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Towards Reflexive Responsibility in a Textile Supply Chain

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ABSTRACT
Modern industrial society has transformed the textile sector. Brand-owning companies today seldom own the production process but instead rely on global supply chains consisting of a myriad of suppliers and sub-suppliers. The global scope of this sector, along with the complex and uncertain health and environmental risks associated with textile production, create extensive challenges for companies striving for sustainability. This paper explores the possibilities for responsible management of high-risk chemicals in textiles and focuses on a case study of a Swedish outdoor company. The concept of *reflexive responsibility* is used to understand and discuss potential possibilities and challenges. The paper describes the process and illuminates the complexity, balancing acts and avenues for upstream responsibility faced by a brand-owning company. It contributes to an understanding of how important steps towards responsibility can be taken. It also addresses the limits of responsible supply chain management of one organization, albeit a highly committed one. Copyright © 2018 John Wiley & Sons, Ltd and ERP Environment

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Introduction

LATE MODERN INDUSTRIAL SOCIETY IS ASSOCIATED WITH THE RAPID GROWTH OF GLOBAL TRADE AND MARKETS AS WELL AS THE GLOBALization of risks and responsibilities. It is abundantly clear that late modern risks cannot be managed only within national borders and that it is not possible for one organization alone to solve such a complex set of problems. These pre-conditions have sparked an era in which some actors involved in or affected by trade globalization have exhibited growing commitments to taking responsibility.

The textile sector currently exemplifies this dynamic development. This sector is characterized by so-called late modern risks (Giddens 2002; Beck 2009); such risks are man-made, complex and dispersed across space and time. Brand-owning companies rarely own the production of the textiles. Instead, they employ the services of suppliers and sub-suppliers scattered around the globe and connected to each other through geographically complex production networks (Gereffi 1999; Coe et al. 2008; Locke 2013). Two business trends are clearly visible in the textile sector: the need both to secure a competitive advantage and to integrate environmental performance into this competitive advantage (Handfield et al. 2005). Scholars (e.g. Niinimäki and Hassi 2011; Locke 2013) pay attention

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to buyers' conflicting interests. While brand owners want to ensure a positive brand image connected to responsibility, they simultaneously want to obtain high-quality products as quickly and cheaply as possible, and this effort has involved sourcing from low-cost developing countries. Fluctuating market demand, shorter product life cycles and competition for market segments have led buyers to repeatedly change suppliers, lower per-unit costs, quick turnarounds and so on, all of which in turn weaken their ability to ensure responsible management of their supply chains via codes of conduct (Locke 2013) or other instruments. These often-conflicting interests make it especially challenging to address sustainability issues.

Due to increasing pressure from targeted campaigns by NGOs, the media and concerned citizens, responsibility for supply chain management has been placed on the procuring organizations, such as brand-owning companies (Coe et al. 2008; Knudsen 2013; Vermeulen 2013). However, recent scholarship has shown that the notion of the buyer as dominant and influential must be problematized (Anner et al. 2012). Many buyers rely on sourcing strategies that, in practice, limit their power over suppliers and therefore over the supply chain. For example, sourcing from low-cost supply markets implies a number of limitations and creates difficulties in controlling and managing supply chains (Åkesson et al. 2007; Boström et al. 2015). This also happens in situations with many buyers and few suppliers. The buyer thus has a low share of the total supplier market, and the supplier is not dependent on the buyer for revenue and has more information and expert knowledge than the buyer (Cox 2001; Locke et al. 2009; Knudsen 2013).

One prevalent example of environmental risks that buyers in the textile sector must manage concerns hazardous chemicals in textile products and production. The use of such chemicals is widespread within the production and distribution processes (Choudhury 2013; Luongo 2015). Many of these chemicals have properties known to be hazardous to humans and the environment; e.g., they may be allergenic, carcinogenic and/or toxic to reproduction. Chemicals used in textiles, whether harmless or hazardous, may leak, either accidentally or on purpose, from production at different steps along the supply chain. They are also present in the completed textile or garment, either to add specific functions to the article, such as colour, water repellence or flame resistance, or as a by-product from another stage in the production process (Assmuth et al. 2011, Luongo 2015.)

