

Social innovation as interconnected chains of action: Using a graph-theoretical approach to study social innovation processes

Wouter Spekkink^{*†} & Frank Boons^{*}

WORK IN PROGRESS – DO NOT CITE WITHOUT AUTHORS' PERMISSION

1 Introduction

In academic and policy circles, there is a strong interest for ‘social innovation’ (Adams and Hess 2010; Van der Have and Rubalcaba 2016) and the role it may play in sustainable societal transformations (Avelino et al. 2015; Howaldt and Schwarz 2010; Pel 2016; Millard 2018). Although the conceptual landscape of social innovation is somewhat fragmented, and understandings of the concept therefore vary (Cajaiba-Santana 2014; Van der Have and Rubalca 2016; Dawson and Daniel 2010; Pol and Ville 2009 Howaldt and Hochgerner 2010; Ayob et al. 2016), social innovations generally refer to changes in the way of life of people and/or in the ways that people live together (Howaldt and Schwarz 2010; Howaldt and Hochgerner 2018), driven by motivations different from those that underlie innovations in business and technology (Howaldt and Schwarz 2010).

A relatively recently developed perspective takes “social practices” as the central objects of analysis in studies of social innovation (Franz et al. 2012; Howaldt and Schwarz 2010; Hochgerner 2011; Howaldt and Hochgerner 2018; Rabadijeva et al. 2018). Based on this perspective, a social innovation can be defined as “a new combination of social practices in certain areas of action or social contexts. What distinguishes social innovations from other manifestations of social change is that they are driven by certain actors in an intentional targeted manner with the goal of better satisfying or answering needs and problems than is possible on the basis of established practices” (Howaldt and Hochgerner 2018, p. 19; also see Howaldt and Kopp 2012). According to Howaldt and Hochgerner (2018), an innovation is social to the extent that it is socially accepted and diffused in society, or a sub-area thereof (also see Howaldt and Schwarz 2010).

This definition primarily draws attention to social innovations as *outcomes*, which leaves open the question of these outcomes are brought about. In their elaboration of their approach to social innovation, Howaldt and Hochgerner (2018) identify five *key dimensions* that “fundamentally affect the potential of social innovations, their scope, and their impact” (p. 19): (1) process

dynamics, (2) resource, capabilities and constraints, (3), addressed societal needs and challenges, (4) governance, networks and actors, and (5) concepts and understanding. Of these key dimensions, process dynamics has most direct relevance for the question of *how* social innovations unfold, whereas the other key dimensions primarily address the conditions that influence the process and its outcomes. In this paper, we focus first and foremost on the dimension of process dynamics, and we present a methodology that enables a systematic study of these dynamics. Our methodology consists mostly out of graph-theoretical methods and techniques that are useful in the in-depth analysis of complex social processes that unfold amid (changing) social structures. Rather than drawing attention to attributes of social processes, our methodology draws explicit attention to the events from which social processes are made up.

The main aims of this paper are to provide an introduction to this graph-theoretical approach to studying social processes, and to demonstrate its usefulness in studies of social innovation using an illustrative case study¹. To this end, we first connect the social practice-oriented perspective on social innovation to the work of Schatzki (2002; 2016), conceptualising social innovation processes as interconnected *chains of action* that transpire amid *arrangements* of people, organisations places and other entities (chapter 2). We then introduce our methodology, and how it can be used to reconstruct and analyse chains of actions and arrangements (chapter 3). We then demonstrate how the methodology can be applied (and with what outcomes), using a longitudinal case study of several community sustainability initiatives in Staveley (UK) as an illustration (chapter 4). We close with a more general discussion of the relevance of our methodology for studies of social innovations, and what types of insights can be produced with our methodology (chapter 5).

2 Social innovations as chains of actions

2.1 Practices and arrangements

As discussed in the introduction, we build on a definition of social innovation as the intentional creation of new combinations of social practices (Howaldt and Hochgerner 2018). Even though social practices are taken as the main objects of analysis in this approach, a specific definition of social practice is often lacking, which also makes it difficult to understand what specifically is meant with combination of practices. To create some clarity on these issues, we build on the work of Schatzki, who defines social practices as “open spatial-temporal manifolds of activity organized by understandings, rules, and teleoaffective structures, where a teleoaffective structure encompasses emotions and end-task-action combinations that are enjoined of or acceptable to participants”

¹ Our illustrative case study fits within the category of “community based social innovations”, in the typology of process dynamics created by Rehfeld et al. (2018).

(Schatzki 2016, p. 5). In Schatzki's view, social practices are inextricably intertwined with *material arrangements*, which he defines as "interconnected human bodies, organisms, artifacts, and things" (Schatzki 2016, p.5; also see Schatzki 2002). How entities in arrangements relate, what positions they occupy, and what meanings they have to each other is shaped by practices, and at the same time prefigures and channels practices (Schatzki 2016).

2.2 Social innovations as interventions in chains of action

Although practices and arrangements are thus inseparable, the definition of social innovations as "new combinations of practices" (Howaldt and Hochgerner 2018) draws attention primarily to (changes in) relations between practices. There are numerous ways in which practices can relate (see Schatzki 2002; 2005; 2006; 2010; 2016), but in this paper we draw attention primarily to *chains of action* (Schatzki 2010; 2016). Chains of action are formed by causal relationships between activities, of which Schatzki (2002) distinguishes two types. First, a causal relationship exists when the action of entity *makes* something *happen*, where the thing that happens, as it were, has no choice in the matter. Second, a causal relationship exists when the action(s) of one entity *lead into* the action(s) of another entity (although an entity may also respond to his/her own actions). In this case, the second action in the causal relationships is a *response*, and the entity that performs the response usually can respond in multiple ways. Chains of action are formed by actions that are linked to each other through these causal relationships. Since the actions of which chains of action are composed are also 'moments' in the performance of practices (Schatzki 2002), chains of action can be understood to link practices *via* these causal relationships. From this perspective social innovations, defined as the intentional creation of new combinations of practices, can be understood as interventions in these chains of actions.

For example, imagine an innovation that targets the way in which people provide food for their family. A possible chain of action in this context is one in which people travel (transportation practices) to the shop to do groceries (buying practices), travel back home (transportation practices), possibly temporarily store the food (storage / preservation practices), and eventually take the food out to prepare a meal (cooking practices). One might intervene in this chain of action by replacing the buying of food with growing food at home. Another possibility would be to stimulate people to get their food delivered, allowing people to buy their food from home, and then food delivered to multiple families in a single trip. Both examples imply significant changes in the chains of action that unfold, and in the types and organisation of the practices that make up these chains of action. As discussed previously, these interventions also necessarily entail changes in the arrangements to which practices are tied. For example, growing food at home requires particular tools, it requires land to grow on, and the kinds of food stuffs produced are likely to be different from

those that can be bought from the store. In addition, since there is no longer a need to go to the store, it also changes the way that the person growing the food relates to that store, and to the people that work in it, and etcetera.

2.3 The process of social innovation as chains of action

The foregoing shows how a Schatzkian social practice perspective can be used to conceptualise outcomes of social innovation in terms of chains of action and arrangements. However, our main interest in this paper is in the *process* of social innovation itself, based on the argument that *social innovation itself consists out of chains of action that transpire amid arrangements that shape, and are shaped by these chains of action*. This approach is in agreement with the view that social innovations are “ensemble performances, requiring interaction between many actors” (Howaldt and Hochgerner 2008, p. 21), but it more explicitly asks what these performances are, and what interactions between actors this entails. More precisely, the main questions become (1) what (kinds of) practices social innovation consists out of (what are typical innovation practices?), (2) how these practices are linked into chains of action (what are typical innovation dynamics?), and (3) how are these practices related to (changes in) arrangements with which they hang together (with what contextual conditions are these dynamics associated?).

The combined focus on practices and arrangements in the study of how social innovation unfolds is also consistent with the view that social innovations require reflection on social relationship structures in addition to social practices (also see Howaldt and Schwarz 2010; Avelino et al. 2015; 2018). Although our adapted conceptualisation of social innovation draws attention primarily to Howaldt and Hochgerner’s (2018) *process dynamics* dimension of social innovation, other dimensions, such as *governance, networks and actors* and *resources, capabilities and constraints* are to some extent factored in through the concept of arrangements.

In the next chapter we operationalise our approach to social innovation as chains of social action, and we discuss various methods and techniques that can be used to study social innovation processes in depth.

3 Using graph-theoretical methods to study social innovations

3.1 Introduction to the methods

As discussed in the introduction, the main aim of our paper is to introduce and demonstrate a methodology that enables the systematic, in-depth study of social innovation processes. Our methodology makes use of various graph-theoretical methods and techniques, which we discuss in more detail here. We start with a

general overview of the methodology (this section), followed by a discussion of the type of data used in our methodology, including how data are structured and stored (section 3.2). We then discuss the different qualitative coding procedures that we use (section 3.3), followed by introductions into different ways in which we model and further analyse the coded data using graph-theoretical tools, including event graphs and event hierarchy graphs (section 3.4), occurrence graphs (section 3.5), and network graphs (3.6).

The methodology presented here was developed in collaboration between a handful of researchers (including the authors) over a period of several years. We have applied this methodology (or earlier versions of it) in studies of collaboration on industrial symbiosis (Spekkink 2013; 2015; 2016; Boons et al. 2014; Spekkink and Boons 2016), studies of durability of Chinese circular economy policies (Jiao and Boons 2017), and in a study of the evolution of environmental policy in the Dutch chemical sector (Boons and Spekkink 2015). The methodology takes inspiration primarily from approaches developed in sociology (Abbott 2001; Abell 1987; Heise 1991) and organisational sciences (Langley 1991; Poole et al. 2000; Van de Ven and Poole 1990). A defining characteristic of our approach is that all analysis ultimately make use of qualitative descriptions of events (see section 3.2), where the specific events focused upon will depend on the research questions asked, and the theoretical perspective that is chosen.

These event data can be coded in multiple ways, using qualitative coding procedures (see section 3.3), which prepares the data for different graph-theoretical approaches to modelling, analysing and/or visualising the data (sections 3.4 to 3.6). The insights derived from the last step are then synthesised in a narrative, where we bring together insights gained from the different analyses, and also qualify these further based on the underlying qualitative data. An overview of this approach is offered in figure 1.

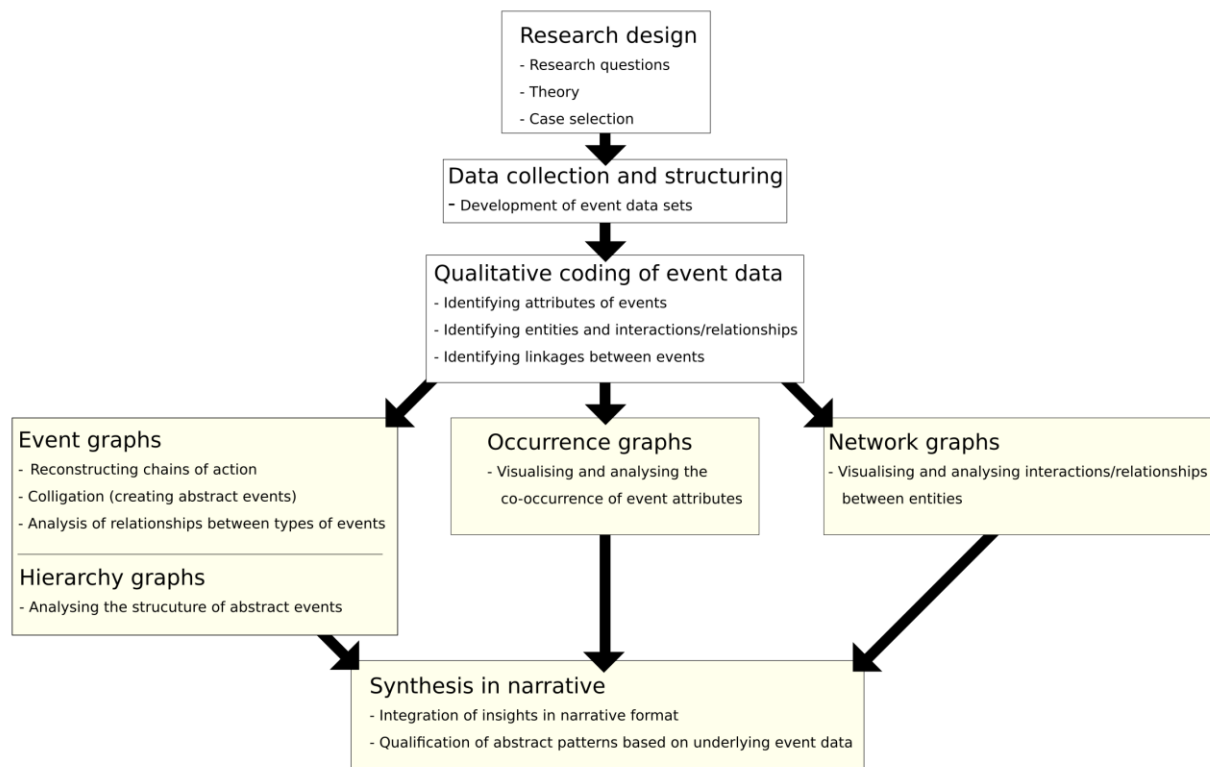


Figure 1. Overview of steps taken in methodology.

During the past months, we have developed a software package, called Qualitative Social Process Analysis (Q-SoPrA²), which facilitates most of the steps of the methodology. The details of the software are discussed in a separate paper.

3.2 Event data

As mentioned in the introductory section, the methods included in our methodology all ultimately make use of qualitative descriptions of events. More precisely, we make a distinction between *incidents* as the data points we include in our data sets, and *events* theoretical constructs for which our incidents serve as indicators. This approach, which was invented during the Minnesota Innovation Research Programme (Van de Ven and Poole 1990; Poole et al. 2000), involves the creation of chronologically ordered data sets of incidents, which in our case³ consist out of (1) a qualitative description of an occurrence (usually activities), (2) an indication of the timing of the occurrence, (3) and an indication of the source of data. In addition, if available, we typically include (4) the fragments of ‘raw data’ from interviews and/or documents from which we derived the incident. This allows us to keep sight of the incident as

² The software is still in development and not yet publicly available. A public release of the software is planned for this year.

³ Our definition is a slightly adapted version of the original definition by Van de Ven and Poole (1990).

it was originally described in our sources. Finally, (5) we occasionally write memos that we include with incidents to record any thoughts that might be relevant during analysis and interpretation of the results of analysis. We record these incidents in chronologically ordered datasets. Q-SoPrA facilitates in this by providing an interface where incident data can be entered, using the format described above (see figure 2). These data are stored in an sqlite database⁴.

In the applications of our approach so far, we have relied almost entirely on archived sources of data, such as various types of documents that have been produced by people involved in the process of interest, news archives (e.g., through the LexisNexis database), and web pages (including web pages retrieved through the Internet Archive project⁵). Archived sources are typically more reliable sources of information when studying a process that started and/or came to its conclusion a longer period of time ago, since retrospective accounts typically suffer from hindsight bias and ex-post rationalisation. However, we have found it useful to discuss the reconstructions we make based on archived sources with people that were closely involved in the process of interest (cf. Roth and Kleiner 1995), since the availability of our reconstruction helps these people to remember how things happened (thus, slightly reducing the effect of bias), and gives an opportunity for them to provide additional context to the observations made.

What specific data one should collect for a process study indeed depends, in the first place, on the research questions asked. Two basic possibilities are (1) to take an outcome event and from there trace other sequences events that led up to this outcome, and (2) to take a particular event as a starting point, and follow other sequences events that came out of this starting point (Boons et al. 2014). The latter approach is the one taken in the illustrative case study discussed in chapter 4, where the starting point is the establishment of a community sustainability initiative in the village of Staveley. In both approaches, the boundaries of the cases are set primarily throughout the data collection process, through an approach that can be understood as a form of progressive contextualisation (Vayda 1983). In this approach, one starts with a small set of incidents, and then progressively expands the boundaries of the case by repeatedly putting incidents in their wider context.

