

MANAGING POLICY NETWORKS: A SOCIAL MARKETING- AND COLLECTIVE INTELLIGENCE SYSTEMS-DRIVEN VIEW

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Abstract

This research contributes a new view of Policy Networks (PN) management. The research object is a successful PN practice in the Basque Country (BC) over an 8-year period, in relation to Local Agenda 21 (LA21) promotion. The Basque experience is studied using a qualitative and a quantitative approach. PNs are viewed as social marketing-driven collective intelligence systems built to have an effect on municipality commitment to LA21 (in terms of value, satisfaction and loyalty). The research concludes that by fostering the co-development 'genome' (a mix of co-decision, co-creation, love, glory and money 'genes') a commitment to the new tool is achieved.

Keywords: Local Agenda 21, environmental change, marketing, managing networks, collective intelligence systems.

CONCEPTUAL BACKGROUND AND RESEARCH AIMS

This research examines how to foster the spread of good practice among municipalities, through implementation of Local Agenda 21 (henceforth, LA21) in order to meet goals of Sustainable Development (SD). Various perspectives on LA21 conceptualise it as a medium-term local action plan for tackling environmental, social and economic issues (Lafferty, 2001) through new forms of involvement and cooperation (O'Riordan and Voisey, 1998) that lead to quality-of-life improvement (Meister and Japp, 1998).

There is a broad consensus around the central role local governments and civil society play in achieving SD, given their proximity to the causes and solutions of many of the problems associated with this major goal (Evans, Joas, Sundback and Theobald, 2005; Krueger and Agyeman, 2005). Consequently, all the European countries participating in the Rio de Janeiro World Summit (Brazil, June 1992) subscribed, at least nominally, to the United Nations proposal to promote the devising and implantation of local SD strategies, known as LA21s. 18 years later, however, the response from local authorities is far from generalised. This investigation aims to indicate possible paths towards a more across-the-board diffusion of locally-based SD strategies by analysing the experience of a specific region in Europe, the Basque Country (BC), which has developed a successful networking experience, which previous literature reports (Barrutia et al., 2007; Echebarria et al., 2009).

Previous studies have highlighted the spread of LA21 processes in Europe and concluded that to promote LA21 dissemination, support from higher levels of government is necessary (e.g., Eckerberg, Coenen and Lafferty, 1999; Echebarria, Barrutia and Aguado, 2009). Factors such as a lack of local government resources due to limited size and insufficient SD experience and knowledge in relation to the new tool, have been considered as an important brake on the spread of LA21 (Echebarria et al., 2009). In spite of these difficulties, however, diverse empirical evidence regarding LA21 seems to indicate that in territories where higher levels of government have encouraged networking experiences LA21 dissemination tends to be higher. These networks seem to constitute a launch pad for the explosion of initiatives of this kind, as illustrated by the cases of Italy (Sancassiani, 2005), Sweden (see the case of eco-municipalities in Eckerberg and Dahlgren, 2007) and Spain (Echebarria et al., 2004, 2009). Municipal governments participating in networks appear to develop a higher degree of commitment to LA21 and to obtain important benefits from the transmission of experiences and inter-municipal collaboration (Echebarria et al., 2009).

McGuire (2006) suggests that networking is becoming the prominent form of government due to societal change and the complexity of the problems that government faces today. As a consequence, the amount of empirical research on the subject has increased significantly over the past twenty years. Berry et al. (2004) identified three traditions of network research: (1) sociological tradition or social network analysis (e.g. Granovetter, 1973; Mizruchi, 1996; Herranz, 2007), whose principal interest is the network structure and position as results and antecedents of action, attitudes, and outcomes; (2) the political science tradition or policy network analysis (e.g. Marin and Mayntz, 1991; Atkinson and Coleman, 1992; Rhodes and Marsh 1992; and Rhodes, 2007), whose principal concern is how policy actors achieve desired policies and how the network role of actors influences policy outcomes; and (3) the (collaborative) public

management tradition (e.g. Provan, 1984; Agranoff and McGuire, 2003; Crosby and Bryson, 2010), whose interest lies in how managers' actions affect network outcomes.

This research is mainly rooted in the interrelated traditions of political and public management. Within the political tradition the governance school conceives policy networks (PNs) as a specific form of governance, and as a non-hierarchical mechanism for mobilising political resources in situations where such resources are widely dispersed amongst public and private actors (Borzel, 1997). According to Bevir and Richards (2009) PNs "consist of governmental and societal actors whose interactions with one another give rise to policies. They are actors linked through informal practices as well as (or even instead of) formal institutions" (pp. 3). The public management tradition focuses on the managerial role of a PN, which is affected by the distribution of power between the participants in the network (Heen, 2009). Emphasis has traditionally been laid on the non-hierarchical nature of PN management but, as pointed out by some collaborative public management literature authors (Agranoff, 2006; McGuire, 2006), there is evidence to suggest that instead of a completely flat, self-organising network, the presence of a lead organisation, acting as a driver of the network and as a system controller or facilitator, is often a critical element of effectiveness in collaborative management (Provan and Milward, 1995; Vollenberg et al. 2007). Integrative leadership literature has emphasised this view. Crosby and Bryson (2010) define integrative (public) leadership as 'bringing diverse groups and organisations together in semi-permanent ways – and typically across sector boundaries – to remedy complex public problems and achieve the common good.' Silvia and McGuire (2010) consider three types of integrative leadership behaviours in networks (people-oriented, task-oriented and organisation oriented) and show that behaviours in networks are different to those in hierarchical/single-agency structures.

