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Beyond links and chains in food supply: A community OR perspective

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Abstract

This theoretical paper complements traditional OR approaches to improve micro-businesses' performance. When looking at local micro-businesses, we find that current supply chain and operations theory that focuses on efficiency and economic-based criteria for chain and network integration, is inapplicable and external organisation inappropriate. An illustration shows how traditional modelling exercises may fall short in better-informing independent-minded micro-entrepreneurs on how to collaborate, even though they recognise benefits from such endeavour. The illustration concerns consideration of food micro-producers, not as links constituting a chain, but as members of a community. This paper explores two different approaches to apply Community OR research principles. On one hand, the application of OR methods to phenomena in the 'community'; on the other, the development of research on 'community operations'; which are symbolised as C+OR and CO+R respectively. These approaches are associated to two different research languages: *of needs* and *for interactions*.

Main contributions of this paper are: first, we show that collaboration does not always need shared aims. Second, we offer a circular process where the identification of collective actions may help organisations to improve individually; and vice versa. Third, we suggest how to develop the role of a stronger collective actor by means of collaboration.

Keywords Community OR, problem-structuring methods, food systems sustainability, supply chain.

Introduction

The label 'Community Operational Research' (Community OR) suggests advantages in the use of analytical methods for better decision-making inside the communities where we live (ORSoc, 2014). Rosenhead (1986) proposed extending the use of OR techniques and tools to deal with societal

problems, even though this does not seem to be an easy task, as Jones and Eden (1981) identified before him. Traditional OR techniques produce mathematical models with a particular quality; they are simplifications on reality that provide insights for better-informed acting (Pidd, 2004). However, when the problem is to coordinate different actors that not share the same objective function, like increasing income or reducing cost, traditional models seem unable to capture such variety. When each actor has different reasons why they do what they do, and no alignment is possible, as usually happens when issues are presented inside communities; other approaches are required. Exercises and reflections on Community OR have been reported many times since then through the pages of the *Journal of the Operational Research Society* (Rosenhead, 2009). These reports have also shown the appropriateness of Community OR for assisting in dealing with problems originated in very different communities (Wong and Mingers, 1994), and for solving problem situations within food networks in particular (Tavella and Papadopoulos, 2017). The possibility of extending the notions of Community OR is what triggered this investigation. This paper looks at the concept of ‘community’ in the business environment, and provides a particular protocol for the use of Community OR principles in constructing and structuring community business problems by means of softer tools. The rationale behind this exercise involves a particular challenge; how to address additional variety introduced by entities that react to the research process. In this paper, we show by means of an illustration the difficulties of studying how to improve microbusinesses’ resilience by means of collaborative action. The illustration provided shows how traditional modelling exercises may fall short on informing independent-minded micro-entrepreneurs on how to collaborate, even though they recognise benefits from such endeavour.

Two approaches for applying Community OR research principles have been identified (Vahl, 1994). First, the application of OR methods and ideas to study phenomena in the ‘community’; second, the use of research as a ‘community operation’; what she symbolised as C+OR and CO+R respectively. Different extensions of both have been explored in later years. As a result, the Community OR stream has been part of several Annual Conferences of the Operational Research Society (2008-2014). There we witnessed a variety of implementations which were not always related to the original aims of Community OR. In fact, there are multiple reports on the use of community concepts intertwined with

business-oriented research, such as entrepreneurship, regional development, knowledge partnerships and sustainable food production and distribution. In relation to the latter, Namen, Bornstein and Rosenhead (2009) have examined “the possibility of improving sustainability in food production of poor communities based on self-management and with the help of OR techniques” (p. 587). Their work is an example of C+OR as it discusses ideas for the use of operational research to improve the conditions of life in a poor community. It involves the development of sustainable communities by looking at environmental drivers, and accommodating also the social and economic dimensions. In terms of CO+R, Namen *et al.* do not, however, seem to explore if there are any potential contributions that research activities may provide to increase the level of engagement among members of that particular poor community. This suggests the presence of additional spaces in which to develop all the advantages that COR may provide. In this context, this paper’s focus is on the role that collective research activities may play to increase predisposition of micro-businesses to collaborate in collective activities and projects; an example of many forms that CO+R may take. The extension consists of investigating CO+R potential to build and maintain sustainable food supply structures.