Brand-owning companies in the textile sector often report that managing a supply chain is a major challenge. Existing governing frameworks on chemicals in textiles are neither globally coordinated nor consistently ambitious (Börjeson et al. 2015; Boström and Karlsson 2013; Eriksson et al. 2010; Fransson 2012). This absence of congruent regulation leads to a diffuse distribution of responsibility along the supply chain and obstructs effective risk management. There is growing scholarly interest in research on corporate responsibility connected to risk, ethics and sustainability as well as on sustainable and responsible supply chain management (e.g. De Bakker and Nijhof 2002; Srivastava 2007; Seuring and Müller 2008; Goworek 2011; Locke 2013; Boström et al. 2015; Barraud de Lagerie 2016). Among other topics, the literature discusses the cultural, linguistic, political, legal, communicative and power-related aspects of such management. Fewer studies focus more directly on *proactive responsibility or responsibility for situations of great uncertainty* (e.g. Vermeulen and Ras 2006; Scruggs and Ortolano 2011), in which it is very difficult for a company to know and to assess appropriate measures.

The paper focuses on a case study of how a Swedish outdoor company handled its chemical risks in general, and highly fluorinated compounds (PFAS) in particular. The study illuminates the company's management process and the complexity it faces in striving to assume responsibility. This is occurring in a context of complex global supply chains, where neither regulation nor demand is sending clear signals and where knowledge of chemical properties as well as of possible substitutions is scarce. The key objective of this paper is to demonstrate the crucial role that *reflexive responsibility* has in handling such difficult situations. Hence, the paper explores both theoretically and empirically what such responsibility entails and implies.

Methods

The Swedish brand-owning company Haglöfs was chosen for this case study because it ranks highly for both its commitment to and capability of achieving extended responsibility (Börjeson et al. 2015). Haglöfs is a suitable choice for this study as it has an outspoken commitment to sustainability and because it made a strategic decision in 2008

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to integrate sustainability into the company's future development (Haglöfs Sustainability Report 2015). The company fits the profile of having complex, global supply chains with limited options for controlling suppliers (mainly due to the company's size and outsourced production). Moreover, they have chemicals that are problematic from a health and environment point of view in their production and final products. These include highly fluorinated substances (PFAS), a group of functionality-enhancing chemicals that have low legal requirements, while at the same time scientific studies document their persistent, bioaccumulative and toxic properties (Prevedouros et al. 2006; Yeung et al. 2006). The case study pays particular attention to the management of these chemicals.

This case study was conducted over the 2008–2017 period, which has allowed us to study the development of the company's management process over time and enabled valuable insights into development of a reflexive approach. As emphasized in the introduction section, both responsibility and reflexivity evolve during a considerable time period, so we consider it a methodological advantage to be able to follow a case over an extended period of time. Data were gathered through qualitative, semi-structured interviews with key informants as well as through 31 participatory observations of strategic meetings, workshops and stakeholder gatherings. A member of the research team, who is also the main author of this paper, carried out the interviews and the participatory observations.

The interviews were semi-structured, which is an appropriate approach when studying ongoing processes. The informants were chosen through consultations with the head of sustainability at Haglöfs, and their roles at the company were as follows: director of sustainability (two different persons during the time period), materials manager, materials coordinator, product developer, head of logistics, and sales. All of the informants were involved in Haglöfs' work on sustainability and chemical management in different ways. All informants were told that the name Haglöfs would be used in the study, which precludes total anonymity. Two informants gave several interviews over the years, which made it possible to obtain insight on the company's development over time. Moreover, about a dozen informal conversations with mainly the head of sustainability, but also the materials coordinator, product developer and sales, were conducted during the participant observations.

The research team aspired to include suppliers in the study, and collaborated with Haglöfs to select a supplier relevant for the case study. Despite repeated efforts both by a member of the research team and by several of the informants, the supplier did not respond to the request. For practical and ethical reasons, the research team decided not to continue these efforts, with the implication that the empirical material excludes the supplier's perspectives. This is a limitation, but can also be interpreted as confirming the considerable challenges involved in achieving effective governance and communication as well as trust along complex global supply chains (Boström 2015; Boström et al. 2015).

However, more robust data were gathered regarding other elements of Haglöfs' context and network through a series of participatory observations. The participatory observations were based on stakeholder meetings, seminars and workshops, and the topics ranged from the broad subject of chemical risks and/or chemicals in textiles to regulations applying to specific chemicals (such as PFAS). These data contribute to a broader understanding of the policy and market context surrounding Haglöfs, as well as providing a picture of the company's networking efforts around responsible production. Representatives from Haglöfs were present at most of the meetings, and we used notes from the observations to interpret how Haglöfs interacts with other stakeholders. We could identify that Haglöfs is a committed company, significantly active in discussions, knowledge sharing and so on. The meetings were mainly mediated by the Swedish Chemical Agency, alone or through collaboration with the Swedish Trade Federation.

Moreover, along with interviews and observations, texts and reports linked to the organization, including codes of conduct, sustainability reports and newsletters, were analysed. The documents were acquired through the organization's web page or the informants.