In line with these approaches, our research focuses on a central actor, Regional Government, which acts as the core of the PN and as the leader of the whole process (through a coordinating agency or a network administrative organisation, as understood by Provan and Milward, 1995). However, this research also contributes new insights in relation to the role of the network leader as a marketer. Regional Government has greater access to human, financial and legislative resources and this advantage lends it special weight within the network. However, as has been suggested by Heen (2009), if network manager actions do not match the participants' various goals, they may be rejected. The Regional Government is viewed as an integrative leader that pursues a social goal -in our case, LA21 spread among municipalities- and achieves it by building an appropriate marketing-driven environment in which value is added and the satisfaction and loyalty of potential users is generated. The leader uses marketing tools such as the addition of complements to the focal LA21 tool (Frels et al., 2003), co-creation (Prahalad and Ramaswamy, 2004; Grabher, 2008) and recognition and appreciation (Kotler and Lee, 2007, 2008). Crosby and Bryson (2010) focus on the achievement of common good. This research is consistent with this view. However, we emphasise that, in order to achieve the common good, the PN leader must create value for network members (and for some network members in particular; in our case, those that have to implement the new tool). Government-to-government value creation has a central role in this research.

This paper incorporates an uncommon view of networks. PN experiences reported in the literature usually refer to the creation of inter-organisational informal or

formal structures in order to more efficiently and more effectively provide a public service (e.g. Mc Guire, 2006). We focus on the spread of a new desirable and previously unknown good practice (LA21) among potential users (municipalities) within a specific geographical area. A PN is viewed as a collective intelligence system aimed at capturing, adapting, enriching and disseminating new knowledge-supported practices that are considered strategic for the future of a region. Accordingly, knowledge generation and diffusion are key elements in the network studied. And research finds inspiration in the collective intelligence framework (Malone, Laubacher and Dellarocas, 2009). This framework is similar to those that have been developed in the field of organisational design. The dimensions it describes are important in designing any system for collective action. However, a differential characteristic of this framework is that it takes its inspiration from recent experiences of dramatically decentralised Internet-enabled knowledge generation. Google, Wikipedia and Threadless are examples of large, loosely organised groups of people working together electronically in effective ways. For instance, in Wikipedia, thousands of contributors from across the world have collectively created the world's largest encyclopaedia, with articles of remarkably high quality. Malone et al. (2009) use the term collective intelligence to describe these new modes of organising work, which is defined in a broad sense as 'groups of individuals doing things collectively that seem intelligent' (pp. 2). This concept matches our view of PN management, when PN are designed to achieve the spread of innovative and socially desirable practices.

This view could contribute new insights to integrative leadership, and PN and LA21 literatures. Avolio, Walumbwa and Weber (2009) suggest several avenues for future leadership research that include: (1) employing more mixed methods; (2) determining the causal mechanisms that link leadership to outcomes; and (3) assessing and developing leadership using evidence-based strategies. This research responds to these claims. On the other hand, evidence about LA21 experiences is scarce, and mainly concerns regional promotion of LA21, through networking processes. Finally, although research on PN has produced useful results, we are still some way from a plausible, consensus-based theory of PN (Peterson, 2003), and this paper attempts to contribute towards the establishment of this theory.

LA21 promotion as a means of improving SD is a major objective in many countries. We also, therefore, wish to assist political leaders in launching public and private processes of collaboration for LA21 dissemination, providing them with the main details of a successful experience and a conceptual model that emphasises the crucial elements in this endeavour. Other geographical areas could then use this approach to achieve successful PN.

The remainder of the paper is structured as follows. The next section refers to the conceptual framework used in this research. The third section deals with the qualitative evidence relating to LA21 processes in the BC. The fourth section explains the results of the empirical test. The final section presents discussion and conclusions.

CONCEPTUAL FRAMEWORK: COLLECTIVE INTELLIGENCE SYSTEMS

Malone et al. (2009) see the building blocks of collective intelligence systems as a result of the replies to two pairs of related questions: (1) Who is performing the task? Why are they doing it?, and (2) What is being accomplished? How is it being done? Using an analogy from biology, they term these building blocks the 'genes' of collective intelligence systems. They define a gene as a particular answer to one of the four main questions (i.e. Who, Why, What, or How) associated with a single task in a

collective intelligence system. In their view, like the genes from which individual organisms develop, these organisational genes are the core elements from which collective intelligence systems are built. The full combination of genes relating to a specific experience of collective intelligence can be viewed as the ‘genome’ of that system. With this framework, PN managers could, for each key activity to be performed, systematically consider many possible combinations of answers to questions about Who, Why, What, and How. Describing the genome requires identifying answers to each of the four key questions.