Following Vahl’s interpretation of COR, we review two different ways of researching food supply organisational structures; (a) externally-imposed capacity modelling (C+OR) and (b) internally-organised capacity building (CO+R). Accordingly, we identify two different approaches in terms of the languages ‘*of needs*’ (C+OR) and ‘*for interactions*’ (CO+R) respectively. We exemplify both, by means of an illustration. This illustration indicates challenges and limitations for collaboration between food micro-producers, in the context of a typical UK regional food marketing group (Select Lincolnshire, SL). SL provides umbrella business support for specialist micro-businesses (MBs). As a conclusion, we suggest that both languages are complementary. The context for this research is Food Supply Chains (FSCs), a universal concern and one typified by national and global consolidation, where OR tools are used to optimise economy and efficiency based decision-making. However, a side-effect is in the displacement of local supportive systems and community identity.

Finally, we present a reflection on the practical implications of this contribution and identify the main benefits of using the *language for interactions* to increase micro-producers' propensity to engage in food supply structures.

Background

Traditional research on Supply Chains (SCs) builds on identifying and structuring channels and networks of relationships that link suppliers with consumers, through different actors that add value by means of intentional coordinated activities (Aitken 1998; Ballou, 1999; Christopher, 2005; CSCMP, 2010; Mangan *et al*, 2012). Operations Management literature considers SCs as all parties involved, directly or indirectly, in delivering operations; such as processing, transportation, warehousing and retailing, that provide goods and services according to end consumers' needs (Chopra and Meindl, 2007; Slack *et al*, 2007; Greasley, 2009). These approaches aim to understand how to increase the value of a good or service for the final customer by means of aligning the outcomes of different actors throughout SCs (Christopher, 2005). In this context, ideas such as *value chain* (Porter, 1985/2004) and ethical discussions such as *green logistics* (Carter and Rogers, 2008) and *sustainability* (Svensson and Wagner, 2012) have been incorporated into the conversation. Ways of optimising resources and improving SC performance have also been identified and applied. For instance, Logistics Management (Ballou, 1999), the Supply Chain Operations Reference model, SCOR (Lockamy and McCormack, 2004), globalisation (Mangan *et al*, 2012) and lean/agile (Christopher *et al*, 2006), have been presented as effective devices to develop successful SC strategies.

Descriptions about Food Supply Chains (FSCs) usually involve a big retailer (Hanf and Kühn, 2002; Burch and Lawrence 2007) that controls the operations upstream and downstream throughout the SC and exerts imbalanced power relations with the different actors (Hingley, 2005). Van Donk *et al* (2008) characterise FSCs by high-volume with low-variety flows, where goods are made-to-stock with short time delivery, and cost leadership is the major order-winner, even though they recognise this is not always the case.

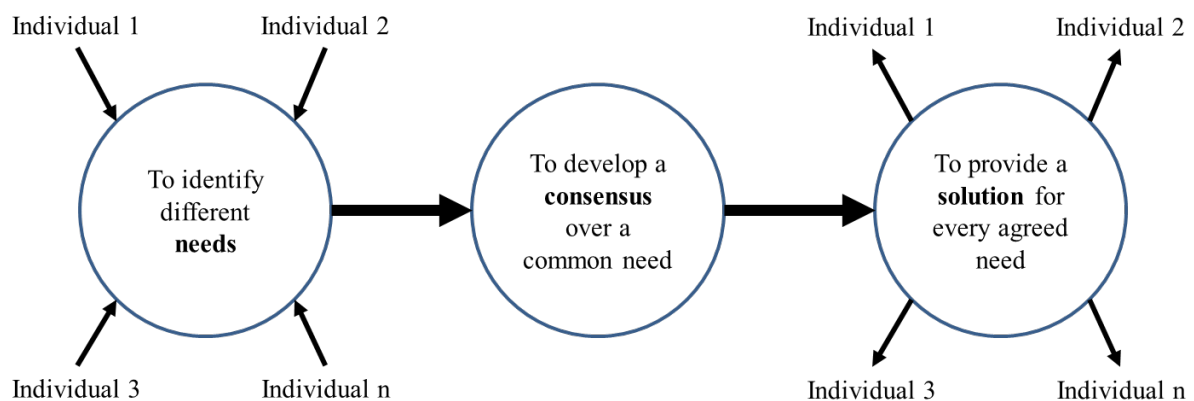
In the food industry, good performance in supply chains is well documented, for example, Aramyan *et al* (2007) propose a Performance Management System (PMS) which they see as essential to assessing SC success; based on efficiency, flexibility, responsiveness and food quality. Concerning Small and Medium Enterprises (SMEs), there is a widespread view that the main difference between SMEs and bigger enterprises is just the scale of operations. Attempts have been made to indicate the contrary, though. For example, Banomyong and Supatn (2011) propose a Supply Chain Performance Assessment Tool for SMEs. Vaaland and Heide (2007) investigate whether SMEs are prepared to meet the SC challenges of modern planning and control methods, in comparison with larger organisations concerning applications of tools and systems efficiencies. Their conclusion is that “SMEs appear to be far behind in the technology and system adoption that is considered vital to sustain SCM implementation” (p. 28). Further, Sodano and Hingley (2009) suggest that centralised, efficiency driven, large retailer buying structures do not sit so easily in managing networks of smaller, niche or specialist suppliers, which are more likely to be de-centralised and do not produce the scale efficiencies of large supplier partnerships for such retailers. This requires changes to the way we research and understand microenterprises, FSCs and members’ engagement. Finally, Hingley and Vilalta-Perdomo (2017) identify different food supply arrangements (i.e. direct distribution, supply chain, supply network and supply community) from a micro-producers’ perspective, and indicate that “the complementary nature of the community approach suggests a framework for micro-businesses to strengthen their operations with existing traditional supply arrangements” (p. 43).