Reflexive Responsibility

Taking responsibility for preventing the negative social and environmental impact of production and goods along complex global commodity chains requires serious and ambitious efforts.

First, such extended responsibility involves organizations in reframing their conceptions of responsibility, moving away from a narrow national and traditional mindset and instead looking beyond their own organizational

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borders (Kovács 2008) to include listening to the expressed concerns and needs of, for instance, suppliers (see, e.g., De Bakker and Nijhof 2002). In addition to this spatial dimension, responsibility has a temporal dimension. Responsibility can be imputed before (e.g. learning about potentially toxic chemicals) and/or after a situation has materialized (e.g. providing economic compensation after an incident). Moreover, it is necessary to see responsibility as an *ongoing* process, in which its meaning and shape is continuously negotiated and developed.

Second, organizations must develop *capabilities* to assume responsibility (Bowen et al. 2001; De Bakker and Nijhof 2002; Gold et al. 2010; Seuring and Müller 2008; Beske et al. 2014). These capabilities can be seen as skills, resources, collaborations and functional competences developed within firms to meet the requirements of a changing environment. For example, these may include a liaison between purchasing and other functions (e.g., a sustainable supply chain may be facilitated by cross-functional teamwork), a collaborative and learning-oriented approach with suppliers, a general understanding of environmental issues and how they affect supply, the technical skills of the purchasing personnel and detailed purchasing policies and procedures. It is also argued that a proactive corporate environmental approach can foster the development of capabilities (Bowen et al. 2001).

Drawing on the concept of reflexivity in our analysis was instructive given the challenges of a company assuming responsibility in a context of complex and volatile global supply chains and environmental uncertainty. A reflexive approach enables companies to deploy capabilities in order to continuously evaluate and organize adaption of the unforeseen emergent risks and concerns in the context of an uncertain and rapidly changing business environment. Such an approach is arguably crucial in order to implement and maintain responsibility and governance practices beyond a company's organizational borders, while at the same time sustaining a competitive advantage (Beske et al. 2014). Reflexivity implies that an individual or collective actor look at itself with a self-scrutinizing attitude. This concept has been developed in the literature on world risk society and reflexive modernization (e.g. Beck et al. 1994; Beck 2009) and in the literature on environmental governance, risk governance and transition theory (e.g. Voß et al. 2006; Kemp and Loorbach 2006; Boström et al. 2017).

Accordingly, a general idea consistent with the notion of reflexivity is that experts, decision makers, citizens and other actors must be open to questioning assumptions in a given situation, in addition to valuing pluralism and not concealing issues of uncertainty. Reflexivity involves addressing questions to oneself concerning how existing habits, perspectives, assumptions, policies, technologies and rules may create and reproduce problems. Applied to responsibility, reflexive responsibility refers to a self-critical scrutiny of current modes of taking responsibility, including their achievements and unintended negative effects (cf. Voß et al. 2006, on 'reflexive governance'). Scholars who focus on reflexivity recognize that global and local sustainability problems are complex, uncertain and ambivalent and must be treated as such (Kemp and Martens 2007; Voß et al. 2006; Walker and Shove 2007). This perspective is applicable to the situation that arises with regard to chemicals in textiles and complex supply chains. Problems can seldom be solved in a once-and-for-all manner because new problems, trade-offs and ambivalences are likely to appear after decisions are made. Therefore, actors must develop the potential to respond continuously to unexpected outcomes. Reflexivity entails a temporal dimension. On the one hand, reflexive organizations are forward looking and adaptive, allow for trial-and-error learning and permit experimenting with new innovations (Grin 2006; Kemp and Loorbach 2006). On the other hand, they are backward looking, make use of experience and critically evaluate earlier mistakes.

Reflexive responsibility ought to be particularly warranted in complex situations involving uncertainty, ambiguities, insufficient regulation and a plurality of interacting actors. Such an approach acknowledges that what works today might prove to be inferior tomorrow and that the pursuit of improvement is usually a never-ending activity. Next, we will explore empirically, through our case study on Haglöfs, how reflexivity can strengthen a company's opportunities to develop responsible supply chain management in issues concerning uncertain and intricate risks.

Haglöfs' Commitment to a Sustainability Agenda

The successful management of chemical risks through the establishment of responsible supply chain management demands serious efforts. In this section, we analyse how reflexive responsibility shapes Haglöfs' management practices and what this means for the responsible management of chemical risks in textiles.

