

**TOWARD A COMPREHENSION OF TENSIONS IN THE FAST FASHION INDUSTRY  
UNDER A COMPLEXITY LENS**

**DOMENICO CEGLIA**

UNIVERSIDADE FEDERAL DO CEARÁ (UFC)

**MÔNICA CAVALCANTI SÁ DE ABREU**

UNIVERSIDADE FEDERAL DO CEARÁ (UFC)

**EUGENIO AVILA PEDROZO**

UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL (UFRGS)

**MARCIA DUTRA DE BARCELLOS**

UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL (UFRGS)

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## ABSTRACT

We see a problem when we talk about tensions in Business Sustainability (BS) because the sustainability is not a momentum to achieve, but an ongoing process. In literature, the tensions in BS are approached according to a win-win, a trade-off, an integrative, and a paradox lens, which don't explain when and how tensions could emerge during the business operation. One alternative possible way to approach the tensions in the BS is under complexity. This way, the debate will focus on how tensions emerge in business's phases, if tensions inherently complex, and how complexity contributes to the literature of tensions in BS. We have interviewed 3 companies in Brazil that deals with the textile industry engaged in sustainability initiatives over time under a production system Fast Fashion called. Complex tensions could emerge during the analysis showing how sustainability initiatives could, over time, lead to uncertain and unpredictable decisions.

**Keywords:** Circular Economy; Production System; Business Sustainability; Complexity

## 1 INTRODUCTION

The tensions between short and long term of sustainability practices have seen significant interest in climate change recognizing the emergence of complexity (Slawinski e Bansal, 2015). A tension emerge when "the head-on collision between two sets of irreconcilable attitude and belief" (Rogers, 1965, p. 7). Among scholars, there is no clear definition for the link between tensions and sustainability, but they argue that the tensions could emerge when businesses adopt sustainability practices or determine objectives for sustainability which could be conflictual, in order to achieve superior economic performance which might be in contrast with societal expectations (Hahn *et al.*, 2015).

Scholars has adopted different paradigm as win-win, trade-off, integrative and paradoxical (Byl, Van der e Slawinski, 2015) to understand the conflict between the sustainability practices in the business. The win-win paradigm has not recognized the conflit because the social and environmental issues are only taken into account to the degree are aligned to sustainan economic performance (Hahn *et al.*, 2010). Although the trade-off paradigm stands for a compromise between two or more sustainability issues, possibly sacrificing one issue to benefiting others, the view is instrumental, it is a economic focus on shareholders and profit maximization (Byl, Van der e Slawinski, 2015). Instrumental paradigm would comprise "the emerging integrative view of corporate sustainability" (Hahn *et al.*, 2015). The integrative paradigm has pointed by Hahn, Pinkse, Preuss, and Figge (2015) helps us to identify the nature of tensions in business sustainability through individual/organizational/systemic levels taking into consideration context and organizational change across time. However, it is still unclear how the multiple tensions interact between them from the proposed framework, since that "business simultaneously address multiple sustainability issues" (Hahn *et al.*, 2015, p. 311). The paradoxical paradigm has explored how organizations can attend to competing demands simultaneously (Lewis, 2000). Although paradoxical paradigm has analyzed the multiple interrelated, yet competing, sustainability issues (Hahn *et al.*, 2018), it still does not explain how the "multiple interrelations" between sustainability tensions work and how they change over time in a virtuous cycle, a concept for which Smith and Lewis (2011) have proposed a similar model.

These paradigms are based on an "instant picturing mode" between multiple economic, social, and environmental issues, thus, the tensions are partially defined because, as argued Lozano (2008, p. 1843), they "suffer from being highly anthropocentric, compartmentalised, and lacking

completeness and continuity.” When business approaches under a “interacting picturing mode” between multiple economic, social, and environmental issues. These interactions between these issues could give rise to interdependent sustainability tensions and, consequently, interdependent contradictions. When these interdependences are contradictory as well, they pose complex, irrational, and circular phenomena of tensions (Smith *et al.*, 2017).

The complex phenomena of tensions could be analyzed under Morin (2001) tetragramic logic because it depicts the interdependent contradictions between business sustainability phases (BSP). The BSPs interact between them along the business life. The BSPs are depicted by Delmas *et al.* (2019) as “initiation”, “early adoption”, “diffusion” and “standardization”. The tetragramic logic uses the same categories called in “order”, “disorder”, “organization” and “new order”. The interactions between order, disorder, organization and new order rise multiple tensions when the attitudes taken from decision makers are irreconcilable (Rogers, 1965). These multiple tensions are based on stretched condition between sustainability demands (Hahn *et al.*, 2015). This stretched condition can be concurrent, antagonistic or complementary, and, when they are analyzed simultaneously, the complexity surfaces because each stretched condition has its logic interdependent with others.