Who? and Why?: The first question to be answered is, Who undertakes the activity? There are two basic possible answers (genes): hierarchy (i.e. someone in authority assigns a particular agent to perform the task) and crowd (i.e. activities can be undertaken by anyone in a large group who chooses to do so, without being assigned by someone in a position of authority). Closely related to the Who question is Why? Why do people (in our case municipalities and civil society) take part in the activity? What motivates them to participate? What incentives are at work? According to Malone et al. (2009), three basic Why genes can cover the high level motivations that lead people to participate in collective intelligence systems: money - in our case economic support and resources -, love - enjoyment of an activity, opportunities it provides to socialise with others, or because it makes them feel they are contributing to a cause larger than themselves - and glory or recognition/appreciation.

What? and How?: The third question to be answered for any activity is: What is being done? The answer to this question is the mission or goal. In essence, to achieve their goals leaders of collective intelligence systems should consider two basic genes: create and decide. In the create gene, the actors in the system generate something new – in our case a new LA21. In the decide gene, the actors evaluate and select alternatives. The final question to be answered is, How to create and decide? The two how genes associated with the create task are collection (in the context of PN, we prefer the term individual creation) and collaboration (we prefer the term co-creation; Prahalad and Ramaswamy, 2004). Individual creation occurs when the items contributed by actors are created independently of each other. The co-creation gene occurs when actors work together to create something and important dependencies exist between their contributions.

For decide tasks, there are two possible genes: group decision (we prefer the term co-decision) and individual decisions. The co-decision gene occurs when inputs from members of the network are assembled to generate a decision that holds for the group as a whole. Important variants of the group evaluation gene are voting and consensus. Consensus means that all, or essentially all, group members agree on the final decision. The individual decision gene occurs when actors of the network make decisions which, though informed by input from other actors, do not need to be identical for all.

MODEL TO BE TESTED: THE CO-DEVELOPMENT GENOME IN NETWORKS

Building a new collective intelligence system requires an understanding of the genes which are effective for a specific situation. Below, taking previous literature and inductive research in the BC into account, we examine the appropriate genes of a successful PN addressed towards the dissemination of a good practice. We consider a marketing perspective. A PN is perceived as being composed of a leader and many users. Achievement of socially desirable goals (LA21 implantation) depends on users’

actions. As power and resources are distributed, the leader sees the users as customers and its actions are, in consequence, directed towards the generation of an environment that adds value to the isolated LA21 tool, obtaining the users' satisfaction and loyalty.

The model proposed is depicted in figure 1. To save space the results of the quantitative research are also included in figure 1. The co-development genome (i.e. a specific combination of co-decision, co-creation, money, glory and love genes) explains the commitment of the municipalities in relation to LA21 - in terms of value, satisfaction and loyalty -.

What/How to decide: Co-decision

The benefits of people participating in decisions that affect them have been highlighted by diverse literatures. From a participative leadership point of view, Yukl (1981) argues that potential benefits of participation include better decisions and greater acceptance of decisions by people who will implement them or be affected by them. In the same direction, public-private partnership and collaborative management literatures have emphasised the relevance of sharing commonly accepted vision/objectives/tasks to explain network success (Fosler and Berger, 1982; Bagchi and Paik, 2001; Agranoff and McGuire, 2003; Barrutia and Echebarria, 2007; Silvia and McGuire, 2010). Silvia and McGuire (2010), for instance, include 'establishing agreement on the nature of the tasks' as an integrative leadership behaviour in networks.

Marketing literature has considered participation from various perspectives. It has been shown, for example, that sales force participation in decision making may have a positive direct impact on sales force job satisfaction (Teas 1983; Brown and Peterson, 1993). Participation in decisions is defined as the degree to which the salesperson is able to influence decisions about his/her job (Teas, 1983). It has also been said that a way to create value for the adopters of a new tool is to adapt the product to their specific requirements (e.g. Kotler and Lee, 2008). Integrating the consumer in the decisions that affect the tool and the complements needed to adopt it (i.e. the 'augmented tool') makes it possible to adapt the product to adopter demands and increase the chance of adoption (Prahalad and Ramaswamy, 2004). So we expect the co-decision gene to directly and positively affect the commitment of users to LA21 (Hypothesis 1; H1).

What/How to create: Co-creation

Malone et al. (2009) suggest that creative ideas have always been widely distributed throughout the population. Co-creation should, then, be more effective than individual creation in innovative contexts, as when an unknown and vaguely defined tool, such as LA21, is being implemented. Collaborative management literature also focuses on teamwork or 'groupware' which describes interagency task group development for reaching jointly arrived at solutions. Groupware is developed through social capital, negotiation and flexibility. Groupware is viewed as a key explanatory factor of network outcomes (Agranoff and McGuire, 2003).