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Haglöfs is a medium-sized, design-controlled company niched as a premium brand within the outdoor sector. The company has ambitions to create high-end products of high quality: 'It is high quality. These are not cheap products. Our main focus is quality, that people feel that they get what they pay for. We are rather high up on that ladder'. According to Haglöfs, quality that is mainly associated with function is what the company lives on. In addition to making high-quality products, Haglöfs is also a company with ambitious sustainability goals (Haglöfs Sustainability Report 2015). It aspires to long-term profitable growth while also contributing to a sustainable society. On a more concrete level, this commitment translates into 'durable products'. This however also implies that environmental performance through recycled materials can, according to Haglöfs, never take priority over the product's durability. Customers must trust that the products they buy will last. The typical Haglöfs product is 'made to work and made to last'. According to an informant, Haglöfs sustainability commitment is based on the company's character. Haglöfs is portrayed as a company that generally takes responsibility. Responsibility is perceived to be embedded in the company's culture, be it responsibility concerning the environment, the company's staff, suppliers or other stakeholders. Second, informants express the conviction that the sustainability aim will prove to be something that ultimately benefits the company. If they show that they 'do the right thing,' people will buy their products.

In addition to internal drivers, there are also external factors that fuel Haglöfs sustainability efforts. Apart from legal requirements, pressure from NGOs and negative media attention shape their decisions. A company that does not want to become the target of media investigation or an NGO report must stay ahead. At Haglöfs there is a constant awareness of such risks. However, the company also uses media reporting to stay up to speed, and if an NGO finds an unregulated hazardous chemical then Haglöfs takes this information into consideration, even when the chemical per se does not directly concern them. Direct customer pressure is perceived to be low and is thus not a key driving force.

The Act of Balancing Risks

Haglöfs' three foci – function, durability and sustainability – are not always compatible. Informants report that the personnel dedicated to working on these issues face a rather challenging task, as illustrated by the example of PFAS. As Haglöfs sells high-quality outdoor products, some of these are surface-treated with fluorocarbons. Haglöfs' employees are well aware of the debate and risks surrounding their use of PFAS technology, but they still use some of these chemicals. This usage is based not on ignorance but on active decision making, despite the company's clear sustainability plan. The risks associated with particular chemicals do not necessarily mean that these chemicals are eliminated from Haglöfs' production, as the commitment to making highly functional garments takes precedence. According to Haglöfs, if there is no equivalent chemical to act as a substitute, continued use of PFAS is warranted. As one employee summarizes this position:

> You have to work with swings and carousels, you might have to cut your marginal on some products so that you may raise it somewhere else, such as when you have all environmental aspects in place. So it is a continuous balancing act.

Accordingly, Haglöfs may lower the sustainability demands on some products while keeping them firmly in place on others. Haglöfs uses PFAS-free water repellent when they determine such a use to be appropriate. The processes of assessing which goals are to take precedence can be interpreted as an act of balancing different possibilities and risks. As this balancing act is performed in a proactive, systematic manner and is based on assessments of different options and risks; it is not necessarily an act of irresponsibility and letting the drive for sales and profits outpace environmental standards. For example the risk of inadequate product quality:

> We are still using C6 water repellent treatment on some of our shell garments since there are currently no PFAS-free alternatives that can meet our high functional requirements necessary in a demanding outdoor environment (Haglöfs Sustainability Report 2015).

The diffuse risks of the use of some PFAS are set against the more straightforward risk of the product not living up to the promised standard on which the company stakes its reputation. Haglöfs' focus is to meet customers'

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expectations for quality and to use the best available fluorocarbon technology where the related risks are perceived to be as low as possible (at the moment). This process of balancing risks shows the ways in which the company is proactive: Haglöfs uses the best available expertise and is systematic and preventive, but is simultaneously bound by the restraints of the ideal of durability and creating functional garments, as well as by the restraints of available information, expertise and technology.

Haglöfs has strategies in place to achieve balance among its three ideals of quality, durability and sustainability, and its long-term strategy is considered to fulfil all three. Such strategies include knowledge management, product development, collaboration and networking with external stakeholders. The company has an outspoken process-oriented approach: 'Sustainability is about making things a little bit better all the time' (Haglöfs Sustainability Report 2015). They clearly acknowledge that they are not perfect but keep striving towards improvement: 'Don't let perfect be the enemy of good' (first head of sustainability). One way to move forward is to try new things repeatedly, and informants at Haglöfs cite the importance of not being afraid to fail or to take corporate risks. For example, the company has tried to replace the fluorocarbon-based surface treatment on its rainwear made of recycled materials with fluorocarbon-free treatment. Although this effort has failed, the company will try again when it finds alternatives that seem promising enough. They continue to ask their suppliers for fluorocarbon-free alternatives, and engage in discussions with chemical-producing companies concerning the development of alternatives to PFAS (as seen in participatory observation). Moreover, Haglöfs is part of a research group that is aiming to develop PFAS-free durable water repellent (DWR) with the same performance as PFAS. They claim that the group is making progress and hope to commercialize products with the new DWRs in the near future. The way in which Haglöfs focuses its management approach on continuous improvement through a try-and-try-again trial-and-error process is representative of its corporate reflexive responsibility. This indicates a systematic and adaptive approach that focuses on continuous improvement, being both preventive and forward looking, while remaining responsive, experimental and learning oriented.