Literature regarding the sustainability tensions is still vague when defining complexity and uses the concept sparsely (Smith *et al.*, 2017). This paper aims better define and to use complexity to understand sustainability tensions as an alternative to the traditional paradigm discussed above (Richardson, 2008; Smith *et al.*, 2017; Stacey, 1995). Yet, insights from a complexity paradigm are limited by fundamental debates about the nature of sustainability tensions. Based on this, we would to attend this research question: How sustainability tensions inherently complex emerge?

To attend to this research question, we analyze three big Brazilian clothing firms because after Rana Plaza disaster in Bangladesh and social and environment scandals in the domestic border, these firms are under attack from investors, governments, and civil society. As all the Fast Fashion firms are set according to business-as-usual model, the introduction of sustainability practices is complex in the current failed system (Ellen MacArthur Foundation, 2017). We would contribute to shed light on shortage of previous paradigms to understand the sustainability tensions. This would be possible showing as the complexity paradigm would be a complementary paradigm for sustainability issues in the turbulent industrial sector as textile, for example.

Our objective is to review and synthesize the studies of sustainability, showing how sustainability in business is far from order and continuity. Consequently, we describe how the tensions emerge during business sustainability phases between order-disorder-organization-new order (virtuosos circle) via interactions. The “order” phase is when the business maintains the status quo in organizational features and processes, including all aspects of acquired learning and accepted practices (Burchell e Kolb, 2006). The “disorder” phase is characterized by situations replete of emergent phenomena, such as an environmental disaster or a social scandal, turning the future neither easily nor perfectly predictable due to nonlinear and complex relationships among phenomena (Intezari, 2015). These nonlinear relationships constitute the organization of the social system. “Organization” is the concept that gives constructive coherence (Morin, 2005). In the last phase, “new order”, either a consensus behind one practice as the de facto standard emerges inside the business, or a particular practice is regulated as the industry standard (Delmas, Lyon e Maxwell, 2019). These interactions give rise to tensions according to an antagonistic, concurrent or complementary condition: (1) antagonistic – the tensions happen when sustainability demands are logically distinct, focusing in different outcomes; (2) concurrent – the sustainability demands simultaneously creates order and disorder; and (3) complementarity – when sustainability demands

are similar, but need each other to achieve the same outcome. The first section of our paper contributes responding to the first fundamental debate. We claim that a complex tension is a compound of nonlinear interactions between the antagonistic, concurrent and complementary tensions, and that the positive and/or negative feedbacks trigger unpredictable and uncertainty demands. The second section of our paper contributes to respond to the second and third fundamental debates. These discussions should open new avenues for BS studies via complexity.

## **2 TOWARD THE COMPLEX TENSIONS**

The mainstream literature is still inconsistent about what complexity is, although it is cited in the most papers on sustainability tensions (Byl, Van der e Slawinski, 2015; Hahn *et al.*, 2010, 2015; Whiteman, Walker e Perego, 2013). Several studies on complexity have explored different themes, such as, how managers do their jobs (Richardson, 2008), complexity as a holistic approach to understand the so-called sustainability thinking (Porter e Derry, 2012), complexity as a descriptor for this new vision of organizational phenomena (Porter e Reischer, 2018), complexity as a lens to examine the emergence of organizational collectives and innovation processes that are themselves complex systems (Dunne e Dougherty, 2016), a framework for the balance between strategy content and strategy process research (Stacey, 1995), among others. This way, there is space for discussion about sustainability in the business phases under complexity. We apply alternative logic to paradox lens because the tetragram loop unfolds the complexity through the interactions between the antagonistic, concurrent, and complementary tensions which emerge in BS.

### **2.1 The sustainability in the business phases under complexity**

We start our discussion questioning this stationary state, or equilibrium/order, within business sustainability under a complex lens. The equilibrium/order phase in BS is when the economic, social and environmental issues are under control by management (Bansal, 2005; Hart, 1995; Lozano, 2008). The BS is approached as a closed system whereas all the inputs can be managed to achieve expected results (Hansen e Schaltegger, 2017). However, BS works as a living system (Miller, 1965), with its structure, interaction, behavior and development, which occasionally encounters points of instability, moments of crisis or confusion, which may allow for new designs, forms and patterns to emerge (Capra, 2005). This instability, chaos and crisis creates a disequilibrium/disorder phase due to the “noise” which points to feedbacks and nonlinear relationships, which make up sustainability (Porter e Reischer, 2018). The complex tensions may emerge within business sustainability due to feedback (positive and negative) and nonlinear relationships between sustainability tensions (concurrent, antagonistic, and complemetnary), whereas new patterns could emerge, thus we use a complex lens to understand how the business deals with its environment.

