Postprint

Foliated Networks to Analyze Moral Responsibility:
A Conceptual Model

Abstract

Purpose – To explore how the flow of moral responsibility in supply chains can be understood through an analysis of material, monetary, and information flows.

Design/methodology/approach – Social responsibility, foliated networks, and morality are used to present a conceptual framework that suggests responsibility links in supply chains.

Findings – By understanding the flows of material, money and information, it is possible to see how different types (liable and political) of responsibility can be identified. Conventional supply chain flows are thus connected with moral responsibility.

Research implications/limitations – Responsibility issues in supply chain management need to include supply chain links created by monetary and information flows, as well as material flows.

Practical implications – Supply chain actors need to consider responsibility across their entire supply chain, which includes material, monetary and information flows.

Originality/value – Foliated transportation networks, moral disengagement, and different types of responsibility are combined in a novel way to facilitate a better understanding of responsibility in supply chains.

Keywords Moral, social responsibility, supply chain management, sustainability

Paper type Conceptual paper

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1   Introduction

Scholars such as Aguinis and Glavas (2012) and Fassin and Van Rossem (2009) have pointed out that increased attention is paid to issues pertaining to corporate social responsibility (CSR) and sustainability in supply chains. Despite this growing attention, there is a lack of models explaining the underlying mechanisms that determine failure or success of such efforts within the supply chain management (SCM) field (e.g., Aguinis and Glavas, 2012; Eriksson and Svensson, 2014). Eriksson *et al.* (2013a,b) have tried to fill this gap through including the notion of moral disengagement (Bandura *et al.*, 1996; Bandura, 1999). The proposed concept is called moral decoupling. Moral decoupling considers moral responsibility as if it was a flow in the supply chain. When the flow is disrupted, it constitutes a contextual condition to which moral disengagement is subject.

Moral decoupling has been discussed within existing research, and seems to be suitable as a means of understanding how moral responsibility may deteriorate in the supply chain and, as a consequence, leads to immoral behavior (Eriksson and Svensson, 2014). Morality is considered as an individual's inner and immediate sense of right and wrong (Hume, 1777) and immorality is thus behavior that is not consistent with this sense. In contrast to the more usual flows considered in SCM, mainly goods, information, and money (Forrester, 1958), it has not been established how the flow of moral responsibility should be mapped or traced. Despite providing practical advice on what to look for, the research in the area tends to be limited to stating that the network should be mapped, in order to reduce the likelihood of moral decoupling. It is suggested that moral responsibility can follow conventional supply chain flows between nodes in a network, or that it can create its own links between nodes (Eriksson, 2014).

This paper aims to contribute to the field explaining underlying mechanisms that cause immoral behavior in supply chains, by outlining how moral responsibility can be integrated into the flow of materials, information and money, and how flows of moral responsibility can arise and connect nodes in a network not previously connected. The main purpose of the paper is to explore how the flow of moral responsibility in supply chains can be understood. In doing so, the paper includes a concept called foliated transportation networks (Kalantari, 2012), referred to as *foliated networks* in order to better reflect the fact that transportation is not the main focus.

The remainder of the paper is structured as follows. In Section 2, the theoretical background is presented, providing an overview of the three areas used in constructing the conceptual framework presented in Section 3. Finally, in Section 4, conclusions, implications, and avenues for further research are presented.

2   Theoretical background

The theoretical background includes three areas and forms the basis for constructing a conceptual framework in the following chapter. To begin with, social responsibility and sustainability in SCM is discussed. This enables us to understand the general discussion and focus of the field. Secondly, the concept of foliated networks is presented, providing an established framework of different connections within a supply chain. Finally, morality in SCM is discussed.

2.1 Social Responsibility in Supply Chain Management

CSR and sustainability are two closely related fields, often considered to be interchangeable (Fassin and Van Rossem, 2009). Both are concerned with economic, environmental, and social development (Elkington, 1997; Aguinis and Glavas, 2012). One element that sets them apart is the time period concerned, in that. sustainability implies a long-time perspective (Bansal and DesJardine, 2014). Despite this distinction there is no clear distinction between long and short-term with regard to these issues. Decisions made today will affect future generations, whether they are duly considered or not (Eriksson, 2014). Given the link between the concepts, social responsibility will henceforth be used as an umbrella term.