When the law does not provide stringent regulation of hazardous chemicals, one could argue that the use of such chemicals becomes a moral issue. From this study, it is evident that the interviewed employees at Haglöfs engage in ongoing reflections on the balance between product quality and moral quality. The interviewed employees all state that a company should not consciously release products into the market that are known to be damaging to either humans or the environment. However, they continue to do so. The first head of sustainability says that everything would be easier if chemical legislation was much tougher. 'If it is not regulated, well then there is the moral obligation. But, moral obligations are always subject to arbitrariness. It is up to you to decide how moral or immoral you are.'

Informants also explain that customers usually do not know what they are paying for, arguing that the company – and not the customers – is an expert on the topic, thus implying that the company should take preventive measures on behalf of customers. Nonetheless, this ignorance on the part of customers is also a challenge and is part of the equation in the balancing act. If what is valuable to the company is not known or valuable to the customers, it can be difficult to explain the higher prices that result from stricter chemical management 'We made a whole collection where everything was 200 SEK[I] too expensive and nothing sold. OK, what would you as a company do in this situation?'

Developing Capabilities

Corporate strategies and practices must be established when striving for responsible management, and they should be in place both in-house as well as in upstream management of the supply chain. In this section, we describe and discuss such practices and how they can relate to a management process characterized by reflexive responsibility.

Capability-Building Supplier Relations and Inter-organizational Networking

Haglöfs' continuous work towards improvements requires an environmental perspective that permeates the entire organization. Achievement of such an integrated perspective is a declared intention, but the company has still many steps to take.

[I]Approximately 20 Euro.

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One way in which Haglöfs organizes readiness to respond to unforeseen events is by forming in-house teams where the members are specialists on their subject matter and responsible for a defined part of the supply chain, such as design or materials. Such cross-functional teams are said to facilitate corporate capabilities and further a responsible approach (see theory section). However, their success depends heavily on how often the group meets and how well collaboration works. With limited meetings or representation, relevant knowledge runs the risk of getting stuck in one department of the company. For example, informants raised concerns that knowledge about chemicals and other sustainability issues may accumulate with the head of sustainability and sometimes fail to be disseminated further in the organization. Informants suggested that chemical expertise could be more systematically integrated early on during the design of new products. Follow-up interviews showed that efforts have been made to meet this demand for integration as well as for continuous knowledge update for the personnel, which indicates ambitions towards an increased capacity building.

Haglöfs addresses responsibility issues upstream in several ways that potentially influence its suppliers. First, the company strives for long-term relationships with its suppliers. It aims at building trusting relations and facilitating open communication. Previous research has documented the importance of such relations with suppliers in developing sustainable supply chain management (e.g. Gold et al. 2010; Locke 2013; Boström 2015).

This goal can be achieved by facilitating a mutual dependence with suppliers, which in turn is achieved through cooperation, being generous with information and sticking to promises and agreements. For example, Haglöfs states that the company gives suppliers information on when its next order will be coming and the approximate size of the order so that the supplier can prepare in good time. If it orders 10 000 meters of fabric, it purchases within the range of 9000–11000 meters. Haglöfs strives to have open and honest conversations with the suppliers, a conversation that works both ways:

> I want them to be able to be honest and call me up and say, well, this colour it did not turn out well and we have to redo the production. That they don't ship out something that is not good because they think they might get away with it – you try to have an understanding relationship. (...) You have to work on that relationship and you cannot do that while hobbling around thinking price price price.

Additionally, Haglöfs has contact with all of its material suppliers so as to determine the level of quality of the included ingredients, which allows the company to guarantee the product. Taking charge of good supplier relations as well as accruing knowledge of the purchased materials can be seen as one more strategy that a brand-owning company can employ to assume responsibility – particularly beyond its own organizational border. A relationship characterized by mutual trust and dependence also places some responsibility on suppliers. A long-term orientation and good relations 'make them [suppliers] listen to you, then they do what you ask'. According to informants, direct communication is preferred and is achieved either through personal meetings, e-mail or telephone. Standardized forms that are filled out and evaluated are not seen as equal to personal connections, but play a complementary role.