COR methodology and frameworks. ‘Language of Needs’ and ‘Language for Interactions’?

The traditional approach to study how to increase MBs propensity to engage in food supply arrangements, involves optimising a utility function to achieve a maximum number of actors involved. However, identifying a common utility function by consensus seems to be an impossible task (Arrow, 1950). Therefore, more or less dictatorial, top-down approaches to achieve development are usually used following economic trade-offs.

Another, more modern and democratic, procedure consists of asking different members inside a community about what they need to achieve individual improvement. If consensus to identify a common need is made, then it is expected that members would develop a collective plan; which if implemented would offer a more satisfactory state (Checkland, 1999). This procedure proposes the use of a *language of needs* to concentrate the collective effort on a reduced set of possible actions for individuals in a community (see Figure 1.). Different individuals engage in an exercise to identify and achieve consensus on different needs, as a path to establish a general solution available for all the participants.

Figure 1. Language of Needs

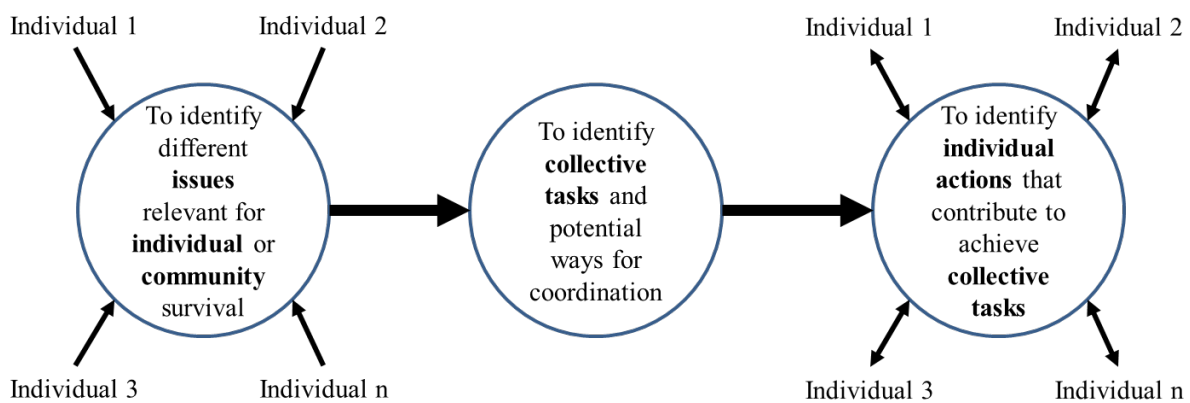


Advantages have been recognised in the use of such *languages of needs*; for instance, different developments are available from Operational Research literature (Checkland, 1999; Friend and Hickling, 2004). Governments and businesses make also use of these languages to identify areas of opportunity, but not without risk. History is full of examples of well-intended actions that became tyrannical interventions. In any case, the main difficulty lies in the individuals' trade-offs between their needs and expectations. As soon as a need is satisfied, a new one appears (Vahl, 1994). This has been recognised in many disciplines; for instance, quality literature brands it as 'continuous improvement': "... an on-going effort to improve products, services or processes" (ASQ, 2013). However, this approach is expensive and requires a continuous injection of resources. In addition, quality literature recognises that success in a *continuous improvement* process involves empowerment (Greasley, 2009), top-management engagement (Jones and Robinson, 2012) and close cooperation between actors (van Iwaarden et al., 2007).