In this paper, the logic is to understand how the tensions emerges between the interactions of BS phases, beginning from an *order* where a business has established rules and processes to work. The *order* is disturbed by a *disorder*, where a social/economic/environmental “noise” or “externalities” destabilize the *order*. In the *disorder*, the business enters in “panic” as processes and rules are under pressure due to the “noise” and “externalities,” including broader societal discussions that affect the lives of organizations. Therefore, the business tackles the “noise” and “externalities,” attempting to *organize* itself in front of this new scenario. We are not worried about the sustainability within the business, as Delmas <sup>(2019)</sup> researched, but how the sustainability demands change/emerge overtime via interaction between two or more phases, unmasking contradictions or not.

## 2.2 The tension under complexity

Our argument is strengthened by Smith, Erez, Jarvenpaa, Lewis, and Tracey (2017), who pointed out that the studies of paradox, dialectics, and dualities unpack complex relationships between opposing demands. These complex relationships happen in a sustainability discourse when the tensions encounter broad debate in the literature (Byl, Van der e Slawinski, 2015; Hahn *et al.*, 2015; Jennings e Hoffman, 2019). However, the complexity lens has encountered little space for discussion regarding sustainability tensions. Good and Thorpe (2019) pointed out that business sustainability interacts dualistically and complementarily with sustainability issues; they organized these interactions based on space and time. Although they did not approach the sustainability tensions directly, their reflections advanced an alternative view about these interactions. The authors have pointed out that these interactions are “awesomely complex, which is in no small way due to the direct and indirect, contemporaneous and staggered natures of those relations” (Good e Thorpe, 2019, p. 20).

The nature of the sustainability tensions emerges from these interactions between order, disorder, and organizations which have complex relationships. Here, the problem is not the ontological relation between the BS and nature as Good and Thorpe (2019) have pointed out, but how this relationship changes over time, embracing not only nature but all the sustainability concerns. The relationships/interactions could be antagonistic and complementary as well as Good and Thorpe (2019) argues. As Morin (2001) have discussed, a relationship could be concurrent as well, when the disorder works for a generalized dispersion and, simultaneously, the order/organization does to the development of an archipelago of organization. The complexity lies in the uncertainty to explain a social phenomenon when we look it at the same time in its multiple forms (Moigne, Le, 1995). We deepen on these various forms as complementary, concurrent, and antagonistic interactions.

Lozano (2008) has argued, sustainability is characterized by complex and dynamic equilibria, thus we understand that the physical conditions of sustainability issues are transformed and regenerated in attempt to achieve an equilibria condition. The tensions emerge from these interrelationships to keep the system organizational. The yin and yang concept are a classic example of these interrelationships, the tensions arise because of one element need for the other, and vice versa, whereas these two elements are competing as well. Complementary sustainability tension emerges when a sustainability demand, coming from one phase, and another demand, coming from a different phase, need each other to achieve a sustainability result. In case of an antagonistic sustainability tension, the demands are excluding of each other. As for a concurrent sustainability tension, it emerges as the demands aim at producing different effects simultaneously.

The interactions between “order” and “disorder” show the complementary tension, the antagonistic tension, and the concurrent tension. These tensions emerge because, as Morin (2001) has argued, the relationship between “order” and “disorder” are unique, complementary, concurrent and antagonistic. These characteristics are present in everything physical, from atoms to stars, from bacteria to human beings, the “order” needs “disorder” to organize itself; everything that is organized produces energy and, through this energy, the “order” transforms itself (Morin, 2001). The tensions happen due to interactions between “order” and “disorder”, and, when they are simultaneously observed, the complex sustainability tension emerges. The interactions between “disorder” and “organization” show the complementary, the antagonistic and the concurrent tensions. The tensions can emerge because, as Morin (2001) has claimed, the “organization” is the great absent in the system, although it is the fundamental characteristic of *physis*, this idea means that the physical universe should be conceived as the place of creation and organization. The

organization is born from the interactions of elements in the system, from the random matches in the dome of “disorder” and “order”, the organization is defined by Morin (2001) as the arrangement of relationships between components or individuals which produces a system with unknown qualities at the individual level. The interactions between “organization” and “new order” show the complementary, the antagonistic and the concurrent tensions. Morin (2001) has argued that the “organization” transforms elements in a new form of relationship between them. The organization utilizes and disperses energy when it works for the system of relationships within organization. The organization connects old elements with new ones and keeps the elements of the system together. All these tasks can produce tension between elements because of their heterogeneity, as a result, new forms of the system could emerge.