Unlike large companies such as IKEA and H&M, Haglöfs faces problems vis-à-vis suppliers due to its relatively small size (cf. Boström 2015). The majority of organizations within the Swedish textile sector are too small to be able to exercise significant influence on producers, suppliers or regulators. 'The company is too small/our production is spread over multiple factories making us too small/the Swedish textile sector is just too small/we are just too small to exert influence in any real way'. Haglöfs is responsible for only a small percentage of the total production of a particular supplier. In such cases, one strategy – which Haglöfs utilizes – can be to seek other spheres of influence (Boström et al. 2015; Chkanikova and Lehner 2015). For example, small companies can network with other organizations, including initiatives such as the Swedish Chemicals Agency's Textile Dialogue or through the organization known as Bluesign: '[W]e cannot exert influence alone because we are too small.... We cannot do it alone but rather need an organization like Bluesign backing us'.[2]

[2]Bluesign is a voluntary initiative through which textile manufacturers aim to improve the environmental performance of their production. The organization provides companies with chemical expertise and creates restricted substance lists (RSLs) that suppliers must comply with if they are to be certified as Bluesign suppliers. Haglöfs has set the goal of gradually and continuously increasing its use of Bluesign-approved fabrics as a way to reduce the toxicological potential and chemical footprint of its products.

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Bluesign is a way to outsource both time and knowledge to a third party. It is also a way to outsource part of the responsibility to an actor that is perceived as more capable of making informed decisions. It requires a certain amount of trust in the consultants' abilities as well as a general understanding of chemical issues to be able to evaluate the measures undertaken by Bluesign. Haglöfs places a high level of trust in Bluesign, but there are also other key actors and rule-systems in Haglöfs' knowledge network, including Swerea, GOTS, EU-Ecolabel, Chemsec, the Swedish Society for Nature Conservation and the Swedish Chemical Agency, to name a few.[3] In spite of the size and capacity of the company, Haglöfs persistently pressures stakeholders such as Bluesign, Gore-Tex and chemical and product producers as well as suppliers of materials towards adopting more environmentally friendly chemical practises. Such a proactive role has been both seen in participatory observations and claimed in interviews. It is worth noting that they also sometimes succeed with this: 'we have been lobbying for this for such a long time so they said [certain suppliers and producers]: "we give up"'(current head of sustainability).

Reflexivity and Responsible Supply Chain Management

This article argues for the value of connecting the concepts of reflexivity and responsibility in a context of complex and radically uncertain risks as well as global and complex supply chains. In the face of a less certain and rapidly changing world, both scholars and practitioners need concepts and proactive approaches appropriate for thinking and acting in these new circumstances.

A reflexive approach enhances a company's preparedness to initiate and internally manage chemical risks as well as to respond to unexpected events. Haglöfs is outspokenly committed to assuming responsible supply chain management and is continuously striving towards developing such capabilities. The company has an outspoken, long-term and process-oriented approach with a focus on continuous learning, which allows for trial and error, as well as acknowledgement of complexities and ambiguities.

However, it is important to stress that a committed approach far from guarantees sustainability. Reflexive responsibility indeed entails acknowledgment that measures taken today might prove flawed tomorrow. Therefore, assuming such responsibility means making efforts to avoid becoming locked into path dependences, and create mindsets and organizational structures that are open to possible revision. Moreover, concerning the focus of this article, there must be constant readiness to substitute chemicals. This study also shows the complexity of managing chemical risks, as the company must also address, for example, opposing business interests, balancing different risks, knowledge uncertainties, internal fragmentation, a fragmented supply chain and 'weak' legislation.

On a systemic level, there are limitations to what a single company can achieve, however committed it may be. Nevertheless, brand-owning companies such as Haglöfs can make efforts in different directions simultaneously, both upstream towards suppliers and sub-suppliers as well as in horizontal networks that include peers, through which they both initiate voluntary standards and lobby for stricter national and international legislation. Reflexive responsibility implies openness towards such inter-organizational collaboration. It implies some shared responsibility along supply chains in a manner that is perceived as fair and balanced. The possibilities to apply pressure are, however, limited for a company of Haglöfs' size. Whereas the company could be a very active player in the domestic context, it faces many more difficulties to achieve close interaction with suppliers along its supply chains (see also Boström et al. 2015, on this and other 'gaps'); and this was a barrier also encountered in our failed attempt to include suppliers in the study. However, if notions of company responsibility are to be further advanced, companies cannot stop trying when faced with failed attempts to engage with suppliers. We face an acute global situation with many escalating risks, including chemical risks, where traditional regulation fails or lags behind. It is fair to say that this is a gigantic organizational, political and regulatory challenge. The development of an extended frame of responsibility and reflexive approaches imply some important and arduous steps on the way.