Nambisam and Baron (2009) build on the Uses and Gratifications framework (from Katz et al., 1974) to identify four broad types of benefits that individuals can derive from participation in co-creating (also referred as co-producing) activities: (1) Cognitive or learning benefits that relate to information acquisition and strengthening an understanding of the environment. Tool-related communities hold valuable collective knowledge concerning the tool and its usage that is generated and shared through continued customer interactions; (2) Social integrative benefits that relate to strengthening consumer ties with relevant others. Such social relationships provide a

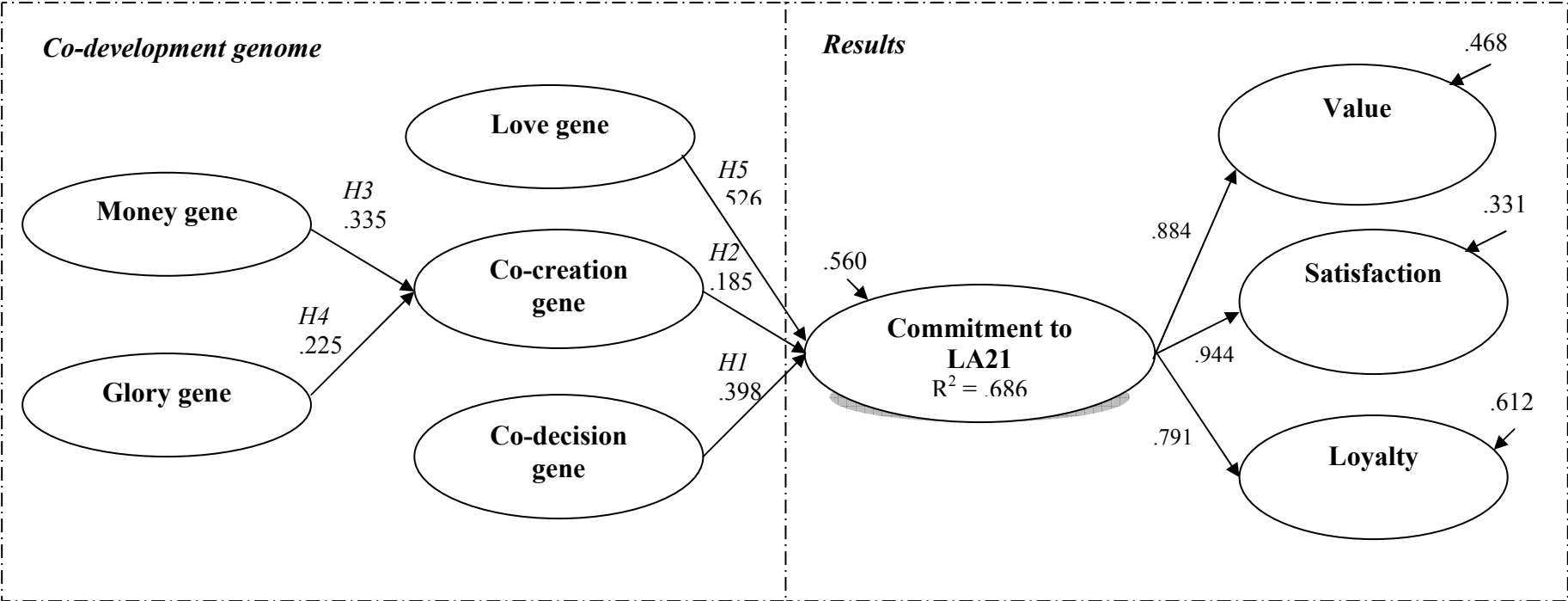
range of benefits to the customer, including enhancement of a sense of belongingness or social identity; (3) Personal integrative benefits that relate to strengthening the credibility, status, and confidence of the individual. Teamwork serves as a venue for individual customers to show their product-related knowledge and problem-solving skills and enhance their expertise-related status and reputation among peer users as well as with the network leader; and (4) Hedonic or affective benefits. User interactions in the teams could be a source of highly interesting and pleasurable as well as mentally stimulating experiences. So we expect the co-creation gene to directly and positively affect user commitment to LA21 (H2).

Who/Why: Money, glory and love

Silvia and McGuire (2010) include ‘using incentives to motivate network members’ as integrative leadership behaviour in networks. Incentives affect the desire to achieve a certain outcome (motivation) and the effort the potential user will exert in developing the tasks (involvement). Malone et al. (2009) suggest that providing money and glory can often influence a group’s direction and speed. Money has traditionally been considered a relevant motivating force. Marketing literature (e.g. Frels et al. 2003, Kotler and Lee, 2008) has considered that money-related complements (such as financial support, training and human resources provision) may add value to the tool in isolation. The conclusion marketing literature arrives at is consistent with studies concerning LA21 implementation in Europe, which point towards the need for economic support from the higher levels of government (see e.g., Lindström and Johnsson, 2003, regarding Sweden; Coenen, 2001 and 2009, regarding Holland; Kern, Koll and Schophaus, 2004, for Germany; Sancassiani, 2005, for Italy; and Echebarria et al., 2004, with regard to Spain). We see the money gene as an extrinsic complement that may induce the involvement of municipalities in co-creation tasks. Co-creation is a rewarding task. But it also consumes time, effort and money. Leaders may therefore encourage co-creation by using the extrinsic motivating tool of money.