### 3 METHOD

To analyze the complex tensions in business sustainability, we choose three firms with a long history in the field of textile and clothing industry in Brazil, known for using sustainable practices. These firms adopt a Fast Fashion system, a low-cost clothing collections based on current, high-cost luxury fashion trends, by its very nature, a fast-response system that encourages disposability (Joy *et al.*, 2012). In apparel production, there is no real technological innovation to mitigate the pollution. The innovation in textile production is focused on producing high-quality, high-choice, low-cost fabrics. These fabrics increase retail sales by offering higher levels of choice and lower prices, the industry does not face incentives to change production platforms (Anguelov, 2015). The Fast Fashion system don’t see the prejudice of their bottom line. The firms are just following the accepted model of economic prosperity. However, growth is subject to costs. In the apparel industry, the social costs are those of environmental damage, which occur at all links of the production chain (Anguelov, 2015). Tensions emerge to mitigate the environmental damage at various phases of business sustainability life; for this reason, we fixed a starting point in our analysis, choosing the “order” phase because there were significant transformations in the Fashion Fast system in the last decade regarding the ethical and environmental issues which have changed the way to deal with sustainability (Toprak e Anis, 2017).

**Table 1** – Companies in the process of investigation

<b>Company</b>	<b>Interviewed Position</b>	<b>Interview Last</b>
FF1	Operations Supervisor	45’
FF1	Industrial Director	20’
FF1	Supply Director	20’
FF2	Marketing Director	63’
FF3	Sustainability Manager	45’

We discussed the firms’ Fast Fashion system with their managers, directors and supervisor between September 2018 and August 2019. Our interviews totaled 193 minutes of audio. As our study involved a wide range of interviews, the analysis was characterized by qualitative rigorous inductive study, based on Gioia *et al.* (2013). This methodology lets us remain open to new concept development through creative imagination and systematic rigor. The data were organized into first-order to capture the interviews essence of participatns and second-order to understand the tensions that could emerge. In the third-order category we assembly the three kind of tensions together to capture the complex relationship between them, see Figure 2.

Codes	Tension	Complex
<p>Today we are obliged to show sustainable practices and not because same customer don't want to pay more for sustainability. (FF1)</p> <p>We are not prepared to disclosure our sustainable practices and we need to do it because international market want to know about it. (FF2)</p> <p>Our big customer is charging for a waste inventory and not because it doesn't want to charged a surplus on the production. (FF3)</p>	<p><b>Disclosure of sustainable practices (Concurrent)</b></p>	<p><b>Reluctant Change Tension</b></p>
<p>To set up a sustainable supply chain, we need to work with a no sustainability supply chain. (FF1)</p> <p>We need to have a sustainable supply chain and we have not a CSR department. (FF2)</p> <p>Our sustainable production need of sustainable raw material that we have not because raise our product. (FF3)</p>	<p><b>Technological Lock-in (Complementary)</b></p>	
<p>We see opportunity with sustainable jeans, but we cannot produce a lot of it. (FF1)</p> <p>Sustainable for us is a big opportunity, however we produce clothes with viscose. (FF2)</p> <p>We cannot produce sustainable product if our customer doesn't want to pay the price. (FF3)</p>	<p><b>See opportunities with sustainability (Antagonist)</b></p>	
<p>Producing jeans with sustainability labels need of raw material no sustainable as well. (FF1)</p> <p>Auditing the subcontractors, I need to have a organized supply chain that we don't have. (FF2)</p> <p>We needed to organize our supply chain to have responsible disposal of clothing manufacturing waste. (FF3)</p>	<p><b>Sustainable supply chain development (Complementar)</b></p>	<p><b>Novice's Hesitant Tension</b></p>
<p>Our processes cannot change rapidly for sustainable product or we change all our production that is impossible. (FF1)</p> <p>We are a brand exposed to sustainability risk or we continue to produce clothes with viscose and trying to transmit a eco-friendly image. (FF2)</p> <p>Our customers demand compliance with European legislation on the toxicity of materials, but not all suppliers want to deliver the toxicity report. (FF3)</p>	<p><b>Meeting demand for sustainable products / processes (Antagonic)</b></p>	
<p>Some customers are pushing to make more sustainable fabric and at the same time our technology does not allow this (FF1)</p> <p>We have large discarded fabric rolls that we are unable to know the quantity and at the same time a demand for this fabric to sell (FF2)</p> <p>Changing our process is necessary, but it takes time and our customer wants it all fast (FF3)</p>	<p><b>Changes in organizational processes and operating procedures (Concurrent)</b></p>	
<p>We cannot recycle a fabric that is not 100% cotton, which makes it contradictory when we say that we are a sustainable brand. (FF1)</p> <p>We need to control the supply chain to avoid problems with slave labor, but we would like to expand our chain internationally. (FF2)</p> <p>Either we use sustainable raw materials at an expensive price or we continue with unsustainable raw materials at a lower price, but our biggest customer is the other product at that price (FF3)</p>	<p><b>To be sustainable or not to be sustainable (Antagonist)</b></p>	<p><b>Sustainantability Dissonance Tension</b></p>
<p>A low-cost and fast production like the Fast Fashion system is what the market wants, but at the same time we need to be sustainable with non-sustainable raw materials. (FF1)</p> <p>We've been working on the Fast Fashion system for years, but at the same time we need to show our customers that we don't have disposal, something impossible today. (FF2)</p> <p>Our biggest customer wants a Detox product with a low price and a fast delivery time, as it works in the Fast Fashion system, but at the same time our suppliers for the adoption of the Detox program want a high price and a longer term. (FF3)</p>	<p><b>Acting in fast fashion and sustainable fashion (Concurrent)</b></p>	