[3]The organizations mentioned include labelling schemes, NGOs, research institutes and the Swedish supervisory authority under the Ministry of the Environment and Energy.

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References

Åkesson J, Jonsson P, Edanius-Hällås R. 2007. An assessment of sourcing strategies in the Swedish apparel industry. *Journal of Physical Distribution and Logistics Management* **37**(9): 740–762. https://doi.org/10.1108/09600030710840840

Anner M, Bair J, Blasi J. 2012. Buyer Power, Pricing Practices, and Labor Outcomes in Global Supply Chains. In Institutions Program Working Paper Series: INST2012-11. University of Colorado at Boulder: IBS Institutions Program, Institute of Behavioural Science.

Assmuth T, Häkkinen P, Heiskanen J, Kautto P, Lindh P, Mattila T, Mehtonen J, Saarinen K. 2011. Risk Management and Governance of Chemicals in Articles. Case Study Textiles. Helsinki: Finnish Environment Institute.

Barraud de Lagerie P. 2016. Conflicts of responsibility in the globalized textile supply chain. Lessons of a tragedy. *Journal of Consumer Policy* https://doi.org/10.1007/s10603-016-9312-1

Beck U. 2009. World at Risk. Polity: Cambridge.

Beck U, Giddens A, Lash S. 1994. Reflexive Modernization. Politics, Tradition and Aesthetics in the Modern Social Order. Polity: Cambridge.

Beske P, Land A, Seuring S. 2014. Sustainable supply chain management practices and dynamic capabilities in the food industry: a critical analysis of the literature. *International Journal of Production Economics* **152**: 131–143. https://doi.org/10.1016/j.ijpe.2013.12.026

Börjeson N, Gilek M, Karlsson M. 2015. Knowledge challenges for responsible supply chain management of chemicals in textiles – as experienced by procuring organisations. *Journal of Cleaner Production* **107**: 130–136. https://doi.org/10.1016/j.jclepro.2014.03.012

Boström M. 2015. Between monitoring and trust: commitment to extended upstream responsibility. *Journal of Business Ethics* **131**(1): 239–255. https://doi.org/10.1007/s10551-014-2277-6

Boström M, Karlsson M. 2013. Responsible procurement, complex product chains and the integration of vertical and horizontal governance. *Environmental Policy and Governance* **23**(6): 381–394. https://doi.org/10.1002/eet.1626

Boström M, Jönsson AM, Lockie S, Mol APJ, Oosterveer P. 2015. Sustainable and responsible supply chain governance: challenges and opportunities. *Journal of Cleaner Production* **107**: 1–7. https://doi.org/10.1016/j.jclepro.2014.11.050

Boström M, Lidskog R, Uggla Y. 2017. A reflexive look at reflexivity in environmental sociology. *Environmental Sociology* **3**(1): 6–16.

Bowen FE, Cousins PD, Lamming RC, Farukt AC. 2001. The role of supply management capabilities in green supply. *Production and Operations Management* **10**(2): 174–189. https://doi.org/10.1111/j.1937-5956.2001.tb00077.x

Chkanikova O, Lehner M. 2015. Private eco-brands and green market development: towards new forms of sustainability governance in the food retailing. *Journal of Cleaner Production* **107**(16): 74–84. https://doi.org/10.1016/j.jclepro.2014.05.055

Choudhury AKR. 2013. Green chemistry and the textile industry. *Textile Progress* **45**: 3–143.

Coe NM, Dicken P, Hess M. 2008. Global production networks: realizing the potential. *Journal of Economic Geography* **8**(3): 271–295. https://doi.org/10.1093/jeg/lbn002

Cox A. 2001. Understanding buyer and supplier power: a framework for procurement and supply competence. *Journal of Supply Chain Management* **37**: 8–15. https://doi.org/10.1111/j.1745-493X.2001.tb00094.x

De Bakker F, Nijhof A. 2002. Responsible chain management: a capability assessment framework. *Business Strategy and the Environment* **11**(1): 63–75. https://doi.org/10.1002/bse.319

Eriksson J, Gilek M, Rudén C (Eds). 2010. Regulating Chemical Risks: European and Global Challenges. Springer: London.

Fransson K. 2012. Chemical risk information in product chains. The cases of paint and textile. Licentiate Thesis. Chalmers University: Gothenburg.