An alternative way to maintain impetus and strive for improvement, without suffering the previously mentioned side-effects, is related to opportunities derived from linking knowledge with action. Learning has been recognised as a source for improvement, but different communicative barriers disarticulate individual and collective learning (Kim, 1993); and facilitated modelling seems a resilient approach to map barriers for collaboration; for instance, Tavella & Papadopoulos (2015) suggest an example within a local food network, where interventions can be effective independently from the facilitators' level of expertise. In the specific case of micro-producers, organisations need resources and information to achieve effective and efficient actions. But information flowing through FSCs is not stable; it changes as different actors inside the chain (re-)act to the previous information available. This is what makes CO+R pertinent to the discussion. FSCs look at creating rigid forms of interactions; on the contrary, 'food supply communities' (FSComms) strive for adaptation and flexibility.

Research on communities (CO+R) involves changing communications structures. The aim is to allow members to address each other to provide precisely what is needed to act as a member of a stable collective or organisation (De Zeeuw, 2001). The essence of this comprises three steps (see Figure 2.).

Figure 2. Language for Interactions



The first step is to involve members in the development of a collective agenda for improvement. The intention is to make explicit their individual views on issues related to community sustainability. The second step is to engage members in a process of research to identify potential collective actions that might promote improvements inside the community. The aim is to engage individuals in a propensity

exercise that becomes a collective process of knowledge generation; as a result, potential collective actions are identified and potentially agreed to be conducted. Finally, each member identifies individually what and how it can contribute to achieve the agreed collective tasks and the individual advantages and limitations of doing that. We name this approach ‘Language for Interactions’.

An illustration of the challenges of research design

In order to show the presence of both languages (i.e. *of needs* and *of interactions*), we contacted an organisation consisting of a group of mainly food micro-businesses. Select Lincolnshire (SL) is a local authority and Chamber of Commerce supported organisation based in the county of Lincolnshire, UK. SL is committed to promote collective brand and members through advertising, marketing, publicity and PR activity (Select Lincolnshire, n.d.). SL has approximately 240 speciality food and drink producers and associated outlets, but has aspirations (as yet under-developed) to support members in a wider offer of collective activities, for example in shared/ hub distribution and other deeper integrations. SL interest in supporting their members’ performance has been reflected throughout different initiatives. For instance, they have organised seminars related to improving organisational functions, such as marketing and supply chain. Through these, SL has identified their members’ need for additional resources, but also the difficulties of coordinating them in effective collective actions. Their interest in constituting a FSC and network for members was the origin of this research in recognising potential drivers for collaboration and barriers to overcome.

In order to provide support to SL we organised a set of steps that follows a traditional research structure, identified earlier as C+OR (see table 1).

Table 1. Research procedure	
Exercises	Main outcomes
In-depth interviews.	Observations were collected from six micro-producers recommended by SL.
Internet-based survey.	Based on the previous observations, a questionnaire was developed. SL sent the questionnaires to all their 240 members. Level of responses, 5%.
Telephone survey.	Due to the low level of answers involved a second intervention through direct contact. Level of engagement 25% (60 members).
Systematic review of all SL members’ websites.	Only 9% of the websites show the corporative image of SL logo.
Exploratory conversations with SL executive about the results.	To identify how to support collective engagement, different organisational possibilities have been discussed.

In depth interviews

The first step involved six in-depth interviews with food micro-enterprises. These were selected for reasons of being ‘typical’ (Yin, 2003) members. All were artisanal, micro-producers and distributors of speciality foodstuffs. Interviews reflected interviewees’ insights about their role within FSCs, through a semi-structured questionnaire (Polonsky and Waller, 2011). They concerned eight questions related to their understanding about their business operations in terms of FSCs. Additional issues included in the interview explored (a) what help, if any, they received in the development of the business and its value; (b) what future help, if any, they may require, and (c) where they would like to position their business in future and (d) who else in the supply chain should be involved to support their success.