<p>As our production is small to be considered a sustainable brand, we also need to make a non-sustainable product. (FF1)</p> <p>We want to be a sustainable brand, but we need viscose as a raw material, as this is our state-of-the-art product and this shows that we are a non-sustainable brand. (FF2)</p> <p>We want to be sustainable with a strong brand, but we need to continue to be a non-sustainable brand due to the price the market doesn't want to pay for our product. (FF3)</p>	<p><b>Creation of a sustainable and an unsustainable brand</b> (Complementar)</p>	
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**Figure 2:** Coding process based on Gioia (2013)

## 4 FINDINGS

### 4.1 From order to disorder

#### 4.1.1 *Disclosure of Sustainable Practices (concurrent tension)*

Due to the 2013 collapse of the Rana Plaza building in Savar, Bangladesh, and recent pressure from non-governmental bodies such as Greenpeace concerning the toxic products textile companies use to dye their own fabrics, in addition to the problems of sea pollution. When disposing of fabrics, large companies in Brazil that produce large amounts of clothing had to rethink their own operations. In the case of the FF1 company, which is the national leader in the production of jeans fabric, it already recycled the fiber that was discarded during the production process, but the company did not disclose these practices, as customers thought that the quality of the product could be harmed, but when FF1's biggest customers were involved in the Rana Plaza scandal, they started demanding that the practices be publicized. The FF1 company experiences a competing tension between “*disclosing and not disclosing*”, as they had clients who do not have exposure to the foreign market and therefore do not need this disclosure. Therefore the FF1 company needs to do both at the same time creating internal tension within the company as the consequences are uncertain.

The FF2 company does not have sustainable practices, but it has a project to internationalize its supply chain. This enables the company to demonstrate that it adopts sustainable practices because the American and European markets are very sensitive to sustainability issues. Tension within the company emerges between “*the need to publicize these practices and the lack of practices that the company has*”.

The FF3 company is one of 12 strategic suppliers of a large national clothing retailer Fast Fashion. They didn't have a record of their own discards so much tissue or otherwise, but after the Rana Plaza scandal, his client started auditing their own suppliers like FF3, demanding that they start keeping a waste record. The FF3 company experienced a competing type of disclosure tension between “*disclosing or not disclosing*” because it was not only working with that big client, but with other small ones as well. Having a controlled registration and disposal led to an increase in the price of the service provided to its own customers, including the largest customer, which was a large national retailer. So she had to do both things at the same time, this led to an internal tension within the company, as the company could lose small customers.

#### 4.1.2 *Technological Lock-in (complementary tension)*

The FF1 company has been working with a supply chain for years and did not question how sustainability could impact operations along the chain. Although the FF1 company had been recycling for years, it was not ready to change its operations in the short term because this required an alignment with both raw material producers and chemical sellers. The company FF1 experiences a complementary tension of technological entrapment between the need to align its own supply chain with sustainability without impacting the price of the fabric and maintaining a traditional chain. The tension between the two decisions entails “*the need to accept a traditional chain so that change can be monitored through collaboration between the actors involved along the chain*”.



The FF2 company is a famous brand in Rio de Janeiro that produces viscose clothing, it has a traditional chain. The problem that she does not have a CSR department and when there was a problem with the Rana Plaza disaster, she was charged both by the media and by her clients, but because she is also part of a group of companies where one of these was operated by the Ministry São Paulo public to use slave labor. So the company needs to audit along the chain, but as the marketing manager reports, the FF2 company cannot be present all the time inside the suppliers' factories and suppliers can outsource the clothes they take from them, so it is difficult to audit. The tension is complementary between “*auditing every month and setting up a CSR department*”. The decision to audit involves the need for a CSR department, as the marketing manager claims, but this centralization of responsibility could reduce the company's performance.

The FF3 company has been linked since its creation in a low-cost production system, buying economical raw materials so that the customer (shopkeeper) accepts the price of the final product. This dependence makes it difficult for the company to enter a sustainable raw material market, which requires new suppliers with new certifications that attest to the absence of toxic material in the raw material. Tension emerges within the company between “*the dependence it has on its own suppliers and the customer who does not want to pay the price of a more expensive raw material*”.