What is novel about many collective intelligence systems (such as Wikipedia) that have emerged in recent years is their reliance on the glory and love genes, in contrast to traditional organisations, which have relied more heavily on money as a motivating force (Malone, et al., 2009). Glory may be understood as the provision of rewards such as praise and acknowledgement of effort for achievement of specified goals. The relevance of recognition and appreciation as sources of involvement in tasks has been highlighted in diverse literatures. Gruen, Summers and Acito (2000) studied recognition in the context of a specific association (a context similar to that of a network) and showed that recognition for contributions has a positive effect on co-creation. They suggested that because the value derived from co-creation behaviours is by nature ambiguous, recognition places an unambiguous value on such behaviours. They also emphasised that it has a positive effect on continuance commitment, because recognition for contributions increases the status of contributing members within the group and provides a source of continuous positive feedback. When the members identify with the organisation, recognition explicitly reinforces the continuity of their self-concept with the organisation. Termination of membership results in losing the source of value. Transactional (i.e. reward as a control mechanism) and transformational (i.e. reward as a system designed to increase employee commitment) theories of leadership also support this conclusion (Rafferty and Griffin, 2004). In the transformational context personal recognition occurs when a leader indicates that he or she values individuals’ efforts and rewards the achievement of outcomes consistent with the vision through praise and acknowledgment of followers’ efforts.

Figure1: Results of the Model proposed: co-development genome and commitment to LA21



* p <= .05 ———>
 p > .05 - - - ->

Goodness of Fit:
 $\chi^2_{(Satorra-Bentler)} = 190.42$
 p = .027; 155 g.l.
 Bentler-Bonett NNFI = .975

CFI = .979
 Bollen IFI = .980
 RMSEA = .040
 90% CI of RMSEA (.014; .058)

Money and Glory are extrinsic motivation forces. Love, meanwhile, is primarily an intrinsic desire to achieve a certain outcome. However, this intrinsic desire could also be affected by external actions such as social marketing campaigns designed to create a strong SD culture (e.g. Andreasen, 2003). In the context of SD, we might expect the love gene to be of relevance in explaining involvement and commitment. According to LA21 European evidence, SD culture constitutes a precursor for LA21 processes. Eckerberg (2000), for instance, with regard to Sweden, and Gram-Hanssen (2000), in the Danish context, refer to a wide range of experiences and projects developed in the 1960s and 1970s, respectively, which might appear crucial for explaining the adoption of LA21 in these countries.

Several authors have pointed to the presence of LA21 lovers in some municipalities. The European research project DISCUS (Evans et al, 2005), in particular, shows that numerous cases can be found where mayors or other agents endowed with sufficient charisma and commitment have acted as drivers for the promotion of LA21s, and have even adopted unpopular decisions, on frequent occasions, in order to prioritise long-term SD targets. That is to say, particular LA21 lovers in municipalities will go for the tool even without in-depth knowledge of it, either because of its aims (driving Local SD), the means employed (strategic planning and citizen participation) or the institutions that promote it (United Nations, regional governments, etc.). The love gene could palliate a strong awareness of costs and risks, such as those involved when promising citizens actions that it might not be possible to deliver, or where there is a winner-loser scenario at the local level, as has been detected in countries where municipalities have very different profiles (see e.g. Barrutia et al, 2007, concerning the Spanish context, and Eckerberg and Dahlgren, 2007, concerning Sweden). So we expect the money and glory genes to directly and positively affect the involvement of municipalities in co-creation tasks (H3 and H4) and the love gene to directly and positively impact the LA21 commitment of municipalities (H5).

Outcomes: Commitment to LA21 (value, satisfaction and loyalty)

Various approaches for measuring network performance have been proposed (e.g. Skelcher and Sullivan, 2008; Voets, Van Dooren and De Rynck, 2008). Head (2008) suggests that assessment of performance will vary depending on the characteristics of stakeholders and the context of policy arrangements in which the collaboration is undertaken. The metrics proposed in this research are marketing-driven. We measure performance in terms of commitment to LA21. Commitment is viewed as a second order construct that reflects the first order factors of value, satisfaction and loyalty. Value can be conceptualised as a weighted comparison between what is ‘obtained’ and what is ‘given’ (Heskett et al, 1994). It is possible to understand satisfaction as a positive affective state resulting from the evaluation of all the aspects associated with a particular activity or relation (e.g., Lam et al., 2004). Loyalty refers to user behaviours, when repeating or recommending an activity (e.g., Dwyer, Schurr and Oh, 1987). The majority of researchers (e.g., Lam et al., 2004, and Yang and Peterson, 2004) have found a strong relationship between value, satisfaction and loyalty. Commitment to LA21 is the first expected result by the PN leader.

THE BASQUE EXPERIENCE: QUALITATIVE EVIDENCE

The BC is located in the north of Spain, on the south-western border of France, and comprises the provinces of Alava, Guipuzcoa and Vizcaya. Population density is high, the region’s industry is solid, and the gross domestic product is higher than the

Spanish average. In the first stage of the research a qualitative case study research methodology was adopted (Perry, 1998; Yin, 1994). This choice of case study is justified on two grounds. First, qualitative methods such as case study address theory building rather than theory testing (Perry, 1998). Second, one needs to delve deep to gain an understanding of this complex phenomenon. The depth and detail of qualitative data can be obtained only by getting physically and psychologically closer to the phenomenon through in-depth interviews (Yin, 1994). We obtained the primary data through telephone and personal interviews with 20 people, and via our anonymous participation in three public forums. The Basque experience of LA21 has been reported elsewhere (Barrutia et al., 2007; Echebarria et al., 2009). We now summarise the main elements related to the network genes.