Social responsibility has, for the last few decades, become more and more connected with SCM, a natural consequence of their intrinsic nature. The debate on responsibility and general management was originally centered on what responsibilities a company actually had (Bowen, 1953; Carroll, 1974). Perhaps as a result of outsourcing production to low-cost production countries, the purchasing function's social responsibility role has gained increasing attention (Gimenez and Tachizawa, 2012; Miemczyk *et al.*, 2012; Walker and Jones, 2012). Production is especially prone to misconduct in industries with complex supply chains, low automation, and pressure to reduce costs (Park-Poaps and Rees, 2010). Use of chemicals and energy, as well as the treatment of workers, are important issues in production, making production as such important with regard to social responsibility (e.g., Lim and Phillips, 2008; Alkaya and Demirer, 2014). Many of the decisions that affect how the supply chain is managed are shaped by new product development (NPD). Accordingly, there is, a lot of research on the interface between SCM and NPD (e.g., Swink and Song, 2007; Wouters *et al.*, 2009). As such, NPD has a strong connection to social responsibility, which is also recognized in research (e.g., Gmelin and Seuring, 2014; Palomo-Lovinsky and Hahn, 2014; Eriksson and Svensson, 2016).

While behavioral guidelines for improving social responsibility in the supply chain are relatively easy to formulate, they are far from easy to implement (e.g., Mamic, 2005; Wolf, 2011; Gimenez and Tachizawa, 2012). Large-scale studies on workers' rights have presented compelling evidence on the failure of such implementation (Anner, 2012; Toffel *et al.*, 2014). Using a smaller sample, Egels-Zandén (2007) found that, out of nine Chinese toy suppliers to Swedish firms, not one followed the agreed upon guidelines. Similarly, Locke *et al.* (2013) identified only seven out of 276 suppliers to Hewlett Packard to be fully compliant. Compliance issues have been identified as especially hard to address in global supply chains (Anner, 2012; Egels-Zandén and Merk, 2013).

Within the realm of SCM, several authors have proposed actions to improve social responsibility (Eriksson and Svensson, 2015), ranging from those possible for actors not included in the network, to intra-organizational aspects. Starting with actors outside the network, Teegen *et al.* (2004) highlight the role of non-governmental organizations, Walker and Brammer (2009) point to the importance of regulation, and Cousins (2005) relates issues to factors inherent to markets, with a substantial focus on cost reduction. Inside the network, other factors are highlighted with regard to social responsibility. Mamic (2005) identifies long-term engagement with other companies in the network as important, Svensson and Bååth (2008) highlight the importance of transparency, and Björklund *et al.* (2012) argue that the issues on hand require a view that is not limited to one's own company. Inside a company. other measures are related to social responsibility. Côté *et al.* (2008) stresses the need to dedicate resources, Pagell and Wu (2009) advocate reward systems, and Carter and Rogers (2008) note that companies cannot rely on financial metrics alone.

2.2 Foliated Networks

An analysis of supply chains can be performed on three basic levels: dyad, chain, and network. The network level focuses on both vertical and horizontal relationships, and is at the stakeholder level (Miemczyk *et al.*, 2012). To understand the network level, which is at the core of this paper, it is necessary to relate it to the context of SCM. The Global Supply Chain Forum has defined SCM as "the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders" (cited in Lambert *et al.*, 1998, p. 1). The integration and management is centered on eight main processes: customer relationship management, customer service management, demand management, order fulfillment, manufacturing flow management, procurement, product development and commercialization, and returns management (Lambert *et al.*, 1998; Croxton *et al.*, 2001). At the network level, the processes include indirect relationships and no attention is paid to a specific focal company (Miemczyk *et al.*, 2012).

So far, networks have been discussed in the context of SCM, but the framework of this paper draws on transportation research, where networks are used in, for example, route planning. In this context, networks consist of nodes and links, the former being intersecting points, and the latter, the connections between nodes. Goods are transported (material flow) from the origin to the destination, and the network is designed to improve transportation according to specific goals (cf. Fleischmann *et al.*, 2001). Different networks can be constructed over a specific set of nodes, depending on the situation in question. For example, a direct link can be created between two nodes, but the same two nodes can also be connected via an intermediary node which is responsible for collection and distribution (Woxenius, 2007, p. 735). The network design is not necessarily restricted to a one-size-fits-all solution. Instead, the same set of nodes can be connected in several different ways. Using multiple such networks over the same set of nodes, has been shown to improve cost efficiency and is referred to as 'foliated transportation networks' (Kalantari, 2012).