Interviews were conducted by both authors, recorded and transcribed with the explicit authorisation of interviewees. The length of the interviews varied from 64 minutes, for the longest, to 24 for the shortest. In all the cases, people interviewed were owners (partners), and all of them were aware of the SC activities inside their business. As a result of the transcriptions, we identified consistencies and discrepancies through the interviewees’ characterisations of their firms and their current FSCs (see table 2).

Organisation	Product quality?	Affinity for the county?	Confidence in managing their FSCs?	Interest on participating in a FSC?
Fish (fishcake) factory	All have conviction in the excellence of their products (and defined them in terms of artisanal, craft and speciality terms)	All feel it and probably this is the reason why all of them are members of SL	Yes	No
Ice cream producer/retailer			Distribution, mainly transportation, is challenge	No, comfortable with current state
Pork-based manufacturer farm				Yes but with additional support from SL
Pork-based manufacturer shop				
Artisan cheese				
Jam producer				

These outcomes suggest that the interest of micro-producers to engage in FSCs is not evident at all. None of the six micro-producers could identify any form of collaboration apart from sharing resources. They did not seem aware of other possibilities such as fully integrated planning or scheduling decisions (Van Donk et al., 2008). Furthermore, only three of them were considering the possibility of taking part in initiatives relating to sharing resources. This was our first indication that traditional FSC research was not supportive enough to increase micro-producers' interest to participate in externally-organised food supply structures.

The six interviewed organisations have had previous interactions through SL. In fact, one collective strategy pursued in the past by SL was to organise national commercial visits, for example, to new business opportunities outside of the regular geographic market (to lucrative and cosmopolitan markets in London), or to represent them at showpiece county fairs such as the annual Lincolnshire Show. However, this kind of externally organised activity did not provide the same level of success for every participant (who have a range of expectations and ambitions, some parochial and some expansive). Some organisations took more advantage than others from these interactions; for example, one is running a stall at the popular retail Borough Market in London, another is selling products to a famous gourmet restaurant chain. This suggests that the role of support organisations is indeed critical to micro-producers' success and the development of network cohesion (Hingley and Lindgreen, 2013); but it is not enough to deal with different expectations and experience levels prevalent with micro-businesses.

Results from this initial exercise suggest that the current structure of SL cannot capture the multiple interests and reasons individuals have to participate in their collective endeavour. Participants were interested in engaging in some sort of collaborative structure, but only if they could maintain their own identity and full freedom to act. This triggered the need for additional research to validate the initial findings.

Internet-based survey

A second research phase, initiated in the light of the issues raised by the in-depth interviews was to distribute an internet-based survey to the whole member group. This was produced in order to confirm

the consistency of view from the in-depth interviews with the wider SL membership. This survey included similar questions as before; with the addition of a new set intended to recognise the present and future role of SL. The latter were introduced by SL as they were interested in recognising the role that they should play in order to better fulfil their members' expectations. Questions related to identifying sources for improving the way SL communicates and shares information online with members, and to select preferences from a list of different training opportunities that SL may provide to benefit their businesses.

The survey was sent directly by SL to their members using online survey software. Results were analysed in a tabular form in order to make comparisons between the different answers gathered. These indicated that the majority of the respondents believe that their main market lies inside the borders of Lincolnshire (through more than 40% of their sales). This 'local' feeling is strengthened by the fact that by first choice half of them would like to increase their operations in Lincolnshire over increasing their presence in other areas of UK, and none see any appeal in becoming a 'consistent international supplier'. This indicates SL members preferences to focus on individual customers and local retailers (via farm stores and farmers' markets). Finally, members are motivated by 'lifestyle', 'enjoyment', 'passion' for their product, personal satisfaction and peer recognition, more than developing opportunities for market development and furthering income. This emphasis on individualistic business logic, small scale locality and personalised customer orientation, makes externally co-ordinated SC developments difficult to implement.

It is worth noting that the level of survey participation was very low, with only five per cent of members responding. This stimulated the Authors to analyse the responses in more detail, in order to find reasons for such low response. It was noticed that SL members are competent in using electronic media to contact their clients (most use websites and some also social media). It was also clear that membership is of a closed user group, that pays a modest fee to be part of it; and even in this case where the survey origination was internal to that group from SL executives, this did not induce them to participate. The low response rate can be interpreted as SL members are simply not engaging in these kind of exercises, and it may be that "the more times a person reports requests for survey cooperation, the more

unfavourable is his or her attitude toward the method” (Goyder, 1986, p. 38). It can also be the case that this survey was seen to be a non-pertinent exercise, as questions were linked only to the surveyor’s agenda (Verba, 1995); in this case their own marketing group (SL). In-depth interviews indicated that members had their own organisational issues and treated these as more urgent. This, in addition and more importantly in terms of this paper’s aim, exemplifies again the distinct and difficult issues of attempting to engender supply chain/operational cohesion in independently minded micro-businesses by means of a top-down approach.