4 <https://www.sqlite.org/index.html>

5 <https://archive.org/>

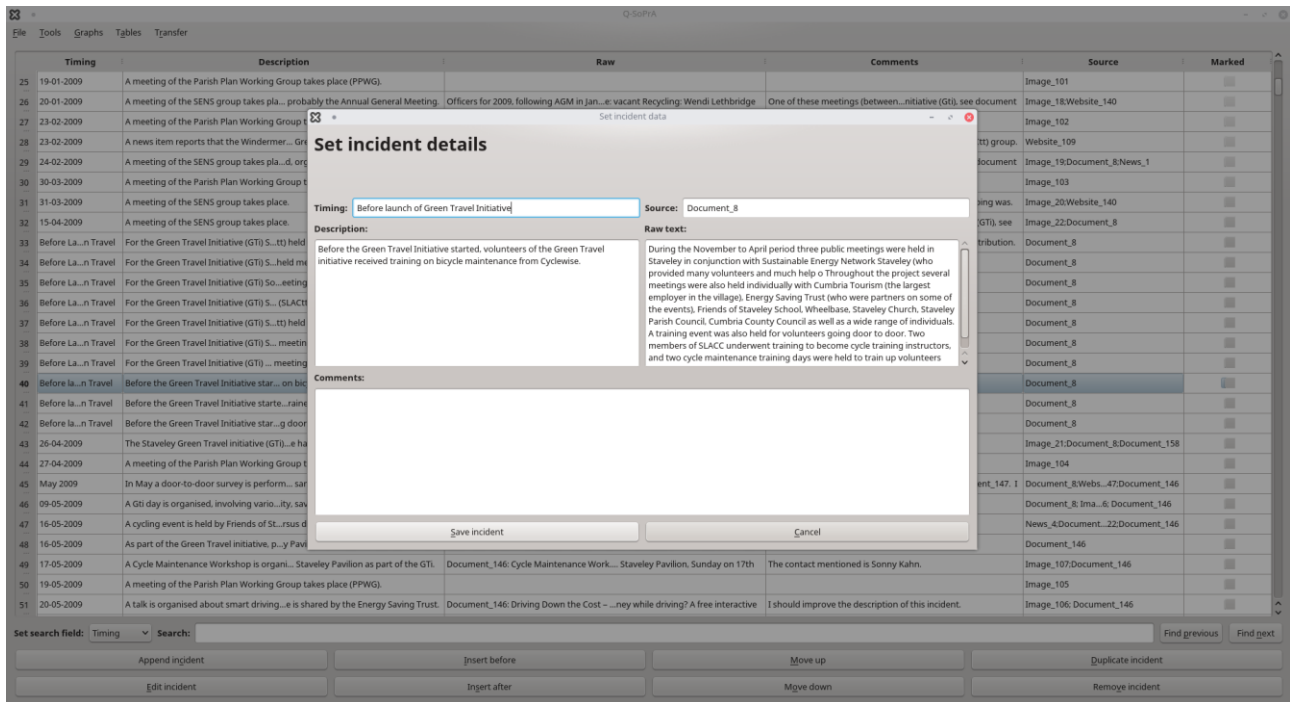


Figure 2. Entering data into the data interface of Q-SoPrA.

Once an event data set has been created, the next step is to code the event data, which is the topic of the next section. Although figure 2 visualises these steps as sequential, in practice, data collection is likely to continue throughout the research process, sometimes even until the relatively late stages.

3.3 Coding the event datasets

The next step in the application of our approach is the coding of data. This is an important step for the interpretation of the data in itself, but it is also a step that is required if one wants to create event graphs, occurrence graphs and/or network graphs. There are three types of qualitative coding that we distinguish in our approach:

1. Coding of incident attributes: This is similar to the qualitative coding of interviews and documents, with the main difference being that codes are assigned to incidents rather than fragments of interviews/documents.
2. Coding of relationships/interactions: In this approach we use incidents as indicators for the occurrence of interactions or relationships between entities (e.g., two actors that are communicating with each other, actors meeting at a certain place). These interactions/relationships are assigned to incidents *as if* they are attributes.
3. Coding of linkages between events: We also approach the identification of linkages between events as a qualitative coding problem. This approach

requires the researcher to first define a type of linkage, and to then decide for all pairs of events in the data set whether or not they are related to each other through such a linkage. For example, in our illustrative case study (chapter 4) we reconstructed a social innovation process in terms of *chains of action*, formed by activities that occur *in response to*⁶ each other. We thus defined a linkage “responds to” and coded the data set accordingly.

In our illustrative case study of social innovation (chapter 4), our aim is to reconstruct the chains of action through which the social innovation process unfolds. This requires us to (1) identify the actions that compose the chains, and (2) identify which actions occurred in response to each other. We used the coding facilities provided in Q-SoPrA for both steps. For the first step we assigned attributes to our incidents to classify our incidents into different types of activities. In this case, we used an approach similar to the one used in grounded coding (Corbin and Strauss 1990), where we defined types of activities ‘on the fly’, and adapted our definitions and coding based on repeated comparisons of our codes and the incidents these were assigned to. We also grouped our types of activities into hierarchies. For example, in addition to defining the activity “Meeting”, we also defined different types of meetings that serve as sub-category of the category “Meeting”.

A second step that we take is to identify interactions / relationships that are indicated by our incident data. Relationships consist out of a relationship type (which can be directed or undirected depending on its definition), and two entities that enter into this type of relationship with each other (e.g., *organisation X* -[organises]→ *activity Y*). The entities can also be assigned attributes, for example to identify different types of entities (e.g., person, organisation, place), or to define qualities of the entities (e.g., geographical coordinates for places). After defining the relationships, we walk through the event dataset and assign relationships to those incidents that indicate that the relationship exists. This gives us the ingredients for the creation of network graph visualisations (see section 3.6).

For the third step we used an “assisted coding” mode provided in Q-SoPrA, which aids the user in deciding which pairs of incidents should be considered for a linkage, similar to a procedure that is used on the Event Structure Analysis (ESA) software created by David Heise (1991). In this mode, the user is walked through pairs of incidents that can be considered for a linkage (where one incident describes an activity that occurred in response to the other activity), and pairs of incidents that are already indirectly connected to each other are skipped. In effect, this means that we assume that a response to a

6 As we explain further in chapter 4, we thus limited our analysis to just one type of causal relationship distinguished by Schatzki (2002).

given action is also an indirect response to other actions in the chains that the first action is connected to; connecting the actions both directly and indirectly thus leads to redundant linkages.

After taking these steps, we have the information we need to the various types of graphs that we discuss in the following sections.

3.4 Event Graphs and hierarchy graphs

One of the graph-theoretical tools included in our methodology is the *event graph*. The ideas underlying event graphs were inspired primarily by Abell's Comparative Narratives (Abell 1984; 1987; 1993; but also see Heise 1991). Abell visualised social processes as directed a-cyclic graphs, where the nodes represent actions, and the arcs represent causal relationships between these actions. Event graphs are essentially a generalisation of this idea, in the sense that types of events (the nodes of event graphs) are not necessarily restricted to actions, and also in the sense that event graphs can be created based on different types of linkages between events, whereas Abell focused exclusively on so-called intentional syllogisms (see Abell 1984; 1987; von Wright 1971). In addition, we also use event graphs to visualise how different types of events are related to each other, which we discuss in more detail below.

In an event graph, our incidents are laid out from left to right, in order of occurrence. We then plot the linkages between incidents that we have identified during qualitative coding, thereby generating a directed, a-cyclic graph that shows what incidents occurred when, and how they are related. If attributes have also been assigned to the incidents, it is possible to typify events in the event graph using these attributes (see figure 3).

As discussed in the previous chapter, for our illustrative case study we identified linkages that represent how different incidents occurred *in response to* each other, and we assigned attributes to incidents to identify what types of *activities* they represent. The event graph that we create from these ingredients thus serves as a visual representation of the chains of action through which social innovation unfolded in our case study.

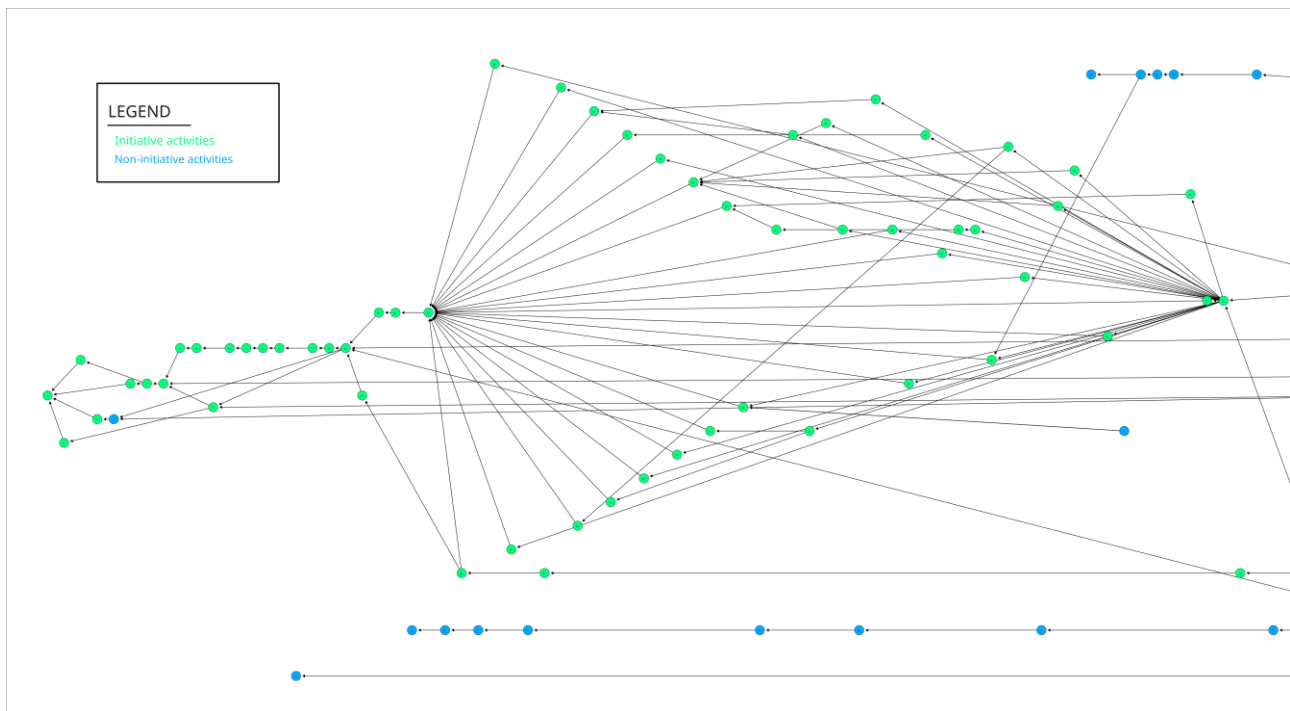


Figure 3. Part of a ‘raw’ event graph (*i.e.*, without abstracted events) showing initiative and non-initiative activities, and which activities occurred in response to what others.

The work of Abell (1984; 1987; 1993) was also a major source of inspiration for thinking about how the basic network of incidents represented in an event graph can be colligated into events. Abbott (1990) describes colligation as “making up a basic theoretical “story” of conceptual events and linking them together” (p. 381). As this description suggests, the identification of linkages between incidents can be understood as part of this process, but colligation also involves the translation of ‘raw’ incidents into theoretical events. Abell developed a procedure in which these two steps interact: He formulated a set of rules for translating a narrative graph (A) into a more abstract version of that graph (B), where the actions of graph A are grouped together into more abstract units in graph B. Abell’s reasoning is that actions should only be allowed to be grouped into more abstract actions if they can be considered as ‘being part of doing the same thing.’ For him, the syntactic representation of this principle is actions being connected by *paths* or, using less severe constraints, *semi-paths*. Abell formulated rules that help to ensure that these constraints are met during the process of abstraction (see Abell 1984; 1987; 1993 for details). In Q-SoPrA, Abell’s method of abstraction has been implemented, allowing us to create (abstract) events from our initial set of incidents. Figure 3 shows an example of (part of) an abstract event graph created with Q-SoPrA⁷. It is worth noting that Abell’s thinking about more and less abstract

⁷ Whether or not using this method of abstraction is appropriate for various uses cases depends on a few things, including the type of linkage defined, the exact interpretation of what less versus more abstract events stand for, the availability and granularity of data,

actions has strong parallels with that of Schatzki (2002), which is largely due to shared sources of inspiration (Danto 1965; Von Wright 1971). Schatzki (2002) proposes that basic activities can usually be parsed into tasks and/or projects, which can themselves be parsed into practices. In this respect, Abell's method for abstracting narratives is consistent with Schatzki's practice perspective at least in spirit. In our illustrative case study, we used Abell's method of abstraction to colligate our raw stream of incidents into more abstract events, allowing us to create an overview (or storyline) that is easier to interpret, but preserves the basic structure of the data as they were originally coded. In this case, we used Abell's semi-path constraints, primarily because of the sometimes low granularity of our data, which sometimes made it difficult to map out chains of action in detail.

When abstracting events, information on the details of the events to some extent get lost. For example, after abstracting multiple incidents into a single abstract event, what we see in the event graph is just the abstract event, and the incidents are no longer visible. However, there may details to these incidents that are relevant to our analysis. For example, we may have a group of incidents that together represent activities that were carried out as part of a single project. We may group these into a single abstract event (the project), but we may then still want to inspect these incidents to understand what types of activities the project consists of. For this purpose, we make use of event hierarchy graphs, which show which incidents (or abstract events, if abstraction was applied multiple times) are grouped in a given abstract event (see figure 5).

It may be useful to create multiple event graphs that vary in (1) their degree of abstraction, (2) the event attributes being explored, and/or (3) the specific episode of the process that they explore. For the illustrative case study we relied mostly on a single abstract event graph. We also added various annotations to the event graph as aids in the interpretation of the chains of action that unfolded in our case (see figure 4 for examples of annotations). By adding these annotations, event graphs begin to resemble visual maps in other process studies (Langley 1999). With these hierarchy graphs, we can thus create separate visualisations of abstract events, which we can use as additional aides in the analysis. Q-SoPrA automatically generates event hierarchies when an abstract event is created (see figure 4 for an example).

and, arguably, the extent to which the research subscribes to Abell's assumption that actions that are 'part of doing the same thing' are always connected by (semi-)paths.

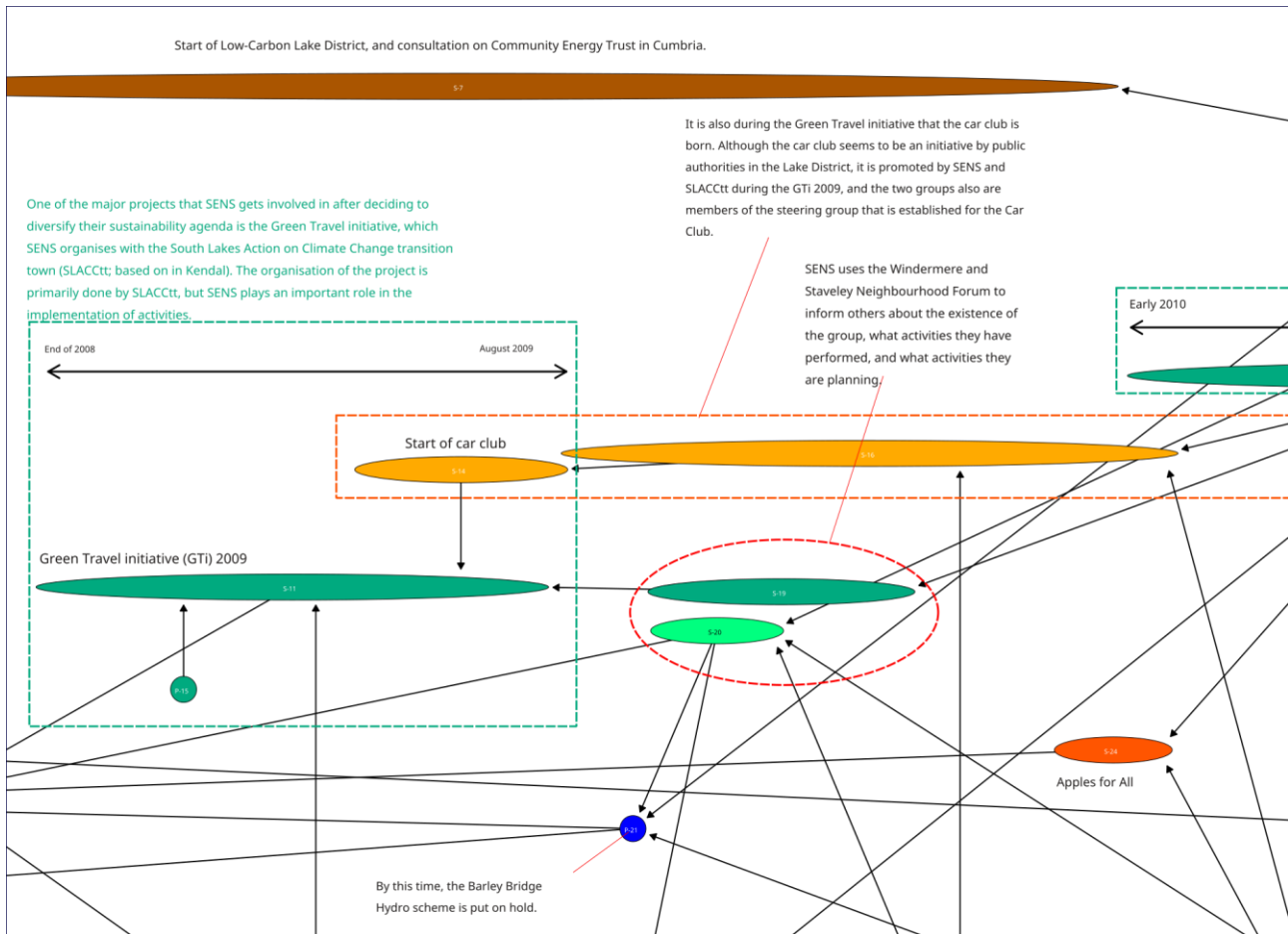


Figure 3. Part of an annotated event graph with abstract events, focusing on projects and which projects are related through chains of action.