A shortcoming of foliated transportation networks, in the context of SCM, is that the main concern is the flow of materials. We also wish to include information and monetary flows. A simplistic view of models commonly used by scholars, for example Gripsrud *et al.* (2005), could be interpreted as if these flows were to follow the same links between the same nodes, but in opposite direction, as the material flow. This is not the case, which is of fundamental importance for moral responsibility.

If we disregard the fact that banking services move money (we could consider them to be for money, what transport companies are for products), there are still companies outside the already established network that focus solely on monetary flows. Klarna is one such company, specialized in payment management. Just entering the U.S. market at the time of writing, they claim already to have 10% of the market share in Northern Europe. Klarna acts as a separate node, linking buyers and sellers in the network. They thus become intertwined with the network, without being part of the materials flow.

Similarly, we find examples of companies and organizations that create nodes which only convey information. Carrington *et al.* (2010) discuss the right of consumers to make informed choices. This is very much in line with the view expressed in the social responsibility field; transparency is of the utmost importance (Svensson, 2009; Awaysheh and Klassen, 2010; Carter and Easton, 2011). As with Klarna and monetary flows, there are companies specializing in connecting supply chains via information hubs. However, other notable

examples are non-profit organizations that, while pushing an agenda, seek to spread information about the state of the supply chain. One notable example is Greenpeace, which has, for many years, informed the general public, including consumers, about production hazards. As a result, companies such as Burberry, Lego, and Lidl have committed to changing their supply chains.

To fully understand the interconnectedness in the entire network, it is not sufficient merely to understand how materials flow through the connected supply chains; on top of this 'layer', monetary and information flows connect nodes at different levels.

2.3   Morality in Supply Chain Management

Turning to morality in SCM, it is important to outline the essentials of morality and moral responsibility. As stated in the introduction, morality is considered an individual's internal and immediate sense of right and wrong (Hume, 1777). The related term 'ethics' is a social construct that is based on rationalizations of what is right and wrong (Lewis, 1985; Bishop, 2013). Jones and Ryan (1997, p. 664) defined moral responsibility as "accountability for one's chosen actions that advance of retard moral purpose". If this perspective is applied, it stands to reason that moral responsibility belongs exclusively to individual human beings and not to collectives of artificial or human bodies (Bevan and Corvellec, 2007; McMahon, 2008; Jensen, 2010). This definition implies that individuals need to be included in the networks mapping flows of moral responsibility. However, when analyzing a supply chain, we have chosen to only include organizations, so as to make the models comprehensible.

Research focusing on the flows of moral responsibility and SCM is fairly recent and limited. Eriksson *et al.* (2013a,b) include moral disengagement (Bandura *et al.*, 1996; Bandura, 1999) to suggest how moral responsibility may deteriorate in the supply chain. Moral disengagement presents eight mechanisms by which individuals come to accept what they would otherwise consider immoral (Bandura, 1999). These mechanisms are connected to common SCM practices (Eriksson *et al.*, 2013a). The field of SCM has not focused on underlying mechanisms of why individuals overlook what they usually consider to be right or wrong (Aguinis and Glavas, 2012). Nonetheless, still Eriksson and Svensson (2015) show that the field is replete with suggestions on how to enhance the impact of social responsibility.

Individuals seek consistency between their expectations and their reality. If these do not match, the individual feels dissonance, which can be reduced by either addressing the cognition or the behavior (Festinger, 1957). If it is not possible to address the cognition using, for example, moral disengagement, individuals need to focus on behavior instead. Social responsibility guidelines are rationalizations of what individuals feel to be right and wrong, and when they cannot deny how the environment is affected by their behavior, they need to address their behavior and, accordingly, are encouraged to follow social responsibility guidelines. It is well established that mechanisms of moral disengagement are consistent with the recommendations found in the SCM literature on how to raise social responsibility. Sixteen important elements are: a holistic internal view, managerial support, responsibility, incentives, measurement, education, collaboration, transparency, organizational supply chain length, geographical supply chain length, cultural differences, holistic supply chain view, power balance between companies, outside pressure, and commoditization (Eriksson and Svensson, 2014). The main lesson drawn from this research is that is seems possible to manage the supply chain in such a way that moral responsibility amongst actors is increased, which, in turn, creates a favorable setting for raising the level of social responsibility.