Telephone survey

In order to improve members’ engagement, a more direct approach and third research phase was undertaken, this time through telephone interviews. SL made available all of their members’ data and sixty organisations (one quarter of the membership) were successfully contacted and interviewed, following a set of six semi-structured questions based on the previous ones.

The main findings from the telephone surveys were, first, an immediate reaction in terms of short-term business objectives, namely concerning the need for ‘money’. This is not a surprising response amongst small businesses for whom income generation and cash flow is uppermost in the mind. Second, long-term objectives were more mixed, some considered ‘survival’ the main aim, others wanted to expand; but what was consistent is the appreciation that family orientation, heritage, lifestyle and associated issues are the most important motivations. Third, barriers that prevent members achieving objectives were typically again associated to ‘finance’. However, other issues such as transport and variable weather, rural isolation and geographic distance from key markets were also shared. Fourth, expectations on SL support to overcome barriers were related to a requirement for more promotional activity; for instance, more events, retailer access and shelf space. However, most claimed to: ‘not really know what SL does’. There was some resentment of paying the (modest) SL membership fee and being asked to pay more for new initiatives, for instance in support of a new logo; devised to standardise group identity and imagery. This proved to be a piecemeal exercise, with the new identity not universally accepted and used, with some members preferring to retain the old logos and some declining

to engage on grounds of cost. The result was, at worst, fragmented group identity amongst members concerning physical and online imagery. Members were divided on what should be the business priorities of the group. For example, to focus on events such as trade fairs and consumer shows, targeted customer engagements (high profile restaurant, hotel or retail outlets outside of the region), or perhaps emphasis on the internal Lincolnshire retail market via collective local market exploitation. As a result, the overall membership is disparate: strategic thinking is not developed, and there is not a consistent understanding as to what SL does and what it could do. This despite frequent overtures from the group executive management to seek to understand individual and collective need for support. For example, through member surveys, 'drop-in' discussion sessions, initiation of online discussion threads, and in targeted training and advice in a whole raft of areas including IT skills, accounting, food technology and logistics/ distribution hubbing.

What is worth noting is that interactions through telephone interviews with SL members suggested that individuals were interested in participating in collective efforts, but this was dependent on their individual intentions and preferences. In this context, a new SL agenda considering the nurturing of individuals' engagement to this community seems to be required. The development of different propensity exercises may contribute to this aim (Rapoport, 1988).

Systematic websites' review

A telling account on the fragmentation of SL, and the difficulties of solving the research problem of variation added by the entities under investigation, can be exemplified through an additional analysis conducted on the members' business websites. The systematic analysis of all 240 member sites showed that these were often poorly designed and not easily navigable. Typically they were 'heritage' and product focused with excessive product-oriented details, but lacking in clear information about where their goods can be found and how they may be bought. Crucially from a network cohesion perspective, there was inconsistency and lack of 'joined up' marketing with regard to linkage between member websites and through imagery and identity concerning SL, with only 9% of the entire member base of

SL using the current and correct SL logo. In other words, few members considered themselves able to take part in the way SL conduct collective activities and projects.

* * *

These research exercises (i.e. in-depth interviews, internet-based and telephone surveys, and member web analyses) exemplify the difficulties of conducting research that strives for ‘improvement’. It is usually very difficult to identify what can and should be improved (De Zeeuw, 2001). Traditional research approaches, focused on producing data for external interpretation, evidence the difficulties associated with the study of non-bounded entities. Situations where humans are involved cannot usually be bounded, because elements inside the system-in-focus produce additional variety in the process of conducting the research. Attempts to limit such variety creation have been proposed, by achieving a consensus between the participants (Checkland, 2000), or by ‘freezing’ the phenomenon under study and expressing it through complex, but deterministic, interactions. Examples of the latter can be found inside the movement of ‘analytics’ that seems to be directing current OR research and practice, particularly the C+OR approach. Different websites from professional organisations related to OR testify the reintroduction of this trend: The Operational Research Society, the Institute for Operations Research and the Management Sciences, and the Institute of Industrial Engineers, IIE, among others. In terms of CO+R it might be argued that such approaches are not enough to properly inform collective action, or constitute organisations that could behave as information systems (Vilalta-Perdomo, 2010).