One of our interests in illustrative case study is what kinds of activities are part of the chains of actions through which social innovation unfolds. One way of studying this is to look at the event graphs, and qualify the events with the attributes that we assigned to them, focusing on those attributes that identify the activities that our events represent. However, it occasionally happens that we recorded multiple types of activities for one incident⁸, and this problem is compounded once we abstract activities into larger events. To study what activities co-occur in incidents and events, we have a more suitable instrument, which is the occurrence graph.

⁸ In principle, it would be possible to break up our incidents in even smaller chunks, and try to capture each activity individually, but this means that the number of incidents to be considered would explode, and depending on the resolution of the data, it is often difficult to know specifically how different activities described in one incident are linked to each other.

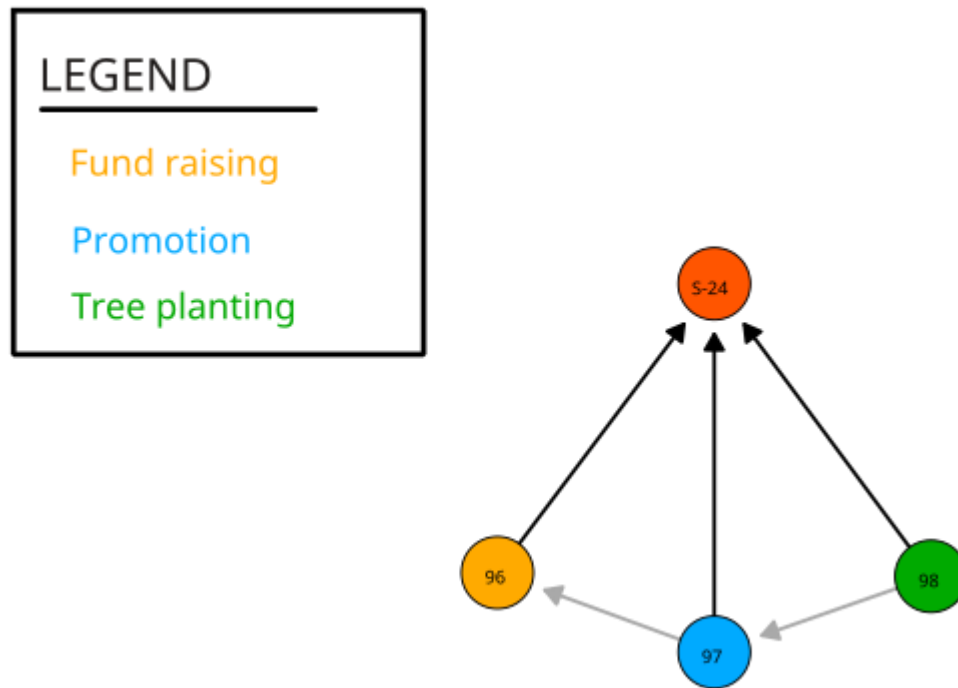


Figure 4. Hierarchy graph of an abstract event, showing the smaller events from which it is composed, and the original linkages between them (grey arcs).

3.5 Occurrence graphs

The idea for occurrence graphs is based entirely on the idea of Bi-Dynamic Line Graphs (BDLGs) as introduced by Brocatelli et al. (2016; Also see Everett et al. 2018). In our approach, we use them to show at what points in a social process attributes of incidents/events (co-)occur. In occurrence graphs, each node represents the occurrence of a particular attribute in an incident (or event). Like in event graphs, these nodes are laid out from left to right, based on the order of occurrence of the incidents/events to which they were assigned (see figure 5 for an example). Subsequent occurrences of the same attribute are connected by edges. The paths that these edges form thus allow us to trace attributes throughout the process. By plotting multiple attributes in a single graph we can also study co-occurrence; if two attributes occur in the same incident/event, we can see this based on their shared position on the x-axis.

Occurrence graphs are thus very useful to study (1) when certain types of activities tend to occur in a process, and (2) what (types of) activities tend to occur together. In combination with event graphs, they can tell us a lot about different types of activities relate to each other, and how this evolves over time.

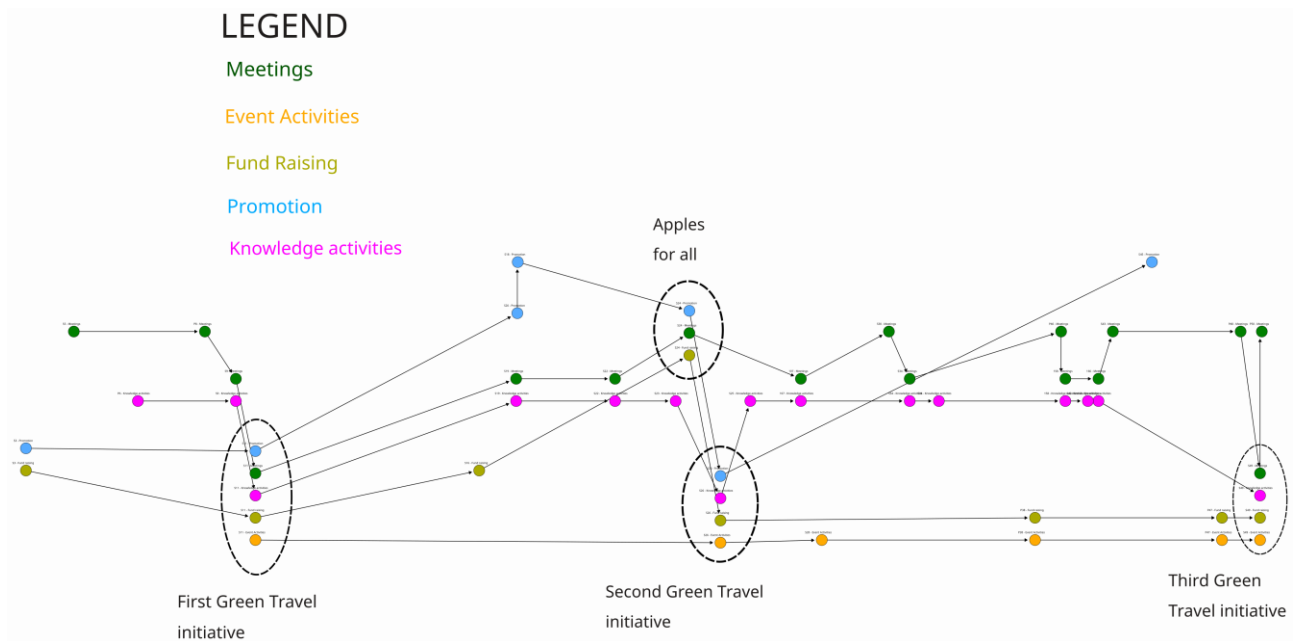


Figure 5. Example of occurrence graph, used to visualise the co-occurrence of some types of activities in various projects.

Q-SoPrA also offers the possibility to match occurrence graphs to event graphs. This means that incidents that were grouped together in events will be considered as one event. This also means that the attributes that were assigned to them are considered to be co-occurrent (in the abstract event).

3.6 Network graphs

There is one more type of graphs in our toolkit. As we discussed in our conceptual chapter (2), we are not just interested in studying the chains of action through which social innovations unfold, but also in the (changing) arrangements amid which these chains transpire. As discussed in section 3.3, we identify interactions/relationships that are indicated by incidents during the qualitative coding process. We use network graphs to visualise these relationships, and thereby map (changes in) the arrangements associated with social innovation processes. In our network graphs, the nodes represent entities (e.g., people, organisations, projects), and the edges represent relationships between entities. In Q-SoPrA, it is possible to visualise multiple types of relationships in one graph, and to identify different types of entities based on their attributes. By identifying different types of entities, we define modes in the network, which also allows us to perform multi-mode transformations. For example, we can transform a network that describes what actors (mode one) organise what projects (mode two) into a network that describes which actors co-organise activities (see figure 6). It is thus possible to visualise the arrangements with graphs of different degrees of complexity. Since the relationships we identified are associated with incidents, it is also possible to filter the network graphs to only show relationships that were observed in

specific episodes of the process, providing a rudimentary way to study network dynamics. Finally, although Q-SoPrA does not currently support the calculating of network- or node-level metrics, the data can be exported for analysis with other software.

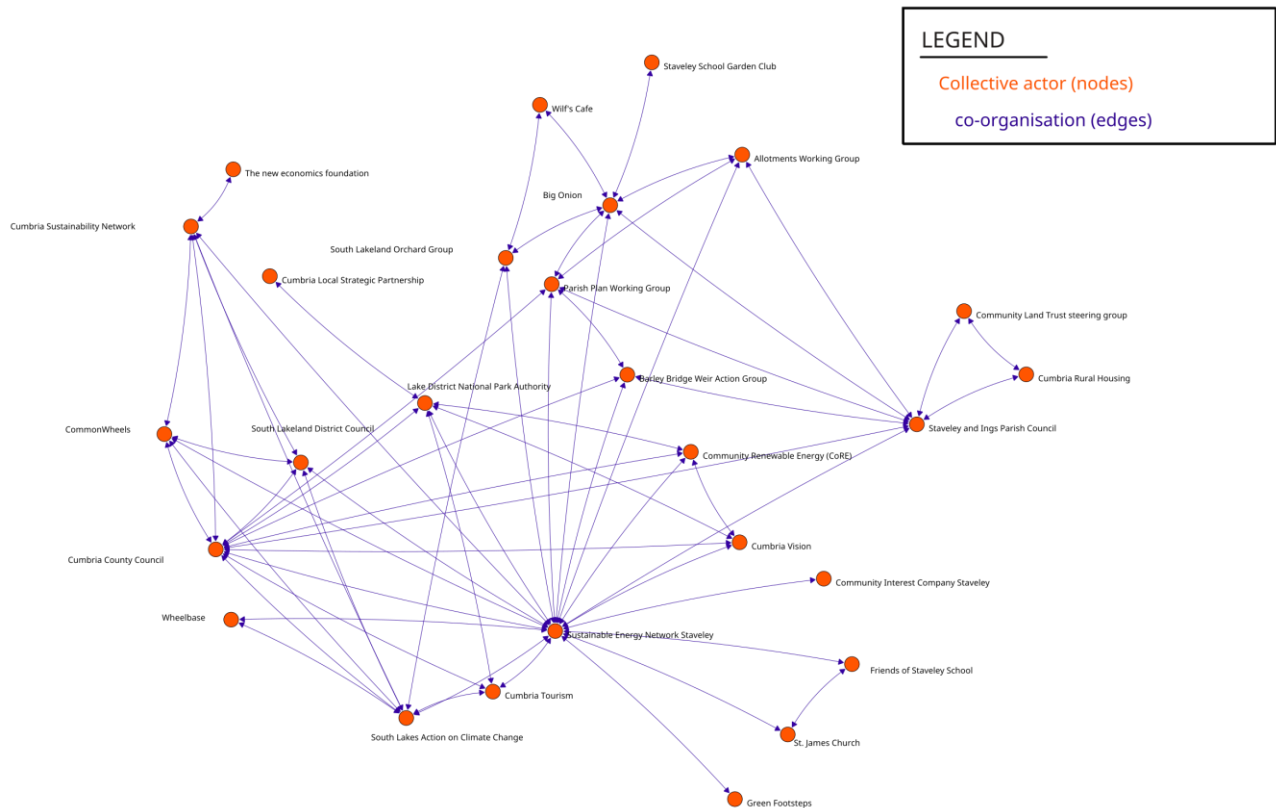


Figure 6. Example of network graph, showing which actors co-organise projects.

4 Illustrative case study: Community Sustainability in Staveley, UK

4.1 Introduction to the case study

In this chapter, we illustrate how our graph-theoretical tools can be used in the study of social innovation processes. For this purpose, we use observations from a case study of a social innovation process at the community level, focusing on a set of community sustainability initiatives that emerged and developed in Staveley, UK. The period of time covered by the study is from 2007 to 2016. The case study from which we draw our material was focused on the following research questions:

1. What new configurations of social practices (social innovations) are pursued by community sustainability initiatives in Staveley?
2. What other practices support the attempts of the initiatives to establish these new configurations of social practices?

3. How do these practices shape, and how are they shaped by changing arrangements of people, organisations, places and other entities?

In this paper, we do not provide in-depth answers to these questions⁹, but we illustrate some of the insights that we can derive from the different graph-theoretical tools discussed in the previous chapter. The approach we use for this is to present a summary narrative of the process, where we occasionally use graph visualisations for illustrative purposes.

4.2 The social innovation process in Staveley

As mentioned in the previous section, our illustrative study focuses on multiple community sustainability initiatives in Staveley. An annotated event graph that summarises the emergence and development of these initiatives is available online¹⁰, and a summarising table of the events visible in this graph is available in Appendix I. The initiatives in Staveley can, to some extent, all be traced back to an attempt by one person in Staveley to develop a hydro scheme at the Barley Bridge Weir in Staveley, at the River Kent (events P-1 to P-8). For this scheme, the initiator received some funding, which came with the condition that the initiator had to set up a larger group around the idea. The Sustainable Energy Network Staveley (SENS) was formed after a public meeting that was organised by the initiator by the end of 2007. Initially, this group focused on the hydro scheme project, and an initial feasibility study for this scheme was performed at this time. However, the group soon decided to adopt a wider sustainability agenda, which paved the way for many of the other activities that followed. The hydro scheme itself was also put on hold relatively early, due to difficulties in determining ownership of the weir.

Shortly after the decision was made to broaden the sustainability agenda, SENS played an active role in 3 Green Travel initiatives (GTi) that were organised in Staveley in 2009, 2010 and 2011. These initiatives were attempts to persuade people in Staveley to adopt (more) sustainable mobility practices, such as cycling and walking, commuting by bicycle instead of by car, joining a car club, making better use of public transport, and so on. The nearby South Lakes Action on Climate Change transition town (SLACctt; based in Kendal) took the lead in the organisation of these projects (arguably, SENS was more of a collaborator on these projects than an initiator, although some members of SENS are also members of SLACctt). The projects were organised in a fairly typical project-based way. The projects typically consisted out of several public events through which the initiatives tried to expose the public to sustainable mobility practices, including workshops, competitions, games, talks, out-door activities, demonstrations and etcetera. These activities were prepared through meetings

⁹ Also, many parts of the analysis still have to be done at the time of writing this paper.

¹⁰ See www.wouterspekkink.org/assets/images/Illustrative_Event_Graph.pdf

among the organisers, meetings with stakeholders, training of volunteers, and promotion of the project at various platforms. In addition, evaluations typically took place by the end of the projects. Figure 7 gives an overview of some of the activities that were performed as part of the 2009 GTi, and how they were performed.