The notion commonly used in SCM, when discussing responsibility, is that responsibility is first and foremost directed to the company's immediate impact. This is quite evident in one of the seminal papers in the area, where Carroll (1991) places philanthropic responsibilities as the very peak of a pyramid of corporate responsibility, above those areas where the company has a more direct impact. Young (2004) presents a useful distinction between different types of responsibility. The one most commonly discussed in SCM, where one is responsible for one's actions, is called 'liable responsibility'. The second type is called 'political responsibility' and addresses the responsibility of agents affiliated with the company causing the harm. Liable responsibility focuses mainly on responsibility for production, which in SCM terms, is included in the flow of materials and money. Political responsibility extends to situations in which one gains knowledge about misconduct and might be connected to, or in some way able to influence, those who cause harm. As such, this connection is similar to the information flows discussed above, where the general public acquires knowledge about misconduct. It follows that responsibility in supply chains cannot be understood by looking only at the material flows; flows of money and information need to be included.

3   Conceptual Framework

In order to construct the conceptual framework, we begin with what is perhaps the most heavily discussed responsibility connection in SCM, that to suppliers. Throughout the discussion, we have chosen to illustrate responsibility in a single direction only. There is some discussion that extends in both directions across the supply chain, but the single direction is sufficient for the construction of this present framework.

In Figure 1, material flows are illustrated. Actor A supplies actor B, which in turn supplies actor C. Actor C is usually considered to have responsibility for actor B, as seen in much of the research on social responsibility (Gimenez and Tachizawa, 2012). However, it is known that much of the misconduct occurs in the earliest stages of the supply chain, whereas actor C is also expected to accept a degree of responsibility for actor A (Ashby *et al.*, 2012; Walker and Jones, 2012). Without actor C, the demand for actors A and B would not exist. Therefore, actor C has what Young (2004) describes as a *liable responsibility*, and is, according to Bandura (Bandura *et al.*, 1996; Bandura, 1999) in some sense behaves in such a way that affects actor A. Let us assume that a transportation provider, actor D, without the knowledge of actor C, is hired by actor B. Actors B and D have the same supplier/buyer relationship as described above. But, does the line of responsibility for actor C also include actor D?

Insert Figure 1 about here.

To understand the situation of responsibility between actor C and D, we instead look at the monetary flows, which are illustrated in Figure 2. If we follow the monetary flows, we can see that D receives money from Actor B, which has received money from actor C. Actor C is, via proxy, giving money to actor D. In this example, actor A has also chosen to use actor E, a company that specializes in purchasing invoices, as an intermediary for their payments. Thus, actor B is, through the business with actor A, providing actor E with money. Inviting actor E, actor A might have invited a company with an unethical investment policy into the supply chain. On the other hand, actor E could also contribute to harmful behavior at actor A. Similarly to the material flows discussed above, the responsibility is associated with liability. That is, by providing monetary funds, one actor enables the behavior of another.

Insert Figure 2 about here.

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In Figure 3, we look at a special case of how information can create responsibility connections in a supply chain. Admittedly, information is exchanged to manage flows of material and money, so here, we instead use an example that does not apply to these usual transactions, but focus on information about the activities at the actors. Actor C uses actor F to obtain information about the production environment at actor A. One can argue as to how exactly actor F is connected in terms of responsibility to the rest of the network. Actor F can, however, at least be seen as a service supplier to actor C. Accordingly, actor C has a responsibility towards actor F. Actor F, being immersed in the region in which actor A is active, informs actor C about actor G, where the ethical conditions are quite unacceptable. Actor C has no previous business with actor G, but with an established production network and action plan in place, actor C has the ability to improve the situation at actor G. This case is not related to liable responsibility, but to political responsibility. Even though actor C is not causing harm at actor G, an inability to take action will enable the situation to continue.

Insert Figure 3 about here.

Drawing from the logic of foliated networks, we can construct two distinct foliated networks based upon the examples above. Figure 4 shows the material, monetary, and information flows, comprising a foliated network of supply chain flows. As is evident, only actors A, B, C, and D take part in the movement of materials. Actor E is only connected through a monetary flow, and actors F and G only through information flows. Actor G has become connected to the network without being part of activities usually related to SCM. Similar connections do exist in reality. There are, for example, initiatives related to water in India, and factory safety in Bangladesh, where European companies improve conditions for actors with whom they do not conduct business.

Insert Figure 4 about here.