#### 4.1.3 *Seeing Opportunity with Sustainability (antagonist tension)*

We produce a large amount of fabric for jeans, we are the largest company in Latin America. Only a small portion of our customers are hanging a certified sustainable fabric. For us, it is an opportunity to show that we are also able to produce this type of product. The tension emerges between making a sustainable or non-sustainable fabric. Generally, sustainable fabric production is derived from non-sustainable production, as the process is the same. We don't always get this type of production, but the market is always asking for more. (FF1)

Sustainability is a great opportunity for us, but we need to make choices that are not easy for our company, as our product is viscose and we are responsible for that. Our customers want a sustainable product, but we don't have it. The tension emerges between continuing with an unsustainable product or not. (FF2)

In the beginning, sustainability was a problem for our company, as our management costs increased, but our biggest client demanded this, as he is responsible for our non-sustainable production as well. The big challenge is in the production of a product with sustainable material, but our customer does not want to pay a price increase. This creates great difficulty for our management, as this generates internal tension. (FF3)

## 4.2 **From disorder to organization**

### 4.2.1 *Sustainable Supply Chain Development (complementary tension)*

The company FF1 is being asked to have a greater sustainability stamp by the large customers who were involved in the Rana Plaza scandal. This seal collection, according to the supervisor of the operations of the FF1 company, does not cover sustainability as a whole, but only tries to meet an undisguised demand for sustainability by the customers themselves. The company needed to create a line of new products with water reduction up to 100% and with low impact chemical products, although as the company claims, it represents a small portion of the jeans fabric that the company produces, as customers are interested in a small part of this sustainable line and not on all lines. The company experiences a complementary tension between “*creating a new line of fabric with low impact and creating a stamp collection without changing the chain*” The

company needs this new product line and seals without changing the supply chain, as this takes time that the market may not be able to wait.

The FF2 company did not have an inventory of the leftover fabric foils that the cutting department produced, this was creating a problem when they needed to inform the purchasing department that they needed new fabric. The company FF2 established a partnership with a company in São Paulo that removed this material in the form of a donation and this one delivered a note of withdrawal of material, the amount was calculated and the company FF2 knew how much leftover was in stock. The FF2 company experiences a complementary tension between the "*supply chain organization and the current model*". The tension emerges because the organization of the chain can only happen if the company continues with the traditional model, because the excess of fabric generated a new opportunity for donation and therefore for CSR for another company. Therefore, this tension could have a positive as well as a negative effect, as there was an environmental liability.

The FF3 company is being charged for waste by the most important retail customer it has, because the retailer is also responsible for this waste. The FF3 company had to hire a biologist and open a staff function that would report directly to the company owner on waste management. The retailer wanted the waste management and the entire chain to be organized in a few months, something impossible as claimed by the FF3 company, as it needed to talk to suppliers and some of them imported directly from Asian countries and this made it difficult to seek a strategic alignment of long term, as the hirings were still carried out with little advance. The complementary tension emerges between "*supply chain management and the traditional model*" of supply because the company needs to contact the most important suppliers and convince them to deliver products in line with what their customer required, this was not always easy because a matter of raw material price.

#### 4.2.2 Meeting Demanda for Sustainable Products/Processes (*antagonist tension*)

Although the FF1 company has a long tradition in making denim fabric, it cannot develop an entirely sustainable product as it cannot change production processes as fast as the market wants. The tension is in the decision "*to create a sustainable product by changing the processes in the long term or to continue producing traditional products*".

The company FF2 had difficulty meeting a sustainable demand, as it was unable to control the source of the supply chain itself. Her clothes were made of viscose, that is, the main product was made with petroleum extraction. Although the company's marketing manager maintained that this was not sustainable, the customer wanted a product with several color prints that recall the colors of Brazil and that viscose was a fabric that adapts well to the woman's body, especially in regions where the climate is particularly high. This tension was antagonistic between "*the demand for a sustainable product with low environmental impact and a demand for an unsustainable product made of viscose material*". The tension created a problem for the FF2 company because not all customers wanted a sustainable product for the sake of price, but it was charged to be more sustainable by some more sensitive customers after the Rana Plaza scandal.

The FF3 company experiences an antagonistic tension between "*meeting a sustainable demand and an unsustainable demand*". Sustainable demand is stimulated because its biggest customer was demanding it, but the sustainable material does not have characteristics such as the shine of the pieces, which the customer was demanding and did not have the toxicity report. An unsustainable demand came from the same customer, as they did not want an expensive, high-quality product, which brought the company.