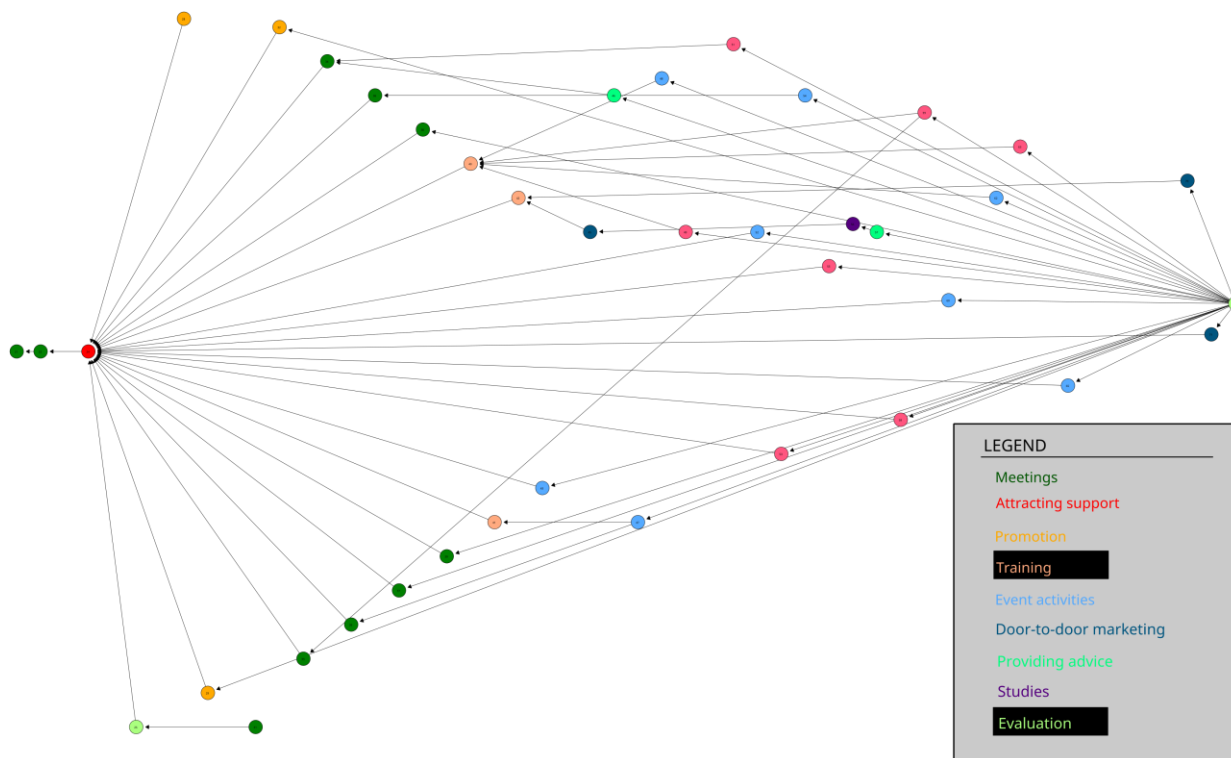


Figure 9. Activities in GTi 2009 (event s-10 in the overview event graph).

SENS generally did not organise their other activities in the same project-based way. One important exception is a project that was funded by the Local Energy Assessment Fund (LEAF), and which SENS carried out in the beginning of 2012, focused on energy saving-oriented project in Staveley (see figure 10).

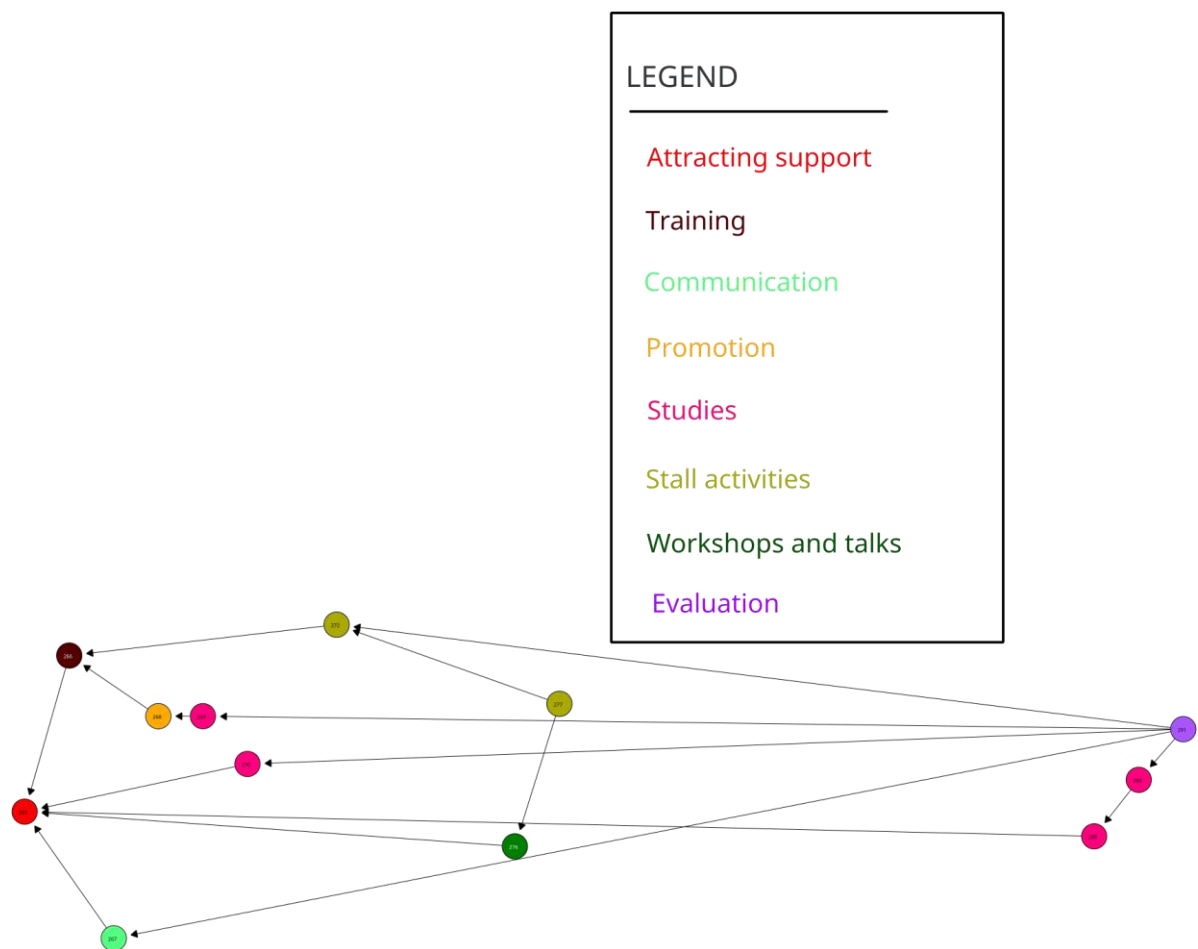


Figure 10. Event graph of LEAF-project (events S-70 and S-76 in the overview event graph).

In addition to the GTi projects, SENS also started some projects of their own in 2010, for which they mostly relied on local contacts that the group developed over time. A major theme in these other projects was local growing of food. For example, SENS started supporting the activities of the local School Garden Club, by providing manpower, and by helping with the organisation of events around the school garden. In addition, SENS was at the basis of an attempt to create new allotment spaces in Staveley, for which they approached the Parish Council of Staveley and Ings. Although members of SENS were invited into the Allotments Working Group that was formed to work on this project (also, the councillor that led the working group is a member of SENS and, later, Big Onion), the way that this project unfolded in the following years (until 2016) was determined primarily by the logic according to which the Parish Council works. At council meetings, the Allotments Working Group would report on their progress, and decisions would be made on how to proceed. The Allotments Working Group would then carry out agreed upon activities, which were then again evaluated at the

next council meeting (see figure 8 for an example). Thus, the pacing of this project was mostly determined by the pacing of the council meetings.

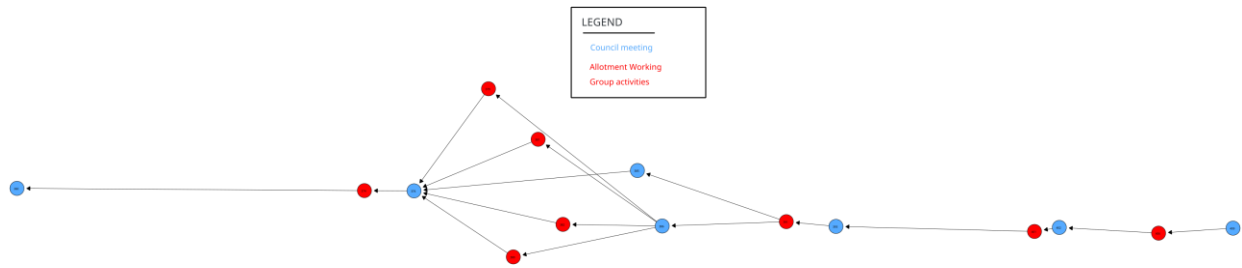


Figure 8. A small part of the sequence of activities in the allotments project.

SENS also had some longer term, less resource-intensive projects focused on energy use. For example, SENS made available smart meters (s-23), as well as contact information of installers of solar heating (S-25) for anyone interested. The group also attempted to set up a solar panels project, but decided to cancel the project after the national government decided to change feed-in tariffs (S-58).

In a way, the Barley Bridge Weir was also brought back on the agenda after a flood of the River Kent caused damage to the weir in November 2009. An action group was formed to promote the repair and preservation of the weir, which consisted partially out of people previously involved in the hydro scheme project, and partially out of ‘new’ members with slightly different motivations (i.e., unrelated to the ambition to develop a hydro scheme). Here too the approach used was primarily to mobilise the Parish Council to take action on the problem. Uncertainty on the ownership of the weir again led to a situation where relatively little was done in the end.

The food-oriented projects of SENS were quickly followed by the establishment of Big Onion, a stand-alone group that would focus on local production and consumption of food, through several long-term projects, as well as several types of annual events. Although Big Onion is a stand-alone initiative, there is significant overlap of membership between SENS and Big Onion (and the same goes for later stand-alone spin-offs), which is illustrated by the graph in figure 9. In its first year, Big Onion focused primarily on public planting, and the organisation of regular events where they would sell produce from several nearby farms. During these events there would typically also be informative talks to teach people skills they could use to grow and sell food locally. Similar talks would be organised throughout the following years, initially as part of Big Onion ‘Exchange’ events (events where people could bring home-grown produce to sell or to swap), and later also as part of Big Onion’s school garden project (Big Onion more or less took over the School Garden project from SENS, but also significantly expanded it, turning it into a long-term collaboration between Big

Onion and the School Garden Club). In addition, Big Onion started working together with the South Lakeland Orchard Group (SLOG) to organise the Staveley Apple Day, of which a first version was already organised by SLOG in 2010.

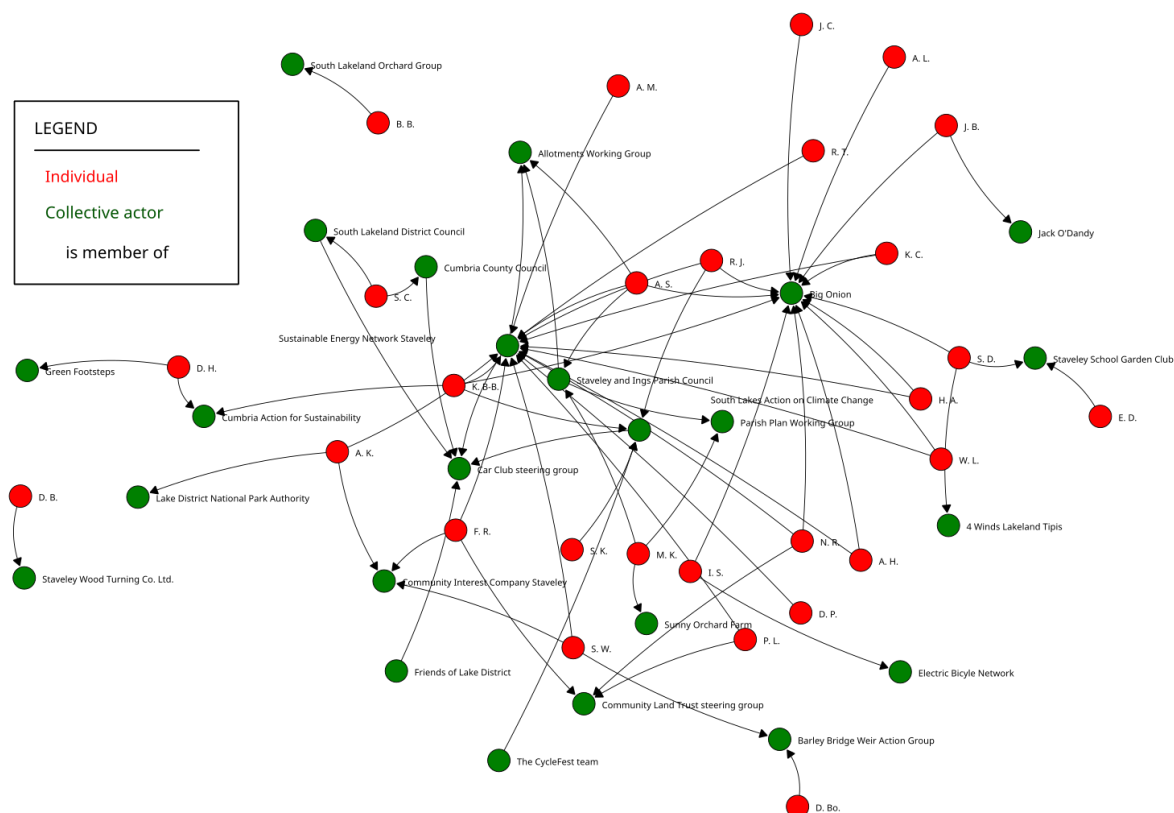


Figure 9. Aggregated network graph of membership relationship. The data on membership of people to various organisations is incomplete, but with this limited information we are still able to significant overlap in membership of individuals in organisations.

Although Big Onion became the primary platform for food-related initiatives in Staveley, SENS also developed a major food-related project, focused on the restoration of a Damson Orchard in Staveley. Products harvested from this orchard would later also be sold at the Big Onion stall.

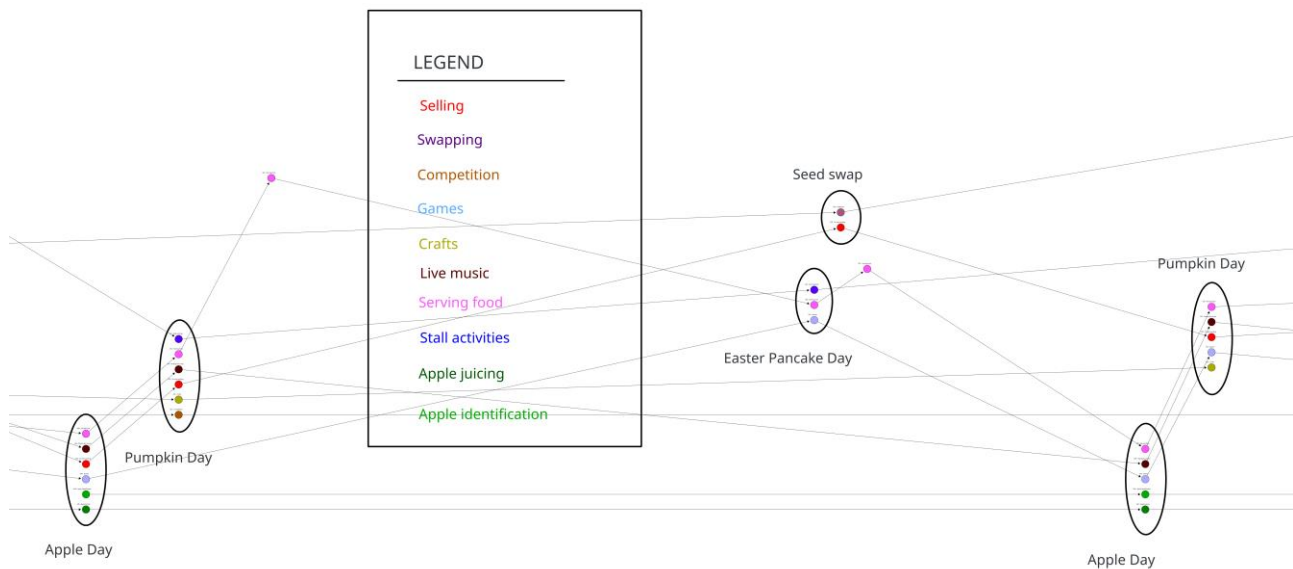


Figure 10. Occurrence graph showing co-occurring activities in some of Big Onion's regular events.