Who-Gene

In the BC, the creation of the LA21 promotion network was not seen as just one more strategic alternative, but as an absolute necessity. The Basque Government knew that many important powers of relevance to SD are held by the municipalities. Territorial Planning is a good example, being pertinent to the construction of more sustainable homes or to land use geared to more sustainable transport. Secondly, the Basque Government knew that no LA21 strategy would work without contributions from municipalities, which would ultimately have to make the effort to design and establish actions to improve sustainability. LA21 philosophy is mainly based on the proximity of local governments to their businesses and citizens. As a result, the creation of channels of participation is a condition for joining the network.

How to Decide: Co-decision gene

In the BC case, the running of the network is shared by all the stakeholders. Trust and consensus is achieved by joint planning involving discussions on a range of issues and the collective ironing out of obstacles. Two Committees (an Executive Committee and a Technical Committee) were created within the network. The first, consisting of political officials, acts as a decision-making body in managing the network. All stakeholders must share key decisions, to prevent the process being jeopardised by discrepancies of judgement. Achieving consensus on policy goals is a key dimension of the BC LA21 experience. The second Committee, formed by town council technical staff and also technicians from all other stakeholders (consultants and members of provincial councils), is responsible for implementing planned activities.

How to Create: Co-creation gene

Various forms of co-creation converge in the Basque experience. Firstly, the network encourages collaboration/meetings between municipalities in voluntary ad-hoc teams in order to design and implement LA21 (these teams are termed Udatalde 21). Besides helping to create consensus and a relatively common culture on goals, regular meetings also mean town councils are required to make an effort, going some way to prevent LA21 becoming merely symbolic plans at best left to overworked environmental staff or to inexperienced students. Udatalde 21 takes advantage of the benefits of working in a group. If necessary, the Udatalde is given technical aid, via an expert LA21 consultant. Through this initiative, municipalities enjoy the benefits of working together, reducing costs and sharing motivations, knowledge and resources. In defining tasks for the different organisations involved, greater control is exercised over target compliance.

Secondly, task forces (termed *Ekitaldes*) were created, with as many as eight member municipalities, to deal with different issues relating to the management of SD (for instance, the social aspects of LA21, waste management, action plan preparation and implementation, and gender issues). Finally, as the BC LA21 network is conceived as a knowledge-sharing network, the Basque Government asked Mayors and technicians from pioneering municipalities to explain and popularise their experiences. While government policy provided the municipalities with training plus economic and human resources, these actors had to respond by offering the knowledge acquired to the community in general. Pioneering municipalities act as distribution channels.

Why Genes

Motivation to participate in co-creation activities is fuelled by money and glory genes. Money has mainly been geared towards facilitating co-creation (i.e. hiring consultants, developing methodologies and training courses and providing specialised human resources for small municipalities). Relevant direct funding has not been established to implement LA21 actions. However, municipalities with LA21 are supposed to have easier (but not regulated) access to general provincial and regional resources.

Being a member of *Udalsarea 21* is a prestige move for town councils (an external indicator of good management) and many of them back LA21 processes so as to be able to join. Every year town and city councils joining *Udalsarea 21* receive an award from the regional minister for Land Planning and Environment, in an act presided over by the President of the BC regional government. After the presentation of the award the President personally greets every Mayor from each municipality and shares with them his concerns about the LA21 process. Some contests to reward best practices have also been implemented. Love is primarily an intrinsic motivation factor. But it is deemed to be the most important driver of commitment to LA21 and efforts have been taken to push it through campaigns that foster a SD culture.

Outcomes and causality

The BC SD experience and tradition is pretty slim. However, results show there was an almost generalised dissemination of LA21 processes, after the presentation of the Basque Network of Municipalities for Sustainability on 20 December 2002. In the case of the BC there is no question that the regional network has been fundamental in achieving LA21 dissemination among municipalities (Barrutia et al., 2007, Echebarria et al., 2009). Membership of the network (*Udalsarea 21*) implies a degree of commitment in that the requirements for participation are rather ambitious, since municipalities participating are obliged to have finished their LA21 design. They are also required to appoint an officer (and a substitute) responsible for taking part in the Technical Network Committee. Municipalities also have to establish channels for civil participation. Network membership, therefore, implies a certain level of commitment.

QUANTITATIVE RESEARCH

Data collection

The empirical test involves 143 surveys conducted with municipal technicians of LA21 in the BC. The municipalities analysed comprise 57% of those existing in the BC and, since all the large municipalities are represented, the sample includes around 90% of the total population of the Autonomous Community.

When the survey design reached completion, LA21 organisers in the municipalities became acquainted with the study at a joint meeting with the attendance of more than 60 municipal representatives. The meeting served to encourage the involvement of those present and to guarantee the confidentiality of the responses. In addition, the web page of the institution responsible for promotion of the processes in the BC (IHOBE) published notification of the project along with an explanatory document seeking collaboration from the municipalities. A specialised firm carried out the surveys by telephone. The researchers were able to monitor the telephone interviews. Finally, they received treatment utilising the Stata program (version 10) and the EQS program (version 6.1), following a traditional procedure.