The second foliated network is that of responsibility. It is evident that the potential links of responsibility go way beyond the mere movement of materials. Even so, there is a case for yet no more responsibility links. All links constitute a connection for which liable or political responsibility arises. The flow of moral responsibility in each link is, through its specific context, subject to moral disengagement, reducing the sense of moral responsibility for the different actors. Moral responsibility has been discussed by Bandura (Bandura *et al.*, 1996; Bandura, 1999; Bandura *et al.*, 2000; White *et al.*, 2009), and Eriksson and Svensson (2014) who also established that efforts directed at improving social responsibility in SCM are similar in principle as to how moral disengagement may be reduced. However, this topic will not be addressed further in this paper, as it has already been done and goes beyond the scope of this paper.

Insert Figure 5 about here.

4 Concluding Discussion

The main purpose of the paper is to present a framework for understanding the flow of moral responsibility in supply chains. Eriksson *et al.* (2013a,b) were the first to introduce the concept of moral disengagement in SCM, viewing moral responsibility as a flow. These ideas were expanded by Eriksson and Svensson (2014, 2015), who established that techniques for reducing moral disengagement are similar to the manner in which social responsibility is improved in SCM. This paper has continued in to build on these ideas, suggesting how foliated networks can be used to illustrate links of moral responsibility in supply chains. In

this quest, a framework has been constructed to exemplify how different supply chain flows create different responsibility connections. Whereas materials and money are primarily related to the notion of liable responsibility, information is primarily related to political responsibility. Figures 4 and 5 show how actors can be connected to the supply chain, thus changing the dynamics of responsibility.

The main implication for researchers interested in SCM and social responsibility, is that it is important not only to consider the flow of materials. As indicated earlier, much of the current research focuses on products, which does not provide a complete picture of responsibility in the supply chain. For practitioners, it is important to note that actors who seek to take responsibility for the entire supply chain (Mares, 2010; Reuter *et al.*, 2010) need to consider how their monetary and information flows affect responsibility. Currently, companies explicitly shun responsibility in this context. Notably, in their code of conduct, H&M (2010, p. 1) explicitly states that suppliers and other business partners are responsible "to inform their subcontractors about H&M's Code of Conduct and Policy for Homework, and to ensure that these are implemented in every factory and workplace that produces, finishes packs or otherwise handles goods or performs services for H&M". Such restrictions of responsibility are similar to what Egels-Zandén (2015) calls 'responsibility boundaries', and might cause actors to escape responsibility (Eriksson and Svensson, 2014).

Even though we have suggested several responsibility links, we do not take the position that responsibility should be distributed in a certain manner. The links are constructed to illustrate how it is possible to locate responsibility within a supply chain. Many justifications of why actors are not responsible for specific links are associated with the discussion of moral responsibility (Bandura *et al.*, 1996), and this is an important topic for continued dialogue, both from the perspective of improvements in social responsibility and from a philosophical point of view.

This paper is just a small step towards providing a deeper understanding of responsibility in supply chains. If it is possible to clarify how actors withdraw from responsibility, it could help to identify how companies prioritize their efforts, and perhaps also increase our understanding of how social responsibility in such links can be improved. A logical next step in this line of research is to investigate empirically to what extent different links causes different actors to feel responsibility, and to develop and understanding of what SCM practice is best suited to improving responsibility within each link.