	1	2	3	4	5	6	7	8	9	10
1. On-site vending	46	14	5	5	3	6	7	4	2	1
2. Swapping	14	15	0	0	0	1	1	1	0	0
3. Competition	5	0	17	3	1	3	9	6	2	0
4. Games	5	0	3	11	2	7	7	2	4	2
5. Crafts	3	0	1	2	3	3	3	1	0	0
6. Playing live music	6	1	3	7	3	13	9	2	5	3
7. Serving food	7	1	9	7	3	9	25	5	2	2
8. Stall activities	4	1	6	2	1	2	5	14	2	0
9. Apple Juicing	2	0	2	4	0	5	2	2	8	3
10. Apple identification	1	0	0	2	0	3	2	0	3	3

Table 1. Co-occurrence matrix that aggregates the data in the occurrence graph of figure 10. The diagonal shows how often an activity occurs. The other cells show how often activities co-occur with another activity.

In 2013, two other spin-offs of SENS were set up, namely the Community Land Trust (CLT) steering group, and the Community Interest Company (CIC). Both initiatives followed a presentation on these forms of organisation by an external expert. The CLT focused on efforts to provide affordable housing in Staveley. The main activity carried out by the steering group was a Housing Needs Survey that it performed in collaboration with the Parish Council and with the Cumbria Rural Housing Trust. In addition, members were at the basis of discussions between several stakeholders on the development of joint visions on the future of Staveley.

The CIC became the new vehicle for SENS' hydro scheme project, which was quickly chosen as the primary focus for the CIC. The CIC performed some further exploratory work on this issue, and also organised a petition to measure popular support for the hydro scheme. However, within the case study period the CIC was not yet able to achieve concrete steps in the development of the hydro scheme. The last recorded activity in relation to the Barley Bridge Weir is a public consultation that was held by the Parish Council to gather opinions about the future of the weir. The consultation confirmed that there was popular support for repairing and preservation of the weir, but it is unclear what action would (or could) be taken, since issues around ownership were still not clarified.

Throughout the process as a whole, SENS and (to lesser extent) Big Onion would also organise regular meetings of members. These meetings were used to discuss various topics of interest to the groups, as well as to coordinate projects and events (some meetings were 'social get togethers'). Especially the annual general meetings are important in this, as these are events where the groups would generally reflect on their activities of the past year, and also decide how to proceed in the following year. In the overview event graph it can be seen that new projects were typically launched shortly after annual general meetings, illustrating their importance in determining how the initiatives progressed.

Throughout their existence, the initiatives worked together with numerous other local organisations, as well as organisations from the wider region. Figure 11 offers an aggregated overview of the activities organised by various actors in and around Staveley, and different types of support offered to these activities by other actors. Obviously, it is hard to read this aggregated graph, but it conveys the general idea that the activities of the initiatives typically involved different kinds of support from numerous other actors.

If we take the graph in figure 11, and focus only on the relationship that describes which actors organise what activities, we can perform a simple multi-mode transformation to reconstruct a network of co-organising actors, which is a bit easier to read (see figure 12). It gives us a picture of the local inter-organisational network that emerged as a result of the initiatives' development.

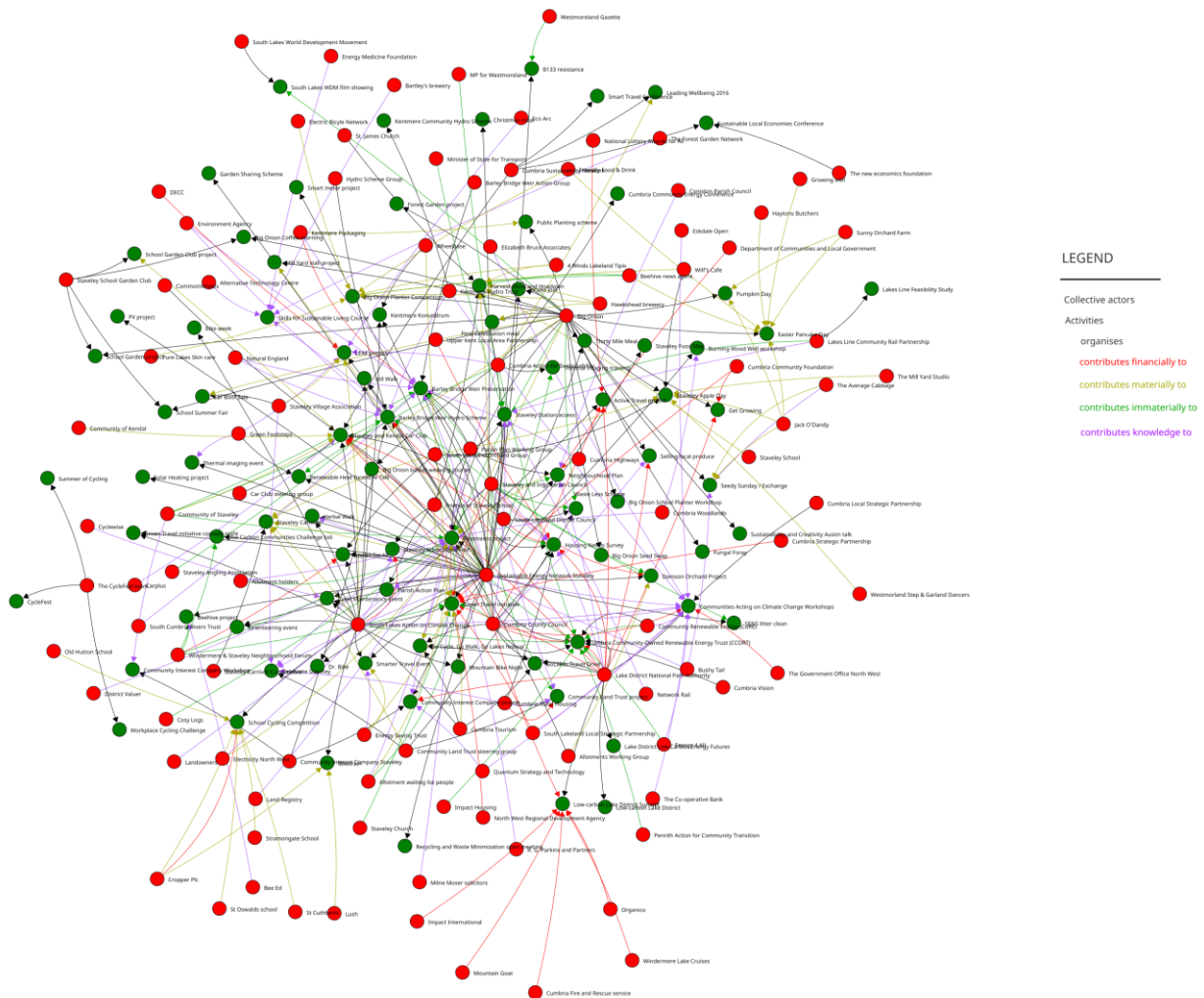


Figure 11. Network of actors that organise activities, and actors that support activities in various ways.

So what does all of this tell us about our research questions? With regard to the first question, we have observed that the initiatives in Staveley focused primarily on persuading people in the local community to adopt sustainable practices in various domains of everyday life, with the strongest emphasis on energy, food and mobility. What domains received most emphasis is partly a function of how the initiatives themselves evolved. The domain of energy was more or less at the basis of the formation of SENS, and it clearly remained an area of significant interest to SENS throughout the remainder of the process. Mobility received most emphasis in the period that SENS collaborated with SLACctt on the GTi projects, and although SENS was also at the basis of some food-oriented projects, activities in this domain were given even more momentum with the establishment of Big Onion. In all these activities, there was a relatively strong focus on teaching people in the community of Staveley the awareness, knowledge, skills, and, to some extent, instruments and

infrastructure required to save energy, travel in more sustainable ways, grow and buy food and other products locally, and so on.

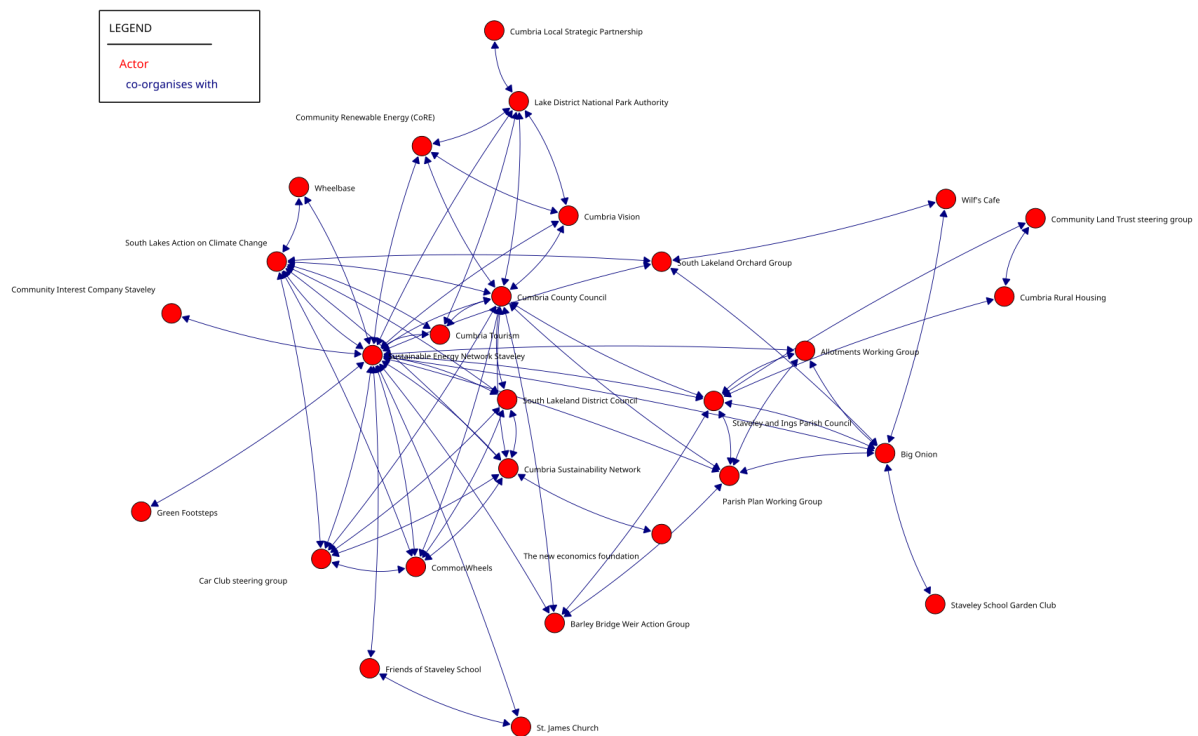


Figure 12. Network graph that describes which (collective) actors organised activities together throughout the studied process.

The practices that the initiatives used to support their attempts to change the everyday practices of people in the community of Staveley also evolved over time. This evolution is a function of various factors, such as the partners that the initiatives chose to work with, the available support (e.g., funding schemes often also prescribe certain ways of doing things), and the philosophies underlying the initiatives themselves (e.g., Big Onion used a different approach to organising their activities than SENS).

In terms of (changes in) arrangements, and how these influenced and were influenced by the unfolding chains of action, one crucial development has been what might be summarised as the development relational capacity. This indeed starts with the relationships that developed among the members of the various initiatives as they were formed, but it also involves relationships that were built up with other nearby community sustainability initiatives, with local businesses and non-for-profit organisations, and with local government and various supra-local government agencies. These relationships were built up through the activities carried out by the initiatives, but once established, they also facilitated activities that were carried out later on in the process

(hence the term relational capacity). To take one example, the Parish Council of Staveley and Ings became an important strategic partner for SENS in the early stages of development, and for many activities that SENS organised later on they strongly relied on their contacts with the Parish Council to get things going. The group would often work through the Parish Council, keep them informed, or receive some kind of support from the council for their activities. In addition, SENS, Big Onion, and their spin-off initiatives occasionally supported activities initiated by the Parish Council itself.

5 Discussion

Our aim in this paper was to offer an introduction to a graph-theoretical approach to studying social processes, and to demonstrate its usefulness in studying social innovations. In our conceptual discussion, We connected the idea of social innovations as new combinations of social practices to Schatzki' s concept of *chains of social action* that transpire amid *arrangements* of people, organisations, places, and other entities. We then offered an overview of our graph-theoretical approach to studying social processes, before offering some basic illustrative examples of the application of this approach, using empirical material from a case study of community sustainability initiatives in Staveley, the UK.

Although the illustrative examples offered in this paper are modest¹¹, we hope that they offer some initial insights in how our graph-theoretical approach can be used to support a detailed qualitative analysis of complex social processes. With event graphs, we are able to reconstruct complex sequences of events, and show how these are interrelated. We can also use them to show how different activities by the same initiatives are also structured in different ways, depending on the specific temporal and social contexts in which they unfold. With occurrence graphs, we can study different qualities of events, and how these different qualities (co-)occur over time in events. With network graphs we can study the arrangements amid which the events unfold.

There are several things that our illustrations have not demonstrated. First, it is possible to use our approach to abstracting events to develop a more sophisticated typology of events. In our example, we have simply abstracted incidents to events to be able to create a general overview. In a more rigorous analysis, the process of abstraction would entail more attention for the question what types of events we reconstruct in this way, and if these different types of abstract events tend to consist out of the same, or out of different component activities. Second, after creating an event graph, it is also possible to make a deeper analysis of how different types of events in social innovation processes tend to be related (e.g., are there certain types of events that tend

¹¹ The analysis of the presented case is still in progress.

to occur in response to each other? Are there particular chains of events that we observe more often than others?), which also requires closer attention to identifying the types of events we create during the process of abstraction.

Another thing our examples do not yet illustrate is how the network graphs can be used to show changes in arrangements associated with social innovations. The network graphs that we used in our examples aggregate all incident data into a single graph, but it is possible to split them into graphs that focus on particular episodes. This makes it possible to begin an analysis of how arrangements change over time, and how this is related to the unfolding events of social innovation. In addition, co-occurrence graphs could then be used to gather additional information on what entities tend to appear together in events, and how their co-occurrence evolves over time, offering another perspective on the way that arrangements evolve.

References

- Abbott, A. (1990). A Primer on Sequence Methods. *Organization Science*, 1(4), 375-392.
- Abbott, A. (2001). *Time matters: on theory and method*. Chicago: University of Chicago Press.
- Abell, P. (1984). Comparative Narratives: Some Rules for the Study of Action. *Journal for the Theory of Social Behaviour*, 14(3), 309-331.
- Abell, P. (1987). The syntax of social life: the theory and method of comparative narratives. Oxford, Angleterre: Clarendon.
- Abell, P. (1993). Some aspects of narrative method. *The Journal of Mathematical Sociology*, 18(2-3), 93-134.
- Adams, D., & Hess, M. (2010). Social Innovation and Why it has Policy Significance. *Economic and Labour Relations Review*, 21(2), 139-155.
- Avelino, F., Wittmayer, J. M., Pel, B., Weaver, P., Dumitru, A., Haxeltine, A., ... O' Riordan, T. (2015). Transformative social innovation and (dis)empowerment. *Technological Forecasting and Social Change*, (May 2015), 0-1.
- Avelino, F., & Wittmayer, J. (2018). Transformative Social Innovation and its Multi-Actor Nature. In J. Howaldt, C. Kaletka, A. Schröder, & M. Zirngiebl (Eds.), *Atlas of Social Innovation: New Practices for a Better Future2* (pp. 47-50). Dortmund: Technische Universität Dortmund, ZWE Sozialforschungsstelle.
- Ayob, N., Teasdale, S., & Fagan, K. (2016). How social innovation “Came to Be” : Tracing the evolution of a contested concept. *Journal of Social Policy*, 45(4), 635-653.
- Broccatelli, C., Everett, M., & Koskinen, J. (2016). Temporal dynamics in covert networks. *Methodological Innovations*, 9(0), 1-14.
- Boons, F.A.A. and Spekkink, W.A.H. (2015). Internalizing environmental responsibility in the Dutch chemical industry. Research report. Dutch Scientific Council for Government Policy.
- Boons, F., Spekkink, W., & Jiao, W. (2014). A Process Perspective on Industrial Symbiosis: Theory, Methodology, and Application. *Journal of Industrial Ecology*, 18(3), 341-355.
- Broccatelli, C., Everett, M., & Koskinen, J. (2016). Temporal dynamics in covert networks. *Methodological Innovations*, 9(0), 1-14.
- Cajaiba-Santana, G. (2014). Social innovation: Moving the field forward. A conceptual framework. *Technological Forecasting and Social Change*, 82(1), 42-51.
- Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology*, 13(1), 3-21.
- Danto, A. C. (1965). Basic Actions. *American Philosophical Quarterly*, 2(2), 141-148.
- Dawson, P., & Daniel, L. (2010). Understanding social innovation: a provisional framework. *International Journal of Technology Management*, 51(1), 9.