Practical implications of the use of the ‘Language for Interactions’

In terms of increasing micro-producers’ propensity to engage in sustainable food supply communities (FSCComms), we present the *language of interactions* as a complementary approach. We have identified that FSCs strive for consistency of purpose and output, improving efficiency and adding economic-value. However, with respect to micro-producers, additional drivers also inform their individual decision-making, for example, family orientation, heritage and lifestyle. Traditional drivers are addressed by reckoning and negotiating individual needs through collective consensus, and then resourcing the latter. Even though this may support individual performance, it demands continuous

injections of external resources, making individuals sensitive to disturbances from outside (De Zeeuw, 2001). It does not contribute either to the success of collective performance, as it is disconnected from individuals' 'expert' actions.

An example of using the *language for interactions* in practice is the current development of a wider ongoing project with SL, based on building a bid for a collective research project. The aim was to develop a framework that would provide a set of operations and logistics decision-making tools available for SL members. The intention was twofold. First, to provide micro-producers with tools that improve their individual performance, in this sense following the C+OR approach. Second, to run a propensity exercise based on doing collective research. As discussed previously, this would increase the interest for participating actively inside FSComms, an instance of CO+R. The SL role inside this project became dual, to act as a repository and as the hub's central actor. Both roles allow outcomes from collective projects to inform members, and members' participation to articulate collaborative projects. This circularity can be related to other self-organising exercises; those where collectives inform individual members and vice versa. This suggests looking at collectives as if they were (action-based) information systems (Vilalta-Perdomo, 2010). The current state of this project concerns the development of a tourist route app. The design of this marketing App is a collective effort of a group of SL members that introduce their own information and provide shared marketing opportunities in the city of Lincoln.

Opportunities for simultaneous improvement at different levels provide additional by-products. For instance, the use of collaborative research as a medium where simultaneous individual and collective learning is achieved; SL members will become able to investigate more effective and efficient ways to coordinate their individual actions into a stronger collective performance. Another benefit is to increase the density of links inside the network, as these do not need to be exclusively associated to economic-based drivers; in fact, other drivers may reverberate inside the community and trigger additional beneficial activities like sharing distribution channels, production facilities, product handling systems, electronic inventory, transportation and marketing. It has been indicated in prior studies that there is a

need to improve access, distribution, and livelihoods within the food chain (Kirwan and Maye, 2013), and we believe that the FSComms approach also addresses these issues.

Conclusions and recommendations for micro-producers as food supply communities

Traditional FSCs involve trade-offs between individual and collective performances. Micro-producers may participate in current supermarket oriented FSCs, if they fulfil a set of externally-defined constraints such as: retailers' price setting, consignment sales policies, specific packaging, lot sizes, availability, etc. This external imposition may not work for some micro-producers, nor may they wish to engage in such externally defined and managed food supply structures. As an alternative, we propose interacting with micro-producers through two different languages: first, the *language of needs* which makes explicit what can externally support their development (C+OR); second, the *language for interactions* to coordinate fruitful internal collaboration that improves the community and its members simultaneously (CO+R). We claim that this approach to build micro-producer FSComms seems to be more sustainable, as it accommodates specific needs and recognises the effectiveness of individual actions to support better collective performances, and vice versa.

The main contributions of this complementary approach are threefold. Firstly, this membership is not associated to any externally imposed purpose, as no collective aim is required. This breaks paradoxes such as the 'impossibility theorem' (Arrow, 1950). Secondly, a circular process simultaneously informs both the sense of 'collectiveness' and the improvement of the individual performance. Finally, it suggests to external observers the presence of a stronger actor, as coordinated collective actions provide additional resources and capabilities inaccessible to individual micro-producers. In other words, it strengthens the community performance by reinforcing members' links and supporting external perceptions about the community acting as a whole (Somerville, 2011). In this sense, we propose that the role of bodies such as SL should be supporting this identification process and embodying the collective knowledge developed through it, rather than externally imposing agendas that are not necessarily shared by their members. We argue that as not all organisations are either motivated by, and or inclined to traditional organisational and SC structures. Therefore, the FSComms approach devised

here in the context of independent minded artisanal food producers, may also be appropriate to other micro-businesses, or indeed other businesses and scenarios requiring collective endeavour.

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