#### 4.2.3 *Changes in Organizational Processes and Operating Procedures (concurrent tension)*

Although some large customers here in Brazil and abroad are pushing for a more sustainable production, our processes are all unsustainable except for the fiber recovery that the weaving machines leave behind. The tension that emerges is between the “*change demanded by the customer and at the same time, the company cannot change its technology*”. (FF1)

In our cutting process, we have a large amount of fabric roll that we do not account for, we do not know how much discard we have, so a company in São Paulo removes this material and on the receipt it specifies how much material they are removing, and thus we manage understand our disposition. The tension emerges because although the FF2 company feels “*the need to change this process, at the same time it is confident that the company that removes the fabric from it quantifies this disposal by the FF2 company*” and only in this way enters our system as material discarded from the cutting process . (FF2)

Our customer, in addition to wanting a competitive price to produce their products that will be placed in stores, he wants to change our production process with more sustainable materials in the short term. Unfortunately, we have not achieved this change and tension emerges when “*we must at the same time change our supply system and the deadline that the customer wants*”. (FF3)

### 4.3 **From organization to new order**

#### 4.3.1 *To be Sustainable or not to be Sustainable (antagonist tension)*

The company FF1 recycles denim fiber that is discarded during production, however it is unable to separate the cotton fiber with other fibers and this prevents the recycling of all the discarded fiber. The operations supervisor of the company FF1 reports that the company is unable to present a sustainable rebranding because all operations are configured according to traditional production and recycling, although it started years ago, it was not configured to recycle all the discarded fiber and there is a technical problem of separation of the fiber. The company FF1 experiences an antagonistic tension between “*being sustainable or not*” because it has a niche of customers who charge for sustainability stamps after being involved in the Rana Plaza scandal, but the operations revolve around unsustainable production.

The company FF2 has an international strategy to set up a production chain to face the domestic and international market, however after the recent slave labor scandal that a company of the same group was involved, it is questioning whether this could bring more problem about the company as an image. The company is dealing with an antagonistic tension between “*setting up an international chain to reduce costs and facing all possible social problems that this could involve or increase the audit of the domestic chain and risk not having a competitive production price for the foreign market*”.

As a company, we need to make a decision, because our client is looking for sustainability that is not cheap. Either we continue with a low-cost production and sell to Fast Fashion as we have always done, or we follow a sustainable production that is not cheap, but at the risk of losing our client. (FF3)

#### 4.3.2 *Acting in Fast Fashion and Sustainable Fashion (competing tension)*

The company FF1 is not able to pass on all costs to customers, as many national competitors have a management system that is open to the practice of ethics to have a more competitive price from the company FF1. The operations supervisor at company FF1 reported that he experiences a

competing tension between “*doing the right thing as they are doing and dealing with the lower price of competitors*”.

Although we have been working on Fast Fashion for years, as the market is looking for many collections during the year. We feel that our customers want more than we demonstrate that we are a sustainable company, as the colors of our clothes refer to the colors of the Brazilian fauna. But at the same time we compete with our values as a company that pursues profit and sustainability issues sometimes remain marginal. (FF2)

The FF3 company is charged by its largest customer to have a competitive price requiring Detox material. The challenge that the FF3 company has is that their suppliers do not have this Detox certification and in order to have a range of suppliers capable of providing this certification, make the price more expensive and their biggest customer does not want to pay the price. The competing tension “*that she experiences is to continue to pressure suppliers to have this certification at a price that it is possible to pass on to the customer and risk losing the largest customer they have*”.

#### 4.3.3 *Creation of a Sustainable and an Unsustainable Brand (complementary tension)*

We are creating a sustainable brand, as we have some products that serve the lowest water consumption. This does not make the company sustainable, as it seems, as our brand is still focused on products that use a lot of water and paint, so our desire is to deal with the sustainability of the product with less impact considering what we are really doing. (FF1)

To be sustainable we need to change our cut, use less paint and avoid viscose. We have some initiatives with a large denim fabric supplier here in Brazil, but for that we still need to produce our conventional products. This is causing some problems for our customers who want something more sustainable, but we still need to continue producing a non-sustainable product, as the market likes a viscose product, as it perspires well in a hot climate like Brazil. (FF2)

The FF3 company needs time to organize its own supply chain to find suppliers with toxic free certification, but its client being linked to Fast Fashion needs a quick response, as the market changes very quickly. This created a complementary tension between “*the search for suppliers with Detox certification (seeking to be a sustainable brand) and delivering the product quickly to the customer itself (a non-sustainable brand posture)*” because the FF3 company needs to find Detox and this entails a series of difficulties because of the price of the raw material.

## 5 DISCUSSION

Companies feel more and more pressured by society to produce sustainable clothing. Therefore, major changes are taking place within the linear model of clothing production (Ellen Mac Arthur Foundation, 2017). The Fast Fashion production system is a linear model (Joy *et al.*, 2012). Tensions emerge within a linear model because the consequences of decisions are uncertain and unpredictable (Morin, 1977).