- Everett, M., Broccatelli, C., Borgatti, S. P. & Koskinen, J. (2018). Measuring knowledge and experience in two mode temporal networks. *Social Networks* 55, 63-73.
- Franz, H.W., Hochgerner, J., Howaldt, J., (2012). Challenge Social Innovation: Potentials for Business. Social Entrepreneurship, Welfare and Civil Society, Springer, Berlin/ Heidelberg.
- Heise, D. (1991). Event Structure Analysis: A qualitative model of quantitative research. In N. Fielding & R. Lee (Eds.), *Using Computers in Qualitative Research* (pp. 136-163). Newbury Park: Sage Publications.
- Hochgerner, J. (2011). The Analysis of Social Innovations as Social Practice. Originally published in German language under the title "Die analyse sozialer innovationen als gesellschaftliche praxis". In *Zentrum für Soziale Innovation* (ed.). *Pendeln Zwischen Wissenschaft Und Praxis*, 173-189.
- Howaldt, J. (2018). The Unanswered Question: Social Innovation and Social Change; How social practice theories contribute to a better understanding of processes of social change and why we have to focus on the embeddedness of any innovation in a dense network of innovation s. In J. Howaldt, C. Kaletka, A. Schröder, & M. Zirngiebl (Eds.), *Atlas of Social Innovation: New Practices for a Better Future* (pp. 88-92). Dortmund: Technische Universität Dortmund, ZWE Sozialforschungsstelle.
- Howaldt, J., & Hochgerner, J. (2018). Desperately Seeking: A Shared Understanding of Social Innovation. In J. Howaldt, C. Kaletka, A. Schröder, & M. Zirngiebl (Eds.), *Atlas of Social Innovation: New Practices for a Better Future* (pp. 18-21). Dortmund: Technische Universität Dortmund, ZWE Sozialforschungsstelle.
- Howaldt, J., Kopp, R., (2012). Shaping social innovation by social research. In: *Challenge Social Innovation*. Springer, Berlin, Heidelberg
- Howaldt, J., & Schwarz, M. (2010). Social Innovation: concepts, research fields and international trends. *Studies for Innovation in a Modern Working Environment*, (May), 1-83.
- Jiao, W. and Boons, F.A.A. (2017). Policy durability of Circular Economy in China: A process analysis of policy translation. *Resource, Conservation & Recycling*, 2017, 117(A), 12-24.
- Langley, A. (1999). Strategies for Theorizing from Process Data. *The Academy of Management Review*, 24(4), 691-710.
- Millard, J. (2018). How Social Innovation Underpins Sustainable Development. In J. Howaldt, C. Kaletka, A. Schröder, & M. Zirngiebl (Eds.), *Atlas of Social Innovation: New Practices for a Better Future* (pp. 41-43). Dortmund: Technische Universität Dortmund, ZWE Sozialforschungsstelle.
- Moulaert, F. (Ed.), (2013). *The International Handbook on Social Innovation: Collective Action, Social Learning and Transdisciplinary Research*. Edward Elgar, Cheltenham.

- Pel, B., Wallenborn, G., & Bauler, T. (2016). Emergent transformation games: Exploring social innovation agency and activation through the case of the Belgian electricity blackout threat. *Ecology and Society*, 21(2).
- Pol, E., & Ville, S. (2009). Social innovation: Buzz word or enduring term? *Journal of Socio-Economics*, 38(6), 878-885.
- Poole, M. S., Van De Ven, A. H., Dooley, K. J., & Holmes, M. E. (2000). *Organizational Change and Innovation Processes: Theory and Methods for Research*. Oxford: Oxford University Press.
- Rabadijeva, M., Antonius Schröder, & Zirngiebl, M. (2018). Building Blocks of a Typology of Social Innovation. In J. Howaldt, C. Kaletka, A. Schröder, & M. Zirngiebl (Eds.), *Atlas of Social Innovation: New Practices for a Better Future* (pp. 84-88). Dortmund: Technische Universität Dortmund, ZWE Sozialforschungsstelle.
- Rehfeld, D., Schartinger, D., Weber, M., & Rhomberg, W. (2018). Ready for Take-Off? Processes of Social Innovation. In J. Howaldt, C. Kaletka, A. Schröder, & M. Zirngiebl (Eds.), *Atlas of Social Innovation: New Practices for a Better Future* (pp. 82-84). Dortmund: Technische Universität Dortmund, ZWE Sozialforschungsstelle.
- Roth, G. L. & Kleiner, A. (1995). "Learning about organizational learning : creating a learning history," Working papers WP 3966-97., Massachusetts Institute of Technology (MIT), Sloan School of Management.
- Schatzki, T. R. (1996). *Social Practices: A Wittgensteinian Approach to Human Activity and the Social*. Cambridge: Cambridge University Press.
- Schatzki, T. R. (2002). *The Site of the Social: A philosophical account of the constitution of social life and change*.
- Schatzki, T. R. (2005). Peripheral Vision: The Sites of Organizations. *Organization Studies*, 26(3), 465-484.
- Schatzki, T. R. (2006). On Organizations as they happen. *Organization Studies*, 27(12), 1863-1873.
- Schatzki, T. R. (2010). *The Timespace of Human Activity: On Performance, Society, and History as Indeterminate Teleological Events*. Lanham: Lexington Books.
- Schatzki, T. R. (2016). Keeping Track of Large Phenomena. *Geographische Zeitschrift*, 104, 4-24.
- Spekkink, W. A. H. (2013). Institutional capacity building for industrial symbiosis in the Canal Zone of Zeeland in the Netherlands: A process analysis. *Journal of Cleaner Production*, 52, 342-355.
- Spekkink, W. A. H. (2015). Building capacity for sustainable regional industrial systems: an event sequence analysis of developments in the Sloe Area and Canal Zone. *Journal of Cleaner Production*, 98, 133-144.
- Spekkink, W. (2016) *Industrial Symbiosis as a Social Process*. PhD Thesis. Erasmus University Rotterdam, Rotterdam.
- Van der Have, R. P., & Rubalcaba, L. (2016). Social innovation research: An emerging area of innovation studies? *Research Policy*, 45(9), 1923-1935.

- Van de Ven, A. H., & Poole, M. S. (1990). Methods for Studying Innovation Development in the Minnesota Innovation Research Program. *Organization Science*, 1(3), 313-335.
- Vayda, A. P. (1983). Progressive contextualization: Methods for research in human ecology. *Human Ecology*, 11(3), 265-281.
- Von Wright, G. H. (1971). *Explanation and Understanding*. London: Routledge & Kegan Paul.

Appendix I: Event table for illustrative graph

Id	Timing	Description
P-1	From Around 2004 to Around 2004	After moving into Staveley, the initiator of the Barley Bridge Hydro Scheme develops here idea for such a scheme, which is also partially inspired by the existence of privately owned schemes on the same river (the river Kent).
P-2	From October 2007 to October 2007	The initiator of the Barley Bridge Hydro Scheme follows an education at the Centre for Alternative Technology (CAT) that to gain more background knowledge about renewable technologies.
S-3	From Probably October 2007 to 06-11-2007	The initiator of the Barley Bridge Scheme obtains some funding for setting up the Hydro Scheme, which comes with the requirement to set up a group around the project. After an encouraging encounter with a local resident (who is also an energy expert), the initiator of the Scheme sets up a public meeting, and it is from this meeting that Sustainable Energy Network Staveley (SENS) was born.
S-4	From Before contact with local factory manager to After Autumn 2007	While following her education, and while setting up a group around the Barley Bridge Hydro Scheme, the initiator is also in touch with Natural England, the Environment Agency, and later the manager of the factory that owns the Mill Yard, in order to gather knowledge about licensing, planning permissions, and ownership. It is primarily the latter issue that later defines the way that the projects develops.
S-5	From 27-11-2007 to 02-09-2008	After the SENS group is formed, the groups starts meeting on a regular basis. At this time, these meetings should have been primarily focused on the Barley Bridge Hydro Scheme.
P-6	From 2008 to 2008	SENS performs a feasibility study on the Hydro Scheme, the results of which, among other things, emphasise the importance of determining the ownership of the weir. Talks on this with the local factory manager (owner of the Mill Yard) are ongoing, but not leading to concrete results.

S-7	From 16-06-2008 to 31-03-2010	The Lake District National Park Authority launches the Low-Carbon Lake District initiative at a conference in June 2008, after which one of the activities developed as part of the initiative is an online consultation on the interest of having a Community Renewable Energy Trust in Cumbria.
P-8	From 2008 to 2008	SENS decides to follow a broader sustainability agenda, making the Hydro Scheme project into an item of a this broader agenda. This is very likely also due to the difficulties encountered in the Hydro Scheme project.
S-9	From 06-11-2008 to 03-11-2009	The SENS group keeps meeting on a regular basis. Sometimes meetings are held to discuss particular themes, and other meetings are presumably held to coordinate the activities of the initiative. At least one meeting is used to evaluate the results of the Green Travel initiative. Annual General Meetings are held to reflect on past activities and to discuss future activities.
S-10	From Before 26-12-2008 to 11-07-2009	The South Lakes Action on Climate Change Transition Town (SLACcTt) and SENS together organise the Green Travel initiative (Green Travel initiative), for which SLACcTt manages to raise money, for which meetings are held with various stakeholders, some of which are also collaborating in the organisation of GTi events (primarily by SLACcTt) and for which some training takes place. SENS is a collaborator in these events, although it seems that the main burden of the organisational responsibility is on SLACcTt.
S-12	From 08-12-2008 to 15-06-2011	The Parish Plan Working Group of the Parish Council for Staveley and Ings meets on a regular basis for a period of several years.
S-14	From July 2009 to August 2009	The South Lakeland District Council and the Cumbria County Council ask Carplug to perform a scoping study into the establishment of Car Clubs in Kendal (and later Staveley). After the scoping study, a steering group is formed, in which SLACcTt and a member of SENS also have a seat.
P-15	From 14-07-2009 to 14-07-2009	At a series of workshops (Communities Acting on Climate Change), organised at the Staveley Village Hall as part of the CLASP programme, organisers of the Green Travel initiative (GTi) share experiences with the organisation of their project.

S-16	From October 2009 to 08-04-2010	The steering group for the car club employs CommonWheels to run a car club in Kendal and Staveley, and also identifies several people that are willing to lease their car the car club.
S-17	From November 2009 to 08-07-2010	After a flood occurs at the River Kent, which damages the Barley Bridge Weir, several public actors start discussing what should be done about the damaged Barley Bridge Weir. In addition, a group of concerned residents of Staveley responds by organising a picnic protest.
S-19	From 2-12-2009 to 15-03-2010	The initiator of SENS reports on the results of the Green Travel initiative (GTi) at the Windermere and Staveley Neighbourhood Forum. The Forum is also used as a platform to report that a new edition of the GTi will be organised in 2010.
S-20	From 2-12-2009 to After 02-12-2009	SENS works together with an external advisor to prepare a bid for the Low Carbon Community Challenge (LCCC), with several projects lined up. The initiator also reports on this during a session of the Windermere and Staveley Neighbourhood Forum. The bid is not successful.
P-21	From Before LCCC bid to Before LCCC bid	By this time, the Barley Bridge Hydro scheme is put on hold.
S-22	From 12-01-2010 to 16-03-2010	The regular meetings of SENS continue.
S-23	From February 2010 to April 2012	Over a period of several years, SENS has smart meters available for people to borrow to find out where they can easily make energy savings.
S-24	From 30-03-2010 to April 2010	SENS, SLACtt and the South Lakeland Orchard Group (SLOG) work together to organise an 'Abundance Project' called Apples for All, where 50 apple trees are planted throughout Staveley, so that people in Staveley can grow their own fruit.
S-25	From April 2010 to April 2012	Over a period of several years, SENS also organises some activities around the topic of solar heating. This starts with a visit to an eco-house and a information meeting on the topic. Later on, it is mostly that SENS has a list of solar heating installers available, as well as a book on how people can create their own solar heating.

S-27	From May 2010 to After Gti 2010 initiative	In 2010 SLACtt and SENS organise a second edition of the Green Travel initiative (GTi). There is again a strong focus on promoting cycling, and this year some challenges are organised for commuters and school children in an effort to stimulate them to use the bike more often. As in the previous edition of the GTi, there are also opportunities for people to get their bicycle fixed for free. Residents and business also receive customised time tables for trains and business, and some personalised travel marketing takes place. The upcoming Car Club for Staveley and Kendal is promoted as well.
P-28	From 04-05-2010 to 04-05-2010	An Annual General Meeting of SENS is held.
S-29	From May 2010 to 25 -09-2010	SENS starts getting involved with the School Garden, which is managed by the School Garden Club. SENS helps out with the school garden, as well as with the organisation of events around the school garden. For SENS this is a way to create more space for growing food locally.
S-30	From Before 07-06-2010 to 05-07-2010	SENS asks the Parish Council for additional allotments in Staveley. The Parish Council invites SENS to form a joint working group for this, after which the Allotments Working Group is established.
S-33	From 01-07-2010 to Around July 2010	SENS gets involved in the development for more detailed plans for a Community Renewable Energy Trust in Cumbria, following the consultation on the topic that was performed as part of the Low-Carbon Lake District initiative.
S-34	From 03-07-2010 to 12-03-2011	The Cumbria Sustainability Network, of which SENS and SLACtt are members, alongside about 10 other community groups, is set up, and starts holding network meetings occassionally.
S-35	From 19-07-2010 to 11-10-2010	Regular meetings of the SENS group continue to take place.
S-36	From Before 1 September 2010 to Before 5 January 2011	After discussing the damaged Barley Bridge Weir during a council meeting, the council makes an effort to find out more about the ownership of the weir from the Environment Agency (EA), which goes on for a while without the Parish Council getting a clear response from the EA.
S-37	From Before 1 September 2010 to 08-01-2011	The allotments working group starts looking for potential locations for new allotments plots.
P-39	From 16-10-2010 to 16-10-2010	The first Staveley Apple Day is organised. In this case, the Apply Day is

organised by the South Lakeland Orchard Group (SLOG).

P-40	From 27-11-2010 to 27-11-2010	A Smart Travel Conference is organised in the Staveley Village, as an activity of the Cumbria Sustainability Network. Experiences are shared from the Green Travel initiatives organised by SLACctt and SENS, and advice is given on how to set up various types of Green Travel initiatives. Advice is also given on how to set up a car club.
P-41	From Early 2011 to Early 2011	The Car Club for Kendal and Staveley was due to launch in 2011.
P-42	From Before 5 January 2011 to Before 5 January 2011	An action group for the preservation of the Barley Bridge Weir is established by residents.
S-43	From 05-01-2011 to 07-02-2011	Based on information provided by the Environment Agency, the Parish Council of Staveley and Ings asks Cumbria Highways for a report on the possible effects of a collapse of the weir on the Barley Bridge, but no such report appears to exist.
S-44	From After Barley Bridge preservation group was established to Before 4th July 2011	The action group for the preservation of the Barley Bridge Weir makes efforts to identify the owner of the weir, without success.
P-45	From 17-01-2011 to 17-01-2011	An Annual General Meeting of SENS is held.
S-46	From 21-02-2011 to 19-07-2011	The SENS group continues to meet on a regular basis.
P-47	From March 2011 to March 2011	The Kentmere Hydro Trust is disbanded, which is recorded as a discouraging event for the members of SENS hoping to establish a Hydro Scheme in Staveley.
S-48	From April 2011 to June 2012	SENS runs a garden sharing scheme for a longer period of time.
P-49	From April 2011 to April 2011	SENS is developing a food map with locations of local producers of food
P-50	From 24-04-2011 to 24-04-2011	Big Onion is established at the 2011 Pancake Day.
P-51	From April-October 2011 to April-October 2011	After Big Onion is established, one of the activities the group engages in is public planting activities at the Staveley Mill Yard, the Abbey, and the Forest Garden (at the Recreation Ground near Staveley Pavilion).
S-52	From Before May 2011 to 18 to 26 June 2011	SLACctt and SENS organise the Active Travel Project, which is the 2011 edition of the Green Travel initiative. In this year, activities in Staveley appear to be limited to the distribution of customised time tables for busses and trains.

