained and lost is zero (e.g. chess and poker). Non-zero sum games are those in which gains minus losses can be greater than zero. The goal is not to win or lose but to reach the system optimum, or one of the optima in the case of multiple transactions, where the global gain is maximised, and all of the actors win.

Non-zero sum games offer a better option for complex and synergistic systems,[4] such as the two-tiered sustainability equilibria. A point to consider is that 'The search for common interest would be less difficult if all development and environment problems had solutions that would have everyone better off' (WCED 1987: 48).

Following this approach, this author recognises a renewed emphasis on collaboration as a key element in the search for progress towards the sustainability optimum, or one of the optima, at least. The goal is, then, to address each of the four dimensions and their interactions, so that the sustainability optima can be reached in this and for future generations. This goal is easier to articulate than to achieve. A tool that may be used to disentangle this chaos of factors, players and their interactions and synergies is the Nash equilibrium, which is defined as:

> Any n-tuple of strategies, one for each player, may be regarded as a point in the product space obtained by multiplying the n strategy spaces of the players. One such n-tuple counters another if the strategy of each player in the countering n-tuple yields the highest obtainable expectation for its player against the $n - 1$ strategies of the other players in the countered n-tuple. A self countering n-tuple is called an equilibrium point (Nash 1950).

The Nash equilibrium can help to solve non-zero sum games with n players, where n is greater than 2. Each of the players can choose a particular strategy according to their expectations, resulting in n single strategies. The system's optimum is attained when every player has chosen the strategies that gives each the optimal payoff, subject to the constraint that other players' strategies allows them to achieve *their* optimal payoff. Thus, the optimum is reached when there is no benefit to a specific player, or the other players, if anyone changes her or his strategy (Lozano 2007).

Modus operandi

Let profit generation be constant (otherwise the purpose of the company is defeated, and Kaku's [2003] Stage 1 is not fulfilled). This already disqualifies the Enronian strategy. For the sake of simplicity, let time also be constant (i.e. discussion of a snapshot at a particular point in time, assuming that the company generates profits). This creates a 3-tuple system: the environment, employees and external stakeholders. Table 4 shows a simplified example of this system, where a grading of 1 indicates a benefit to the actor, 0 equals neutral influence, and -1 a detrimental influence. The best results are obtained from the holistic strategy, since all the actors benefit.

4 Different tools and approaches can be used for simple systems, such as the Prisoner's Dilemma (Tucker 1950) and the Tragedy of the Commons (Hardin 1968).

Table 4 Illustrative examples of corporate sustainability strategic influence typology

	Influences			
Strategy	**Environment**	**Employees**	**External stakeholders**	**Result**
Holistic	1	1	1	3
Anthropocentric	0	1	1	2
Insular	0	1	0	1
Green indulgences	1	0	0	1
Philanthropic	0	0	1	1
Fordian	0	–1	0	–1

Note: 1 depicts a benefit, 0 neutral influence and –1 a detrimental influence

In a company where resources (tangible, intangible and human; Penrose 1959; Sanchez and Heene 1997) are unlimited, it would be feasible to apply a holistic strategy. However, resources in companies are usually limited and most of them are far from applying a holistic strategy. Therefore, a temporary suboptimum would need to be chosen on which the environment tends to be neglected, a situation that seems to be typical for many companies. Considering the strategies proposed from the typology in Table 4, the best suboptimum is the anthropocentric example. The Fordian strategy would be the worst, since it is detrimental to the employees. The other strategies produce limited benefits for the different players. This illustrative argument can easily help one to choose an optimum (the holistic) or a suboptimum (when resources are limited) strategy. However, the argument is simplistic, since it assumes a point in time where the company generates profits, and it does not consider the interactions (positive or negative) between the different players (for example the need to use profits to pay employees, preventive environmental measures, research and development, or even for market expansion). Additionally, as Lozano (2008a) argues, suboptimal solutions are inherently unsustainable.