Gereffi G. 1999. International trade and industrial upgrading in the apparel commodity chain. *Journal of International Economics* **48**(1): 37–70. https://doi.org/10.1016/S0022-1996(98)00075-0

Giddens A. 2002. Runaway World: How Globalization is Reshaping our Lives. Profile: London.

Gold S, Seuring S, Beske P. 2010. Sustainable supply chain management and inter-organizational resources: a literature review. *Corporate Social Responsibility and Environmental Management* **17**: 230–245. https://doi.org/10.1002/csr.207

Goworek H. 2011. Social and environmental sustainability in the clothing industry: a case study of a fair trade retailer. *Social Responsibility Journal* **7**(1): 74–86. https://doi.org/10.1108/17471111111114558

Grin J. 2006. Reflexive modernisation as a governance issue, or: designing and shaping *re*-structuration. In Reflexive Governance for Sustainable Development, Voss J-P, Bauknecht D, Kemp R (eds). Elgar: Cheltenham, UK; 57–81.

Haglöfs Sustainability Report. 2015. http://www.haglofs.com/se/en/sustainability [23 May 2016].

Handfield R, Sroufe R, Walton S. 2005. Integrating environmental management and supply chain strategies. *Business Strategy and the Environment* **14**(1): 1–19. https://doi.org/10.1002/bse.422

Kemp R, Loorbach D. 2006. Transition management: a reflexive governance approach. In Reflexive Governance for Sustainable Development, Voss J-P, Bauknecht D, Kemp R (eds). Elgar: Cheltenham, UK; 103–130.

Kemp R, Martens P. 2007. Sustainable development: how to manage something that is subjective and never can be achieved? *Sustainability: Science, Practice, and Policy* **3**(2): 10.

Knudsen JS. 2013. The growth of private regulation of labor standards in global supply chains: mission impossible for Western small- and medium-sized firms? *Journal of Business Ethics* **117**: 387–398. DOI: 10.007/s10551-012-1572-8

Kovács G. 2008. Corporate environmental responsibility in the supply chain. *Journal of Cleaner Production* **16**(15): 1571–1578. https://doi.org/10.1016/j.jclepro.2008.04.013

Locke RM. 2013. The Promise and Limits of Private Power. Cambridge University Press: Cambridge.

Locke R, Amengual M, Mangla A. 2009. Virtue out of necessity? Compliance, commitment, and the improvement of labour conditions in global supply chains. *Politics and Society* **37**(3): 319–351.

Luongo G. 2015. Chemicals in textiles: a potential source for human exposure and environmental pollution. Doctoral Thesis. Department of Environmental Science and Analytical Chemistry Stockholm University.

Niinimäki K, Hassi L. 2011. Emerging design strategies in sustainable production and consumption of textiles and clothing. *Journal of Cleaner Production* **19**(16): 1876–1883.

Prevedouros K, Cousins IT, Buck RC, Korzeniowski SH. 2006. Sources, fate and transport of perfluorocarboxylates. *Environmental Science and Technology* **40**(1): 32–44. https://doi.org/10.1021/es0512475

Scruggs CE, Ortolano L. 2011. Creating safer consumer products: the information challenges companies face. *Environmental Science and Policy* **14**(6): 605–614. https://doi.org/10.1016/j.envsci.2011.05.010

Seuring S, Müller M. 2008. From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production* **16**(15): 1699–1710. https://doi.org/10.1016/j.jclepro.2008.04.020

Srivastava SK. 2007. Green supply-chain management: a state-of-the-art literature review. *International Journal of Management Reviews* **9**(1): 53–80. https://doi.org/10.1111/j.1468-2370.2007.00202.x

Vermeulen WJV. 2013. Self-governance for sustainable global supply chains: can it deliver the impacts needed? *Business Strategy and the Environment*. https://doi.org/10.1002/bse1804

Vermeulen WJV, Ras PJ. 2006. The challenge of greening global product chains: meeting both ends. *Sustainable Development* **14**(4): 245–256. https://doi.org/10.1002/sd.270

Voß JP, Bauknecht D, Kemp R (Eds). 2006. Reflexive Governance for Sustainable Development. Elgar: Cheltenham, UK.

Walker G, Shove E. 2007. Ambivalence, sustainability and the governance of socio-technical transitions. *Journal of Environmental Policy and Planning* **9**(3/4): 213–225. https://doi.org/10.1080/15239080701622840

Yeung LW, So MK, Jiang G, Taniyasu S, Yamashita N, Song M, Wu Y, Li J, Giesy JP, Guruge KS, Lam PK. 2006. Perfluorooctanesulfonate and related fluorochemicals in human blood samples from China. *Environmental Science and Technology* **40**(3): 715–720. https://doi.org/10.1021/es052067y