Most other activities take place outside of Staveley.

P-53	From 05-05-2011 to 05-05-2011	Big Onion also organises meetings after its establishment.
S-54	From 14-05-2011 to 27-08-2011	A member of Big Onion and SENS organises a Skills for Sustainable Living Course at the Sunny Orchard Farm in Staveley, where she invites experts in various areas to teach small groups of people skills that may help them to live a more sustainable life. This series of courses does not seem to be related directly to SENS or Big Onion, although the themes addressed are also important for these groups.
S-55	From 15-05-2011 to 04-09-2011	After Big Onion is established, the group starts selling local produce every Sunday. During these Sundays, a talk about a topic related to growing food is typically also organised. The local produce sold is supplied by the Sunny Orchard Farm, Growing Well, and a farm at the Crook Road south from Staveley.
S-56	From 16-06-2011 to 05-03-2012	The Parish Plan Working Group (PPWG) performs a consultation on the future revision of the Parish Plan, for which it organises public events, a consultation questionnaire, and two events at local schools in order to involve children in the process as well.
S-57	From 04-07-2011 to 04-07-2011	The action group that is dedicated to preserving the Barley Bridge Weir asks for support from the Parish Council of Staveley and Ings after it fails to identify the owner of the weir, and plans to organise some volunteers to perform emergency repairs. The Parish Council confirms its support.
S-58	From 19-09-2011 to 11-12-2011	SENS attempts to start up a solar panels project, for which it organises an information meeting. This seems to be an outcome of earlier work on the Cumbria Renewable Energy Trust. However, a decision of the government to change feed-in tariffs leads SENS to abandon plans for the solar panels project.
P-59	From 15-10-2011 to 15-10-2011	The second Staveley Apple Day takes place. This year Big Onion is involved.
P-60	From 18-10-2011 to 18-10-2011	SENS Holds an Annual General Meeting.

S-61	From 07-11-2011 to 04-01-2012	SENS asks the Parish Council of Staveley and Ings to support a project for the restoration of a damson orchard at the local Fellfoot allotments site.
S-63	From 07-11-2011 to 04-04-2012	The Parish Council of Staveley and Ings continues its efforts to find more space for allotments. Among other things, the council explores the willingness of existing allotments holders to share their allotment space, and the council also investigates some land that is for sale South of Staveley. Some residents express concerns about the consequences of the creation of additional allotments sites for local flora and fauna, but the council indicates that no concrete steps are being made yet.
P-64	From 21-11-2011 to 21-11-2011	Meetings of SENS continue to take place, sometimes with thematic discussions.
P-65	From 07-12-2011 to 07-12-2011	The Department of Energy and Climate Change launches the Local Energy Assessment Fund (LEAF).
S-66	From Before 11-12-2011 to 02-12-2011	After a successful pilot year, Big Onion makes plans for how to continue the organisation in 2012.
P-67	From Before 11-12-2011 to Before 11-12-2011	The UK government changes its policy on Feed-In tariffs.
P-68	From End of 2011 to End of 2011	Big Onion starts a Forest Garden project at the Recreation Ground near the Staveley Pavilion.
P-69	From End of 2011 to End of 2011	SENS and Big Onion recently won The Green Award in the 2011 Pride of Lakeland Awards.
S-70	From Before 19-12-2011 to 19-12-2011	SENS prepares an application for a grant from the Local Energy Assessment Fund (LEAF).
P-71	From 19-12-2011 to 19-12-2011	Big Onion holds an Annual General Meeting.
P-72	From In 2012 to In 2012	Big Onion is able to obtain financial support as well as organisational support (setting up a formalised structure, training volunteers, CRB checks, insurance and consultation) from the Lake District National Park Authority and the Cumbria County Council.
S-73	From After 04-01-2012 to In 2013	After SENS receives some financial support from the Parish Council of Staveley and Ings, the group retores the Damson Orchard through working parties. This takes places throughout at least 2012 and 2013.

S-74	From 16-01-2012 to 29-07-2012	Big Onion organises occasional meetings.
S-75	From 24-01-2012 to 09-07-2012	SENS continues to meet on a regular basis. Between January and March 2012, SENS performs a energy assessment project in Staveley, funded from the Local Energy Assessment Fund (LEAF). The project was also supported by SLACtt. The project involved trained volunteers providing energy advise to residents in and around Staveley, by going door to door, and
S-76	From 16-01-2012 to By the end of March 2012	by attending various events on energy and sustainability. The project also involved two studies performed by local consultants: One of which was on air flows in local buildings and how to use chimney balloons to beat draughts. The other study was on energy saving measures for Staveley's community buildings. Informative material on how to beat draughts with chimney balloons was al produced, including a video and leaflets.
P-83	From 19-02-2012 to 19-02-2012	Big Onion organises its first 'Get Growing' talks. In the remainder of the 2012, these talks are organised as part of the Big Onion Exchange events.
P-85	From March 2012 to March 2012	By the beginning of 2012, the Car Club of Staveley was up and running.
P-86	From 04-03-2012 to 04-03-2012	Big Onion organises a meeting in March 2012 dedicated to the development of plans around public growing.
S-90	From 23-04-2012 to 12-11-2012	The Parish Plan Working Group (PPWG) starts to work on a revision of the Parish Action Plan, following a consultation period.
P-92	From 08-04-2012 to 08-04-2012	Big Onion organises a Pancake Day, where the group sells produce from local suppliers, serves pancakes, and organises several other activities, including games and music.
P-93	From 17-04-2012 to 17-04-2012	The consultant of the company Green Footsteps presents her findings into air flows in local houses with open chimneys, based on a study that was funded by the Local Energy Assessment Fund (LEAF) as part of a project organised by SENS.
S-94	From 06-05-2012 to 05-08-2012	Big Onion organises regular Exchange Events, where people can exchange produce that they have grown, and where Big Onion typically also organises a 'Get Growing' talk, from which people can learn new things that help them to grow food locally. The first Exchange in the series is organised together with a Seedy Sunday, where people can swap seeds. During the Big Onion Exchange

events, the group typically also sells local produce and crafts.

P-95	From 10-05-2012 to 10-05-2012	Big Onion and SENS are offered money to purchase land for communal growing, and the organisations start actively look for land to purchase. In this effort, the groups also refer to activities of the Parish Council to find new space for allotments.
P-96	From 17-05-2012 to 17-05-2012	Big Onion organises an excursion to a polytunnel in Longsleddale, which is owned the owner of the local consultancy company Green Footsteps.
S-97	From Before 18-05-2012 to 25-10-2012	Big Onion organises regular working parties as part of its public planting scheme. The working parties focus primarily on planting at the Forest Garden at the Recreation Ground (near Staveley Pavilion), but planting also takes place at the Staveley Mill Yard.
P-98	From 27-05-2012 to 27-05-2012	Big Onion makes attempts to raise additional funding by selling local products and produces at reduced prices.
P-99	From 13-07-2012 to 15-07-2012 to 13-07-2012 to 15-07-2012	Big Onion has a stand at the Staveley Carnival.
P-100	From 22-07-2012 to 22-07-2012	Big Onion has a stand and organises a talk at a local walking and cycling festival.
P-101	From 28-07-2012 to 28-07-2012	Taking inspiration from the earlier Skills for Sustainable Living courses, Big Onion organises a one-off Basket Weaving Course at the Sunny Orchard Farm.
P-102	From 12-08-2012 to 12-08-2012	SENS and Big Onion organise a Thiry Mile Meal together. Attendees are invited to bring their and share food sources from within 30 miles. Some of the food is from Big Onion planters created through the public planting scheme.
P-103	From 05-09-2012 to 05-09-2012	Big Onion organises a Food Safety Course for those who produce food products that are sold or traded at Big Onion events.

S-104	From Before the planter competition started to 09-09-2012	Big Onion organises a planter competition to challenge residents of Staveley, including school children, to create their own planters from recycled materials. The rules include that the planter should be used to grow vegetables or other useful plants. For the school children Big Onion also organises two workshops where the children can create entries for the competition.
S-106	From 17-09-2012 to 16-09-2013	SENS continues to meet on a regular basis.
P-107	From 18-09-2012 to 18-09-2012	A Big Onion Committee meeting takes place.
P-109	From 28-09-2012 to 28-09-2012	Seed Freedom Fortnight (promoted by Big Onion)
P-110	From Some time in 2012 to Some time in 2012	SENS participates to a master thesis project by a student of the Center for Alternative Technology (CAT) on garden sharing schemes.
S-111	From Before 01-10-2012 to 09-01-2013	An opportunity comes up for the Parish Council to exchange the Fellfoot allotments for another piece of land. The council performs an initial exploration of this opportunity with the help of the Allotments Working Group. Big Onion uses the 2012 Apple Day as the setting for the finals of the planter competition that it organised, and later announces the winners on its website.
S-112	From 01-10-2012 to 29-09-2012	During the Apple Day, the regular Apple Pressing, and selling of local produces and crafts also takes place. The Lakeland Orchard Group also sells trees, recipe books and cards. In addition, there is music, and food is served.
P-113	From 15 and 16 October 2012 to 15 and 16 October 2012	SENS promotes events dedicated to training people to perform thermal imaging surveys.
P-114	From 28-10-2012 to 28-10-2012	Big Onion organises a Pumpkin Day. Activities include pumpkin carving and games. Food is also served. Big Onion also uses the event to sell local produce and crafts. The day ends with a 'cooking local food demo' at the Hawkhead Brewery, where meals are prepared with local produce.
P-115	From 19-11-2012 to 19-11-2012	SENS attends an open meeting of the Parish Council in order to contribute ideas for the revision of the Parish Action Plan.
S-116	From 26-11-2012 to 28-01-2013	The Parish Plan Working Group (PPWG) continues to meet.
P-117	From Before Official start Mill Yard stall project to Before Official start Mill Yard stall project	Several members of Big Onion meet on a regular basis to make plans for a shop at the Staveley Mill Yard.

P-118	From December 2012 to December 2012	Big Onion evaluate their activities of the past year, and discuss plans for the coming year at a Christmas brainstorming meeting. The decision is made to break up Big Onion in 4 working groups, for Events (Pancake Day/Easter, Seedy Sundays/Exchanges, Apple Day, and Pumpkin Day), a new Mill Yard Stall project, and Public Planting, including a collaboration with the School Garden Club of the Staveley Primary School.
P-119	From In 2013 to In 2013	The members of SENS that are working on the restoration of the Damson Orchard visit someone else's orchard for advise.
S-120	From Somewhere in 2013 to February-March 2014	After residents of Staveley receive B133 notices (claims on mineral rights), SENS organises a response to these letters by seeking legal advice (and arranging legal advice for residents), and trying to raise awareness on the possibility of fracking in the area. In the process, the group also seeks media attention from a local newspaper.
P-122	From 08-01-2013 to 08-01-2013	Big Onion continues to meet.
P-123	From 28-01-2013 to 28-01-2013	Big Onion holds an annual general meeting, where it decides to continue organising regular big events (such as Easter Pancake Day and Pumpkin Day), start a new project at the School Garden of the Staveley Primary School, continue other public planting activities, and to open a stall at the Staveley Mill Yard.
S-124	From Before 03-02-2013 to 04-03-2013	For its investigation in the possible exchange of the Fellfoot allotments site for another piece of land, the Parish Council get several advising parties involved. In the meantime, a land owner near to the land that is to be part of the exchange raises concerns about accessibility of the land.
S-125	From 02-02-2013 to 02-09-2013	In addition to organising other events, Big Onion also has meetings, although they seem not to be as regular as those of SENS. Some meetings are also more like 'social get togethers', for example in the form of Jacob Joins.
S-126	From 05-02-2013 to After February 2013	After a presentation on Community Land Trusts, a few members of SENS set up a stand-alone group that is to set up a Community Land Trust for Staveley.

S-127	From In 2013 to In 2013	Members of Big Onion work together with members of the Staveley School Garden Club to prepare plans for their collaboration at the School Garden. Big Onion supports the School Garden with various activities, and in return can, to some extent, use the School Garden for public planting.
S-128	From Before get Growing Sessions to October 2013	With financial support from the Cumbria Community Foundation and the Lake District National Park Authority, Big Onion organises regular 'Get Growing' talks at the Staveley School Garden. On the same days some work is typically done on the School Garden.
P-129	From 16-03-2013 to 16-03-2013	Big Onion continues work on its public planting scheme with working parties.
S-130	From Before the 2013 Easter Pancake day to 31-03-2013	Big Onion organises an Easter Pancake Day. Food is served, including freshly cooked pancakes, there are games, an Easter bonnet competition, local crafts, and there is live music and other entertainment. The event was used to raise money to run things across the year. Prizes and goods were donated by several local businesses.
P-131	From In 2013 to In 2013	In 2013, Big Onion opens a stall at the Mill Yard, where it sells local produce and crafts on a more or less permanent basis.
S-132	From April 2013 to 01-07-2013	The Parish Plan Working Group finished the new Parish Plan, and publishes the plan in 2013. The plan includes an overview of actions to be taken, and who will be responsible for these actions. SENS is one of the actors that is responsible for various actions in the plan. The plan also included several themes that SENS has brought up before, such as the possibility of a hydro scheme, and improved access to the train station of Staveley.
S-133	From Before 03-04-2013 to 01-07-2013	The Parish Council looks into the problems with access to the the piece of land considered for an exchange (an exchange for the Fellfoot allotments). After some inquiries into this, the council decides that the land of concern is not fit for use for allotments.
S-134	From 28-04-2013 to 26-05-2013	Big Onion organises Seedy Sundays in collaboration with the Average Cabbage. People can bring seeds and seedlings to swap or sell. There are talks and tips from the Average Cabbage, food and drinks are served, and there is live music. The events are also used to raise money for Big Onion and The Average Cabbage.

P-135	From 02-05-2013 to 02-05-2013	Big Onion promotes a film showing that is organised by the South Lakes WDM group.
P-136	From 27-05-2013 to 27-05-2013	Big Onion expresses support again for search for new allotment spaces.
S-137	From Before 10-06-2013 to 04-09-2013	After the new Parish Plan is published, the Parish Council of Staveley and Ings (re)opens discussions with the action group for the preservation of the Barley Bridge Weir, discussing several proposal for how to deal with this matter. The possibility of a hydro scheme is also discussed again in this context.
S-138	From 13-06-2013 to 07-07-2014	The Parish Council starts exploring opportunities for ensuring improved access to Staveley's train station. The Lakes Line Community Rail Partnership (LLCRP) is used as the main platform for this. The outcome of the exploration is that improved access could be linked to plans for electrification of the Lakes Line.
P-139	From 15-06-2013 to 15-06-2013	Big Onion organises a coffee morning to raise funds for Big Onion and the School Garden.
P-140	From 24-06-2013 to 24-06-2013	Big Onion organises a talk by a visitor from Texas on Sustainability and Creativity in Austin, Texas.
P-141	From 11-07-2013 to 11-07-2013	Big Onion organises a school summer fair, where plants and produce from the school garden can be bought.
S-142	From 22-07-2013 to 13-04-2015	The Parish Plan Working Group continues to meet on a regular basis.
S-143	From September 2013 to December 2013	This year, crops are harvested from the restored Damson Orchard, and products are made to be sold at Christmas to raise funds.
S-144	From Before 02-09-2013 to 07-10-2013	The Allotments Working Group continues to explore the possibilities for an exchange of land, but also asks existing landowners about their willingness to sell or lease their land. The willingness to do this turns out to be limited.
S-145	From 04-09-2013 to 10-12-2013	The stand-alone group that was established for a Community Land Trust (CLT) in Staveley manages to secure some initial funding, and starts conversations with the Parish Council about the need for a new Housing Survey to update the Housing Register.
P-146	From 24-09-2013 to 24-09-2013	Big Onion organises a Fungal Foray, where people can learn things about hunting for edible mushrooms from a local expert.