The principle of the Nash equilibrium can help in finding the optimum, or optima, in the 5-tuple system, where profits can be maximised but are constrained by the beneficial influences for the other players. The Nash equilibrium provides a method for reaching a dynamic system's optimal with multiple players, yet, it is based on the capacity to represent phenomena with mathematical formulae (Lozano 2007). This is, generally, not a problem for economic issues. Environmental issues are more elusive, especially with their myriad unknown interactions. Social issues are especially difficult to formulate, where each individual, group, organisation or society is unique, and thus reacts differently from another, or when the multitude of external stakeholders are not grouped together. Even more difficult to develop into formulae are the myriad short-long-, and longer-term interactions between the three dimensions. Another drawback of the Nash equilibrium is that it is based on linear equations, whereas the interactions among stakeholders, economic, environmental and social aspects, in the short and long term, are non-linear. Even though the Nash equilibrium may lack the rigour to solve problems and help guide decision-makers to reach the two-tiered sustainability equilibria, it has the potential to serve as a good starting point.

Conclusions

For many decades authors have debated the responsibilities of corporations. Historically and culturally more corporate rights than responsibilities have been identified. Although the corporation's fundamental obligation is to ensure its own survival, and to thrive by benefiting and balancing the needs of multiple stakeholders, collaboration (e.g. through the *kyosei* approach) can help towards gaining a better understanding of, and engagement with, these different stakeholders (including the environment and future generations) in a systematic way.

One of the first concepts dealing with company responsibilities is CSR, which has great potential to contribute to sustainability. Yet it is limited by three major issues: having been defined and interpreted many times, so that the definitions are sometimes confusing, and at others contradictory; being, in many cases, equated with philanthropy; and being perceived, usually, as referring only to the social dimension.

The CS concept (as outlined in this paper) seems to offer the potential to be more encompassing, both in terms of the company system (including operations, strategy, organisational systems, etc.) and in terms of stakeholders (internal, external, social and environmental). Its advantages include: being a newer term free of over-definition and interpretations, explicitly referring to sustainability in its terminology, thus reducing the confusions of referring only to social or environmental aspects; and addressing the relationships between business practices and stakeholders, based on the real entity theory of the firm.

There has been a range of strategies proposed on how CSR and CS can help managers to engage with their companies' responsibilities to their stakeholders. Most of the typologies focus mainly on social stakeholders. They seldom address environmental issues explicitly. The proposed CS strategy influence typology integrates and extends the CSR and CS typology discussion. It is aimed at providing a starting point to help managers detect where they are influencing and where they could better influence different stakeholders, by providing a guide for companies to detect which stakeholders are being engaged with. The proposed CS stakeholder value system typology could be used by corporations to help them pinpoint whether their motivations and relations with their stakeholders are closer to the holistic or the Enronian CS configuration.

Game theory can help leaders (and other CS proponents) to achieve the optimum or optima (where outcomes need to benefit each and every player, and where each player's strategies are constrained by those of other players) for the proposed CS 5-tuple system, where profits can be maximised, but constrained with respect to the benefit expectations of the other players. This can help them to develop strategies that combine the principles of *kyosei* and game theory in order to have more positive influences on the different company stakeholders, in the short and long terms, and thus move closer towards more sustainable societies. Such strategies should help to challenge current approaches where the environment tends to be neglected, and therefore aim to move towards more holistic perspectives.

This paper is aimed at helping company managers: (1) understand where they are, in respect of their company's influences on different stakeholders, with the help of the CS strategy influence typology; and (2) develop better strategies (with the help of collaboration and game theory principles) to achieve more holistic and beneficial outcomes for the company, the environment, employees and external stakeholders, for this and future generations. It should be noted that this is not a one-off exercise, since changed circumstances, within the company and/or among the stakeholders, which are beyond the control of the company, may dictate reappraisal and change to meet these new circumstances.

The proposals in this paper should help to bridge the gap between the will and normativity to engage with stakeholders, proposed by some of the typologies, and the strategic choices on how to achieve this, so that these strategies results in gains for all players and an optimum in the system.

Longitudinal research is needed, where a number of companies embarked on CS are analysed over time to check if and how the typology, as outlined, and the resulting development of strategies, using game theory, helps the subject companies to become more equitably beneficent and holistic in their dealings with all their stakeholders.

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