### 5.1 Complex Reluctant Change Tension

The complex reluctant change tension emerges in this work because companies are not prepared for the transition to sustainability. According to a traditional logic, which proposes a study of tensions based on an instantaneous mode of representation, tensions arise between two decisions, giving space to a reductionist interpretation (Lozano, 2008; Smith *et al.*, 2017). Tensions arise during a transition from one situation to another (Lozano, 2008). As such, companies struggle to deal with this situation, but are trapped in their traditional model. For example, in the three Fast Fashion companies investigated, they feel an antagonistic tension when they must decide whether or not to adopt sustainability as their customers are demanding. In traditional logic this is a trade-

off. However, if she adopts sustainability, they must disclose their practices, which leads to a competing tension. In a traditional logic it is an integrative tension. Well, this in turn leads companies to imprisonment of the traditional supply chain itself, causing a complementary tension. In traditional logic it is paradoxical. However, under a complex logic, these three tensions emerge simultaneously and it would not be possible to study them separately, as it would limit the understanding of the consequences of the decisions. In this sense, complexity came to show that tension does not arise to be resolved (Morin, 1977), but arises to understand uncertainty and the possible causes of a decision linked to other unexpected consequences.

## **5.2 Complex Novice's Hesitant Tension**

When Fast Fashion companies must organize their transformation processes due to new sustainability issues, they need to create rules to meet a demand for sustainable products or not, this antagonistic tension emerges from a trade-off decision between two choices. As the company is under pressure to change, it must serve a changing market. Companies should change internal processes, but this has unintended consequences because customers want change quickly. An organizational tension under a paradoxical logic is seen as a contradiction (Smith e Lewis, 2011), in fact the tension that arises competes between two alternatives that require the same transformation resource, but that meet two different logics, sustainability and not. The internal change is accompanied by an external change in the supply chain. In this sense, a complementary tension emerges between the supply chain for sustainability that needs a non-sustainable supply chain. The contradiction in this tension leads to paradox. In all three tensions separately there is a traditional logic that explains this (Byl, Van der e Slawinski, 2015), but these tensions do not happen separately, but at the same time, as sustainability creates interrelations that need to be looked at together (Lozano, 2008). In this case, the complex tension that arises delays companies in the internal transformation and in the influence of the supply chain itself, as it must meet two antagonistic demands between them for the sake of price, but also of delay in the process of transformation process.

## **5.3 Complex Sustainability Dissonance Tension**

Although the company is aware that it needs to change something to pursue sustainability, the dilemma still exists, as this requires new raw materials, new technologies that the market does not always pay the price for these changes. This creates an antagonistic tension between the two choices. If she wants to pursue sustainability, she needs to share resources between non-sustainable and sustainable production. This generates a concurrent tension under an integrative logic because the two systems must cohabit within a single production for a long-term transformation to take place (Ellen Mac Arthur Foundation, 2017). In a way, companies seek to create a sustainable brand, but for that they must continue proposing the brand they have, although this creates confusion in the company's values (Kaikobad *et al.*, 2015). The tension in this case is complementary, that is, paradoxical, because there is a dependency between two opposite values, but which need each other to create a sustainable brand. The complexity lies in looking at these logics together to discover that there is a dissonance between what the company wants to do and what it actually does. This leads the company to choose the path of non-sustainability, but with some initiatives for the market to perceive a sustainable company.

## **6 CONCLUSION**

The complexity emerges because sustainability issues are inherently discontinuous and extraordinary. Complexity breaks with a cause and effect linear logic, and it shows how the interconnections between business sustainability phases could give rise to new sustainability

demands. Thus, the unpredictability is typical in the complexity, differently from when the win-win and trade-off logic is taken as standard. Porter and Kramer's work (2006) raised the question of shared value between actors involved. However, the nonlinearity showed in this paper furthered the problem that the shared value is unpredictable. The Hahn et al. (2010) work shows that trade-off in BS is the rule due to the complexity and diversity of sustainability issues. Our finding shows that the variety of sustainability issues raises the complexity, and the concurrent, complementary, and antagonist tension shows this diversity, and when analyzed simultaneity, these tensions become complex. We complement to Hahn et al. (2015) framework showing how the tensions interact between them. Our findings show not only how an integrative aspect of sustainability issues emerge in BS, but also as the diversity of tension can become complex and if we accept the variety of sustainability issues, the doubt lies to recognize a pool of predefined sustainability tensions. The Smith and Lewis (2011) work have showed the paradoxical logic, and as Van der Byl and Slawinski (2015) have argued that tensions, according to this logic, could persuade researchers to think about tension's nature and its different types, and how to manage them, claiming decisions are taken in a the nonlinear and holistic way in. Given this statement, the paradoxical theorists, as Smith and Lewis (2011), show us a "model" to deal with the paradoxical lens. However, this model spurs the confronting paradoxical tensions via iterating responses of "splitting and integration", avoiding considering the uncertainties that can emerge when decision-making needs to deal with antagonism, concurrent and complementary sustainability issues simultaneously. Our finding shows these uncertainties over time, because the BS works in an open system where the nonlinearity and feedbacks are the rules and not the exception.

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