P-147	From 28-09-2013 to 28-09-2013	Big Onion organises the Staveley Apple Day with the South Lakes Orchard Group. People can bring their apples to have them pressed for juice. There are also family games, live music, storytelling, and food and drinks are served. Local produce and crafts are sold by Big Onion to raise money. There is an apple detective present to identify species of apples.
S-148	From In or before October 2013 to 31 December 2013	After a presentation about Community Interest Companies by a consultant from Quantum Strategy & Technical, SENS establishes its own Community Interest Company as a vehicle for the organisation of renewable energy projects
P-149	From 27-10-2013 to 27-10-2013	Big Onion organises a Pumpkin day, with pumpkin carving for children, food and drinks, live music, and a celebration meal. Local produce and crafts are also sold to raise money.
P-150	From November 2013 to November 2013	SENS spreads leaflets in Staveley to remind people of how to use Chimney Balloons and also to inform them about the Renewable Heat Incentive.
P-151	From November 2013 to November 2013	SENS changes the car of the Car Club.
P-152	From November 2013 to November 2013	SENS organises a visit to a Passiv House owned by two members of SENS.
P-153	From 01-11-2013 to 01-11-2013	One of the leading people in Big Onion offers a reflection on activities in 2013 at the time that the current leader of Big Onion steps down.
S-154	From 18-11-2013 to December 2013	SENS keeps meeting on a regular basis.
S-155	From End 2013 to End 2013	The Lake District National Park Authority arranges funding (via the CLASP programme) and support from Cumbria Action for Sustainability to support a small number of community energy projects in the Cumbria region.
S-156	From After CIC formation to After CIC formation	The Community Interest Company (CIC) organises an initial meeting to discuss what kinds of projects the company will focus on. It is decided to focus on one specific hydro scheme.
S-157	From January 2014 to After CIC formation	With financial support from the LDNPA and advice from Cumbria Action for Sustainability, the Community Interest Company starts exploring possibilities for the establishment of a hydro scheme,, addressing ownership issues and permissions.
P-158	From After CIC formation to After CIC formation	After the Community Interest Company is established, it provides free energy advice to members of the Staveley Community.

S-159	From 08-01-2014 to 02-04-2014	The search for new allotments space has stalled, and other options are being explored (partly within the Parish Plan Working Group). One route tried by the Allotments Working Group is to identify suitable plots of land and nominate these through the Localism Act's 'Right to Bid' Scheme, but this seems not to have been successful.
P-160	From 15-01-2014 to 15-01-2014	Big Onion holds their annual general meeting, where they reflect on the activities of the last year and also make plans for what activities will take place in 2014.
P-161	From 20-01-2014 to 20-01-2014	SENS organises an annual general meeting, where it reflects on activities performed in the past year and other relevant developments in Staveley.
P-162	From 2014 to 2014	Also in 2014 SENS carries out work at the Damson Orchard.
S-163	From 24-01-2014 to 01-04-2014	SENS signs the Tipping Point Declaration, which is organised Kirklees Transition Town as part of a campaign against climate change.
S-164	From 27-01-2014 to After 06-10-2014	The Parish Council of Staveley and Ings supports SENS's Community Land Trust group in the development of a Housing Needs Survey.
S-165	From 03-02-2014 to 03-03-2014	The SENS group that is working on the restoration of the Damson Orchard ask the Parish Council for help with overhanging trees that shade the damson trees in the orchard. It is decided that the trees will be cut.
S-166	From 10-02-2014 to 20-04-2014	SENS keeps meeting on a regular basis.
P-169	From 20-04-2014 to 20-04-2014	Big Onion organises their fourth Easter Pancake Day, where they serve freshly cooked pancakes, organise family activities, have stalls, and serve other food and drink. This is also used as a fundraiser for Big Onion.
P-170	From 25-05-2014 to 25-05-2014	Big Onion and The Average Cabbage organise a seedling swap. This event is also used to raise some money for Big Onion.
P-171	From 30-05-2014 to 30-05-2014	Big Onion organises meetings, but on a less regular basis than SENS.
P-172	From 14-06-2014 to 14-06-2014	SENS organises another coffee morning as a fund raiser for the School Gardening Club.

S-173	From Before 07-07-2014 to 07-01-2015	The Allotments Working Group makes the decision to focus on the possibility of restoring the Fellfoot allotments to make better use of them. Meetings are held with current allotments holders, and advice is sought from Cumbria Woodlands on the possibilities for restoration. After this first phase, the Allotments Working Group develops more detailed plans for the next steps.
P-174	From From 11-07-2014 to 13-07-2014 to From 11-07-2014 to 13-07-2014	The Staveley Carnival takes place. Big Onion, SENS and the Community Land Trust Steering group have stands there.
N-175	From Summer Holiday to Summer Holiday	One of the members of Big Onion harvest crops from the School Garden throughout the summer holidays.
P-176	From September 2014 to September 2014	Big Onion moves into a larger shop space at the Mill Yard to accommodate the regular sale of local produce as well as local crafts.
S-177	From September 2014 to September 2014	SENS harvests damsons from their orchard and sells products made from these damsons during a Christmas Fair and in Big Onion's Mill Yard Stall.
P-178	From 02-09-2014 to 02-09-2014	Big Onion holds a general meeting where it reflects on recent meetings and also discusses upcoming events.
P-179	From 03-09-2014 to 03-09-2014	A representative of the Environment Agency gives a presentation on flash flooding to the Parish Council. During the discussion the damaged state of the Barley Bridge Weir is brought up.
S-180	From 03-09-2014 to 03-11-2014	The Parish Council discusses with Kentmere Packaging about the Barley Bridge viewing area
S-181	From 10-09-2014 to 10-09-2014	The owner of Green Footsteps talks about the Renewable Heat Incentive at a meeting of SENS.
P-182	From 22-09-2014 to 22-09-2014	Big Onion and SENS organise a joint meeting.
S-183	From 27-09-2014 to 27-09-2014	SENS organises another Apple Day with the South Lakeland Orchard Group. There is an apple press that people can use to have their apples juiced, there are games, crafts, and food and drinks are served. The event is also used to raise funds for the shop at the Mill Yard.
P-184	From 26-10-2014 to 26-10-2014	Big onion organises a pumpkin day, with pumpkin carving, games, food and drinks, live music, and pumpkins and squash for sale.

- S-185 From November 2014 to November 2014 The news comes out the the rail line from Oxenholme to Windermere is to be electrified, which opens up opportunities for plans to improve access to Staveley Station.
- P-186 From November 2014 to November 2014 Produce from the Staveley School Garden are sold at the Big Onion stall at the Staveley Mill Yard. The money is used to support the gardening activities of the school.
- P-187 From 10-11-2014 to 10-11-2014 The Community Land Trust steering group organises a 'Celebrate Staveley', attended by SENS, the Staveley Village Association, the Parish Council, the Community Land Trust steering group, and the Cumbria Rural Housing Trust. These groups discuss the possibilities for a shared vision on the future development of Staveley, for which there appears to be interest.
- P-188 From 18-11-2014 to 18-11-2014 SENS organises an opening meeting on recycling and waste minimisation, where information is provided by a Local Waste Prevention Officer.
- S-189 From 19-11-2014 to 28-11-2016 After Big Onion moves into a larger stall at the Mill Yard, the group uses it to sell local produce and crafts from various local producers. The group regularly advertises on their Facebook page about products available in the shop, or when the group needs additional volunteers to help out with shop activities.
- P-190 From 30-11-2014 to 30-11-2014 Big Onion asks its supporters to vote for the group in the Galaxy Hot Chocolate Fund for local community groups and charities.

The Community Interest Company (CIC) of SENS develops plans to obtain funding from the Rural Community Energy Fund to carry out a feasibility study on a hydro power scheme at the Barley Bridge Weir. A meeting is also organised to explore the future of energy generation around Staveley's natural resources.

- S-191 From Before December 2014 to 16-12-2014 An event is hosted by the Community Interest Company (CIC) on exploring the future of energy generation around Staveley's natural resources. Mention is made of the potential of a Lakeland valley to generate power from water, guided by Cumbria Action for Sustainability. It is presented by SENS as the last opportunity of the year to members to come together. The CIC is looking to receive money from the Rural Community Energy Fund to carry out a feasibility study on the hydro-power scheme for the Barley Bridge Weir.
- S-192 From After CIC meeting of December 2014 to 02-02-2015 The Community Interest Company of SENS asks the Parish Council for support in finding grant funding for the development of a hydro scheme at the Barley Bridge Weir. The company also organises a petition to test for popular support for the scheme.
- S-193 From Before reflection by leading figure to By the end of 2014 One of the leading figures of Big Onion reflects on the activities that have been organised over the past years. This is done in conversation with someone from Cumbria Volunteer Services. It seems that Big Onion, at this time, is having some problems to keep up its capacity in terms of available volunteers. Cumbria Action for Sustainability publishes its report on the project that it performed for the Lake District National Park Authority to support the Community Interest Company of Staveley. The report makes several recommendations for further steps in pursuing the hydro scheme.
- S-194 From January 2015 to 31-01-2015 A member of the Community Land Trust steering group approaches the Parish Council because she is exploring possibilities for getting funding to work on a
- S-195 From Before 07-01-2015 to 02-02-2015 Neighbourhood Plan for Staveley. The Parish Council seeks help from another council that has experience with this, and arranges for some funding to be assigned to the project.

		After the news was received that the Lakes Line would be electrified, the Parish Council of Staveley and Ings, in collaboration with partners from the Lakes Line Community Rail Partnership, take various steps to lobby for
S-196	From Before 07-01-2015 to 06-07-2015	inclusion of improved access for Staveley Station in the plans for electrification. Attempts are also made to mobilise support from the MP of the region, and the Transport Minister. Making improvement of station access part of the plans turns out to be difficult.
P-197	From 11-01-2015 to 11-01-2015	Big Onion organises a seed swap at the Stall at the Staveley Mill Yard.
S-198	From Before 02-02-2015 to Before 11-05-2015	The Allotments Working Group makes concrete steps towards the restoration of the Fellfoot allotments. Preparations are made for the felling of trees, a bat survey is commissioned, a revised tenancy agreement is set up, and conversations are held with existing allotments owners and people on the waiting list for allotments. Progress with the project is reported at regular council meetings. The public is informed about the plans by the council, and some input from concerned residents is received during the process as well.
S-199	From 02-02-2015 to Before March 2015	The Parish Council seeks Community Grant Funding from the South Lakes District Council to fund the repairs of the Barley Bridge Weir, but decides not to pursue this option further after it finds out that the Community Land Trust has already requested funding from this source.
P-200	From February 2015 to February 2015	Big Onion organises a Get Growing talk where various local growers share tips on what vegetables and other plants do, or do not, grow well in Staveley.
P-201	From 03-02-2015 to 03-02-2015	SENS organises an Annual General Meeting, where it presents a report on the last year and presents an agenda for 2015.
P-202	From Around Spring 2015 to Around Spring 2015	The SLDC provides funding to the Community Land Trust to support the Housing Needs Survey that they want to perform.
S-203	From 02-03-2015 to 02-11-2015	The Parish Council seeks alternative sources of funding for repairs of the Barley Bridge Weir. In the process, they engage in another discussion with the Environment Agency, who declare that they have no responsibility over the weir, because they are not the owners. This increases concerns of the Parish council about the faith of the weir.

P-204	From 05-03-2015 to 05-03-2015	Big onion organises its annual general meeting.
P-205	From 23-03-2015 to 23-03-2015	The Parish Council of Staveley and Ings organises an extraordinary meeting on the idea to develop a Neighbourhood Plan for Staveley. A presentation is given by the Lake District National Park Authority, followed by a Q&A session. It is decided that the idea should be explored further.
S-206	From 28-03-2015 to 01-04-2015	SENS organises a litter sweep.
S-207	From 11-05-2015 to 05-10-2015	Further steps are made in the restoration of the Fellfoot allotments. Further steps are taken to ensure the felling of trees, the revised tenancy agreement is sent out, and working parties are organised with people on the waiting list to carry out physical work at the site. In the process, some concerns are raised about illegal drainage work that was carried out at the site.
S-208	From 28-05-2015 to 06-01-2016	The Parish Plan Working Group discusses the possibility of having a Neighbourhood Plan for Staveley. It is finally concluded that the Parish does not have the necessary resources to develop such a plan, but a recommendation is made to perform a strategic review of what the village will look like in 10-15 years.
P-209	From 31-05-2015 to 31-05-2015	Big Onion and The Average Cabbage organise a Seedy Sunday. Vegetables and seedlings from The Average Cabbage are for sale, food and drinks are served, and people can swap or sell (with a 20 percent commission for Big Onion) their surplus vegetables and seedlings. Any remaining plants are donated to the Staveley School Garden.
S-210	From 07-07-2015 to 09-04-2016	Cumbria Action for Sustainability starts facilitating meetings of the Cumbria Sustainability Network, and meetings take place again occasionally.
P-211	From 09-07-2015 to 09-07-2015	Big Onion is present at a Staveley Cycling event.
S-212	From 31-08-2015 to 26-09-2015	Big Onion organises another Apple Day, in collaboration with the South Lakeland Orchard Group. People can bring apples to have them juiced. There are also family games and there is live music. The shop of Big Onion is also open to sell local produce and crafts. The event takes place at the shop's location.
S-213	From 11-09-2015 to 12-09-2015	Big Onion organises another fund raiser coffee morning to raise funds for the Staveley School and for Big Onion.

S-214	From 16-09-2015 to Before October 2015	The Housing Needs Survey is finished, and the final bits of funding are secured.
P-215	From October 2015 to October 2015	The Housing Needs Survey takes place this month.
S-216	From 02-11-2015 to 15-02-2016	The tree felling at the Fellfoot allotments commences, and the issues around the illegal drainage work are cleared up.
S-217	From Before 06-01-2016 to 06-01-2016	The Lake Lines Community Rail Partnership explores the possibility of funding a feasibility study, of which improved access to Staveley Station would be part.
S-218	From 06-01-2016 to 06-04-2016	Out of concerns about the state of the Barley Bridge Weir, the Parish Council of Staveley and Ings organises a public consultation on the topic, which is also attended by members of SENS interested in developing a hydro scheme at the weir. The council decides to keep finding opportunities for funding repairs.
P-219	From 11-01-2016 to 11-01-2016	SENS continues to meet
P-220	From Early 2016 to Early 2016	Big Onion posts on its website what activities it will engage in in 2016, which includes promoting food, growing and sharing skills, the stall at the Mill Yard and the School Garden project.
P-221	From 01-02-2016 to 01-02-2016	Report on Housing Needs Survey published
S-222	From 22-02-2016 to 21-11-2016	The Parish Plan Working Group continues to meet on a regular basis.
S-223	From Before 07-03-2016 to 06-06-2016	The first new allotment sites are given out to people on the waiting list, some further work is done on drainage of the site, and the felled trees are cleared out by working parties.
S-224	From 16-05-2016 to 22-05-2016	Big Onion and The Average Cabbage organise a Seedy Sunday. People can buy seeds from The Average Cabbage and bring surplus seeds and plants to swap or sell (Big Onion takes a 20 percent commission). Any uncollected plants are donated to the School Garden. Food and drinks are served, and there is live music.
P-225	From 25-05-2016 to 25-05-2016	Big Onion continues to meet, but seemingly on an irregular basis.
P-226	From 04-07-2016 to 04-07-2016	The Parish Council informs the public about progress in the Allotments project. The update also mentions that that surplus produce from the Fellfoot allotments are likely to be sold from Big Onion's Mill Yard stall.
S-227	From 28-08-2016 to 10-09-2016	Big Onion organises a fund raising coffee morning to raise funds for Big Onion

and the Staveley School Garden.

- S-228 From 10-09-2016 to 24-09-2016 Big Onion and the South Lakeland Orchard Group organise another Apple Day. People can bring apples to have them juiced. It is also possible to get apples identified by an expert. There is live music as well as a dance performance. Food and drinks are served as well, and there are games. The Big Onion stall will be open during the event, and donations can be made to the South Lakeland Orchard Group.
- S-229 From Before 14-09-2016 to 03-10-2016 Additional people apply for a new allotment plot at the restored Fellfoot allotments site, including Wilf's Cafe.
- S-230 From Before 14-09-2016 to Before 03-10-2016 New gates are erected at the Fellfoot allotments.
- S-231 From Before 14-09-2016 to 07-11-2016 The drainage work at the Fellfoot Allotments is finished, and a new car park is created.
- S-232 From 14-09-2016 to 17-10-2016 After a presentation by the South Lakes District Council (SLDC) on a recycling project they want to organise in Staveley, the Parish Council gets Big Onion involved. Big Onion agrees to discuss the idea with the SLDC.
- P-233 From 14-09-2016 to 14-09-2016 SENS promotes a film on grassroots initiatives that will be shown at the Sprint Mill.
- S-234 From Before 03-10-2016 to 03-10-2016 A feasibility study by the Lakes Line Group is proposed, in which improved access to Staveley Station is also included as a topic.