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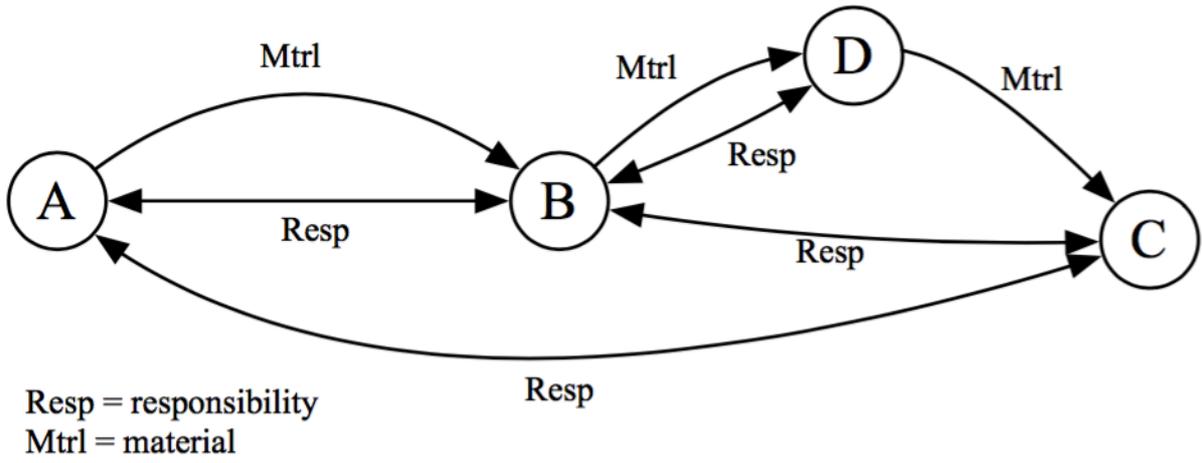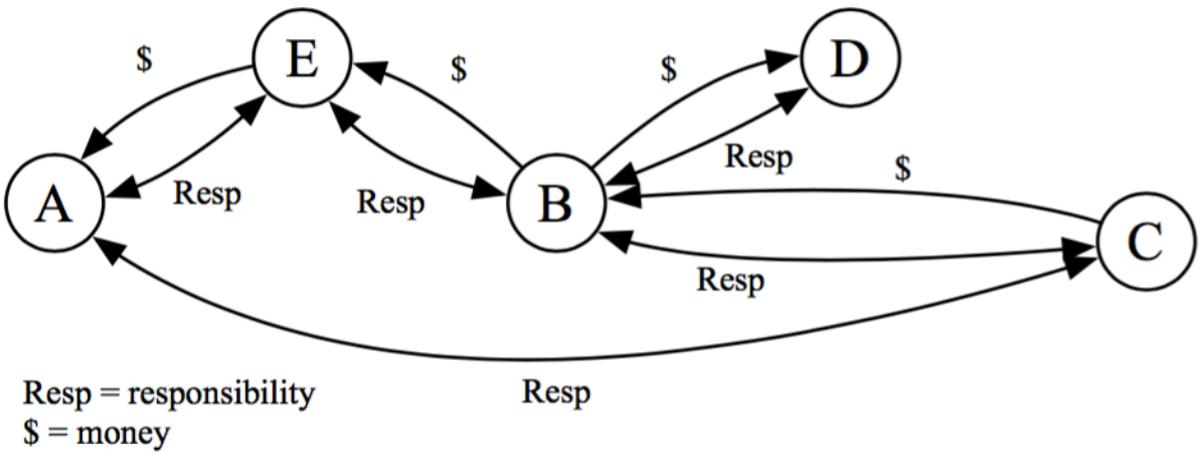
Resp = responsibility
Mtrl = material