Metrics

The measurements for value, satisfaction and loyalty followed, in adapted form, the works by Lam et al. (2004), and Yang and Peterson (2004), which in turn utilised extensively tested scales. Malone et al. (2009) do not propose specific metrics to measure the genes of the collective intelligence systems. However, the concepts they use are akin to other concepts that have been considered and measured by related literatures. We used some of these metrics as an inspiration source and then developed and adapted metrics to our purposes.

The co-decision metric takes its inspiration from marketing research regarding employees' participation in decisions that affect them (e.g. Hackman and Oldham, 1974 and Teas, 1983) and the 'voice' measures from Carson, Teluk and Marrone (2007), who studied shared leadership in teams. The co-creation metric is inspired by the work of Prahalad and Ramaswamy (2004) and by the 'shared purpose' metric from Carson, et al. (2007). The money gene was adapted from Frels et al (2003). The love gene was built on the basis of the concept used by Evans et al (2005). To measure the glory gene we considered recognition and appreciation items that were reported by Podsakoff et al. (1990) and Rafferty and Griffin (2004) and the 'social support' measure developed by Carson, et al. (2007).

Before the field work came meetings with those regionally responsible for organising the dissemination of LA21 processes and with councils, which acted to refocus, define and properly draft the items used and to guarantee the content validity of scales. To test the apparent validity of the items proposed, 11 (municipal and regional) experts had to assess the different items as clearly representative, somewhat representative or unrepresentative. Only the items around which consensus existed were retained (Lichtenstein et al., 1990). 11-point Likert scales constituted the method of measurement (between 0 and 10).

Results

The Stata program served to carry out a preliminary study of the data via the execution of an Explanatory Factorial Analysis and calculation of the Cronbach alpha internal consistency coefficient. These analyses made it possible to confirm a good general fit of the data to the defined measurement model, although some items had to be removed (see table 1). When an initial cleaning of the scales had taken place, the rest of the work proceeded using the EQS program. Table 1 shows the results of the unidimensionality, convergent validity and reliability analysis obtained through the execution of a First Order Confirmatory Factorial Analysis (Anderson and Gerbing, 1988). As is evident from this table, all the standardised loadings are satisfactory, the smallest of them offering a value of .76. All of them are significant at .01 level.

Similarly, the composite reliability coefficients of the factors are high, with the lowest value at .80, corresponding to the factor co-decision.

Table 1: Analysis of Unidimensionality, Convergent Validity and Reliability

	Standardised Loadings	t-Value*	Composite Reliability Coefficient
Co-creation gene			.952
X ₁ : We communicate often	.912	16.43	
X ₂ : We meet up	.914	16.21	
X ₃ : Long conversations	.949	18.66	
X ₄ : Fluid relationship	.876	13.48	
Co-decision gene			.804
X ₅ : We participate in decisions		Excluded	
X ₆ : Ways to participate in decisions	.815	10.80	
X ₇ : Forums to participate in decisions	.826	9.36	
X ₈ : We discuss our differences		Excluded	
Money gene			.903
X ₇ : Present support	.810	8.66	
X ₈ : Much future support		Excluded	
X ₉ : Easily accessible support	.872	11.27	
X ₁₀ : High quality support	.925	11.21	
Love gene			.850
X ₁₁ : Influential people who love LA21	.890	11.27	
X ₁₂ : Municipal organisers who love LA21	.830	11.24	
Glory gene			.860
X ₁₃ : LA21 activism is recognised	.764	9.36	
X ₁₄ : LA21 activism is awarded	.938	13.31	
X ₁₅ : Main political leaders recognise LA21 activism	.748	9.07	
X ₁₆ : LA21 gives prestige		Excluded	
Commitment Value			.936
Y ₁ : More benefits than costs and problems	.892	12.97	
Y ₂ : LA21 worth the trouble	.982	17.12	
Satisfaction			.857
Y ₃ : Very satisfied	.884	14.06	
Y ₄ : Satisfies expectations	.848	11.41	
Loyalty			.850
Y ₅ : Our intention is to keep working with LA21	.823	9.51	
Y ₆ : We will intensify	.897	13.19	

Goodness of Fit

$\chi^2_{(Satorra-Bentler)} = 162.20; p = .118; 142 \text{ d.f.}$
 NFI = .915; NNFI = .984; CFI = .988; IFI = .988
 RMSEA = .000; 90% CI of RMSEA (.000, .052)

The average variance extracted (AVE) in the different factors is included in table 2 and is also satisfactory (the lowest offers a value of .67 and corresponds to the glory factor) (see, for example, Byrne, 2006; Nunnally, 1978). Table 2 shows the results of the analyses carried out to ascertain discriminant validity. We used three forms of verification (see, e.g., Hair et al., 2010). The most demanding of the three requires that the squared correlation of the factors be lower than the average variance extracted (AVE) for each factor, which occurred in all the cases, and is the form reported in table 2.

Table2: Inter-correlations, squared inter-correlations and shared variances

<i>Variable</i>	F1	F2	F3	F4	F5	F8	F9	F10
F1: co-creation	.833	.232	.104	.183	.131	.152	.232	.217
F2: money	.482	.757	.062	.181	.116	.050	.120	.142
F3: co-decision	.323	.25	.735	.335	.063	.354	.298	.123
F4: glory	.428	.426	.579	.674	.188	.126	.313	.215
F5: love	.362	.341	.251	.434	.750	.349	.409	.405
F8: value	.390	.225	.595	.355	.591	.808	.693	.466
F9: satisfaction	.482	.347	.546	.560	.640	.833	.807	.556
F10: loyalty	.466	.377	.351	.464	.637	.683	.746	.879

Note. Inter-correlations are presented in the lower triangle of the matrix. Shared variances are depicted in bold face on the diagonal. Squared inter-correlations are given in the upper triangle of the matrix.

After analysing the measurement model, the validity of the causal model proposed was tested. An analysis of the normality of the data, including in the general model, demonstrated that the individual values for the asymmetry and kurtosis of each item were relatively satisfactory. However, the normalised estimate for the Mardia coefficient presented a value of 23.4, which is indicative of the existence of a multivariate kurtosis (Bentler, 2005, recommends a cut value of 5). It was necessary, therefore, to consider the robust fit measures (specifically, Satorra and Bentlers scaled Chi-square test, 1994). As Figure 2 shows, both the measures of absolute fit and those of incremental fit offer acceptable results. Model fit for the robust method presents $\chi^2 = 190.4$, with 155 degrees of freedom (p value = .028). The *Root Mean Squared Error of Approximation* (RMSEA) displays a value of .04 (lower than .8). Logically, the measures of incremental fit also exhibit high values with a *Bentler-Bonnet Non-normed Fit Index* (NNFI) and a *Comparative Fit Index* (CFI) which provides a value of .98. As Figure 2 shows, the causal model proposed appears to satisfactorily explain the data variance. Commitment' predictors account for 69% of the total variance. It is not possible to reject the hypothesis that co-development genes are a main driver of commitment to LA21.

The second order factor commitment is built by using the blocks of value, satisfaction and loyalty. Table 3 shows the psychometric properties of this factor. Standardised loadings, average variance extracted (.76), the composite reliability coefficient (.82) and the goodness of fit ($p = .84$) are satisfactory.

Table 3: Testing of Commitment toward LA21

2 nd -order FACTOR	Standard. Gamma	Critical <i>t</i> -ratios Robust test	Determinant Coefficients (R ²)	AVE	IFC	1 st -order FACTORS
Commitment to LA21	.882	7.64*	.779	.762	.825	Value
	.951	7.97*	.905			Satisfaction
	.778	7.69*	.605			Loyalty
Goodness of Fit χ^2 (Satorra-Bentler) = 2.01; p= .847; 5 d.f. NFI = .995; NNFI = 1; CFI = 1; IFI = 1 RMSEA = .000; 90% CI of RMSEA (.000, .065)						

* t-Values greater than 1.65 are significant at p<.05; t-values greater than 2.33 are significant at p<.01

CONCLUSIONS AND FUTURE RESEARCH

This research contributes a new view of PN management. PN are analysed from the combined perspectives of marketing and collective intelligence systems. PN management is approached as a means to achieve the development and implantation of socially desirable practices (LA21) by obtaining the commitment of the target audience (municipalities). Commitment is measured in terms of user value, satisfaction and loyalty.

Research results show that a way to generate commitment is to create a PN designed as a specific collective intelligence system, which we term the co-development genome. The genes of co-decision, co-creation, love, glory and money are included in this genome in a specific way. Firstly, co-creation tasks should be encouraged by the integrative leader. Co-creation is a rewarding task. But it also consumes time, effort and money. Leaders can encourage co-creation, by using the extrinsic motivating tools of money and glory. Secondly, co-creation, co-decision and love have a direct and positive effect on commitment. But love is mainly an intrinsic cultural factor and is not easy to change in the short term. So, in essence, leaders should see PNs as marketing-driven collective intelligence systems that achieve their goals by promoting co-creation and co-decision. In order to achieve common good, PN integrative leaders should see other PN members as customers and choose their strategies to create value, satisfaction and loyalty for them.

In this research we quantitatively measure municipalities' commitment (first major target for achieving LA21 dissemination). LA21 philosophy also suggests that the involvement and commitment of civil society (local business and citizens) should be secured in the decision and creation tasks. This view is consistent with that of collective

intelligence systems. In the case of the BC each municipality decided the level of participation of its civil society (individual decision). Some municipalities seem to have understood participation processes as mere informative actions, forgetting to stress the importance of decision-making and creation by the local community itself. Participation is not synonymous with unidirectional communication (Irvin and Stansbury, 2004; Yang, 2005).

We also have some concerns regarding the involvement and commitment of local business and citizens. Low levels of interest and/or free-rider behaviour, both of which are highlighted in the literature, would seem to be rife among these actors. Our qualitative research has confirmed serious difficulties in achieving their effective participation. Particularly striking is the non-presence in forums of the companies that pollute the most, largely because they are very wary of the reaction of the most environmentally aware citizens. Furthermore, not all citizens are represented. Participation in forums is mostly limited to environmental associations and retired people. More research into this crucial LA21 issue is needed. Effective policies should be designed and best practices extended. Our research focuses on the government-to-government relationship. More research on the government-to-civil society relationship is needed.

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