Figure 1: Material flows and responsibility links

Resp = responsibility
$ = money

Figure 2: Monetary flows and responsibility links
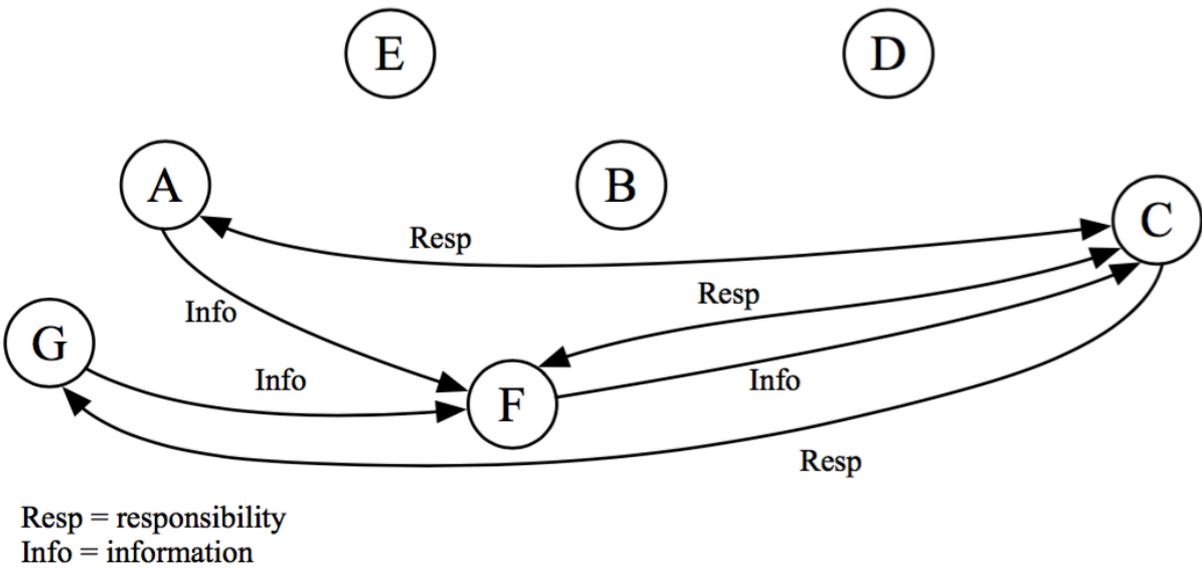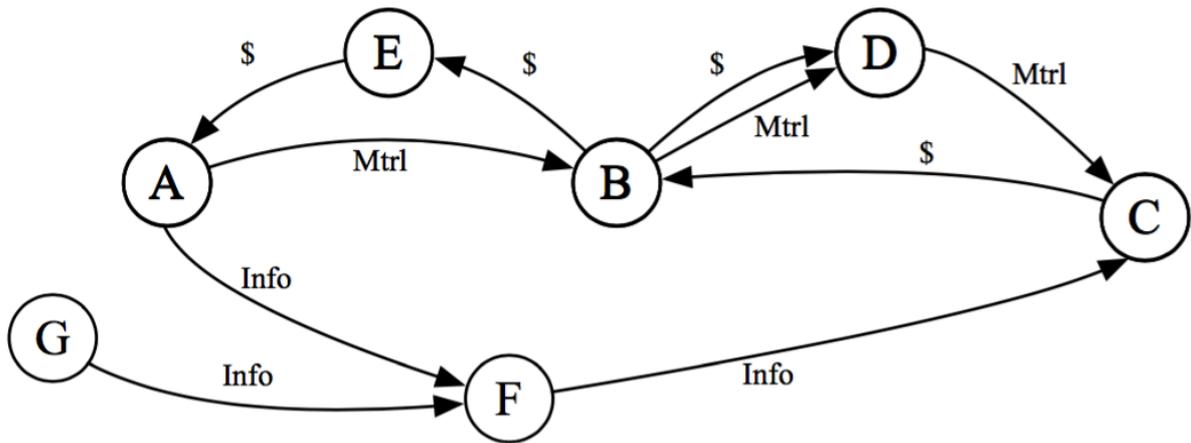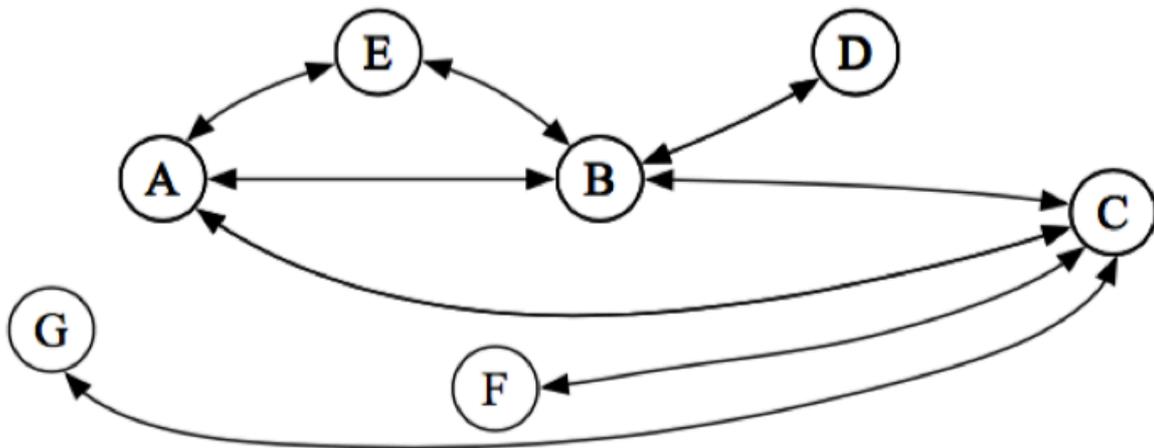

Resp = responsibility
Info = information

Figure 3: Information flows and responsibility links

$ = money
Info = information
Mtrl = material

Figure 4: Supply chain flows

All arrows are responsibility

Figure 5: Responsibility links