Circular Entrepreneurship,

The case of Urban Agriculture in the Circular Economy

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“This planet has - or rather had - a problem, which was this: most of the people living on it were unhappy for pretty much of the time. Many solutions were suggested for this problem, but most of these were largely concerned with the movement of small green pieces of paper, which was odd because on the whole it wasn't the small green pieces of paper that were unhappy.”

— Douglas Adams, The Hitchhiker's Guide to the Galaxy

Abstract

At the moment a theory specifically focussed on entrepreneurship in the relatively new research area of the circular economy is lacking. Plus the more established fields of institutional theory and sustainable entrepreneurship can potentially benefit from a fresh outlook on the topic. For this thesis, a "circular entrepreneur" is defined as an agent who promotes change and exploits opportunities, with the purpose to do business according to the principles of the circular economy concept. This thesis aims at developing a better understanding of the actions, efforts and choices of these circular entrepreneurs from an institutional perspective, in comparison to sustainable and social entrepreneurship literature.

Methodology: A single-case study design was selected to explore the efforts, activities and choices of a circular entrepreneur in the urban agriculture sector. Aimed at better understanding the way he navigates the institutional system of a linear economy, while doing business in according to the principles of the circular economy.

Findings: The circular entrepreneur is purposefully educating the masses and stimulating action; thereby influencing the cognitive and normative institutions. The circular entrepreneur mainly uses regulative institutions that are set-up to mitigate the externalized costs of the linear economy. These are the same institutions sustainable entrepreneurs and social entrepreneurs use to gain support for their business. As long as CE is just a mitigation for the negative effects of the industrial linear economy, an inherent system-change cannot yet occur.

Implications: This thesis is focussed on one case, data collected is subjective and from the perspective of one entrepreneur. The findings show little difference between the strategy of sustainable entrepreneurs and circular entrepreneurs, thus limiting the relevance of the circular entrepreneurship concept.

Keywords: Circular Economy, circular entrepreneur, transition, sustainable entrepreneurship, social entrepreneurship, institutional economics, urban agriculture, strategy.

1. Introduction

Human civilisation has developed to such an impactful extent that some argue we have entered a new Era: the Anthropocene. *"The epoch in which humans and our societies have become a global geophysical force"* (Crutzen & Stoermer, 2000; Steffen et.al., 2007; Steffen et.al., 2011). Not a strange argument when considering a growing global population of 7.4 billion people and an estimated future population of 9.6 billion people by 2050 (United Nations, 2014). Most of them live in cities, which are probably the most human-dominated landscapes on the planet. In fact more than 50% of the world's population is living in urban areas today (WDI, 2014) up to an estimated 66% in 2050 (United Nations, 2014). It is in these areas that the pressure on the relationship between humanity and the global environment is most visible. We have entered the 'Century of the City' and the challenge for a sustainable future is more pressing than ever (Seto et al., 2010).

Feeding these rapidly growing cities in a sustainable manner poses a primary challenge. The current industrial agriculture system is depleting resources - like water, soil, fertilizer and pesticides - at unsustainable rates causing a wide array of environmental problems: erosion, soil depletion, water pollution and decreasing biodiversity (Horrigan et. al., 2002). Overgrazing and deforestation increase erosion and decreases the amount of arable land. Climate change increases weather extremes like floods, long droughts and hurricanes placing high demands on the system resilience (Eigenbrod & Grunda, 2015). The vast majority of our food is produced outside urban areas and must therefore travel long distances. As a result, food production becomes invisible to consumers, the producer and consumer disconnect, creating distrust and a certain negligence from the consumer-side. As a consequence, unhealthy food habits and high food-waste have become pressing issues (O'Kane, 2010). With a growing population and rising urbanisation in mind, these problems are likely to increase (Godfray et al., 2010).

Resource depletion is not a new issue. In fact Kenneth Boulding wrote about the phenomenon 'Spaceship Earth' in 1966, where he describes the earth as a spaceship, floating in space, with a limited amount of provisions. A few years later the book Limits to Growth, presented to the Club of Rome in 1972, put resource depletion on the political agenda. Its simulations predicted that the current rate of resource depletion and population growth would quickly exceed the earth's carrying capacity. The problem is: resource depletion is at the core of our economic system (Boulding, 1966; Braungart et al., 2007; Braungart and McDonough, 2002; Pauli, 2010; Ellen McArthur Foundation, 2012; Ellen McArthur Foundation & McKinsey, 2014).

The current capitalist economic system can be described as linear; take, make, dispose (Braungart and McDonough, 2002; Ellen McArthur Foundation, 2012). Resources are taken from the environment, mixed and made into a product, used and eventually disposed of (fig. 1). This system creates products that offer certain services and create economic value, but in an unsustainable way. The most obvious problem of this system is in the necessity of the last step: dispose. It destroys the materials of which a product was made through incineration or it locks them up in a landfill, making sure those resources can never be as useful again. In addition, the system is based on efficiency. The more efficient a business can function the more monetary value can be created. Often this focus on efficiency creates circumstances where it is cheaper to dispose or discard resources than it is to use them effectively (Braungart and McDonough, 2002). There is no solution for the problem of resource depletion within the inherently unsustainable linear system, the only way is a transition to a more sustainable paradigm of resource utilization: the Circular Economy.

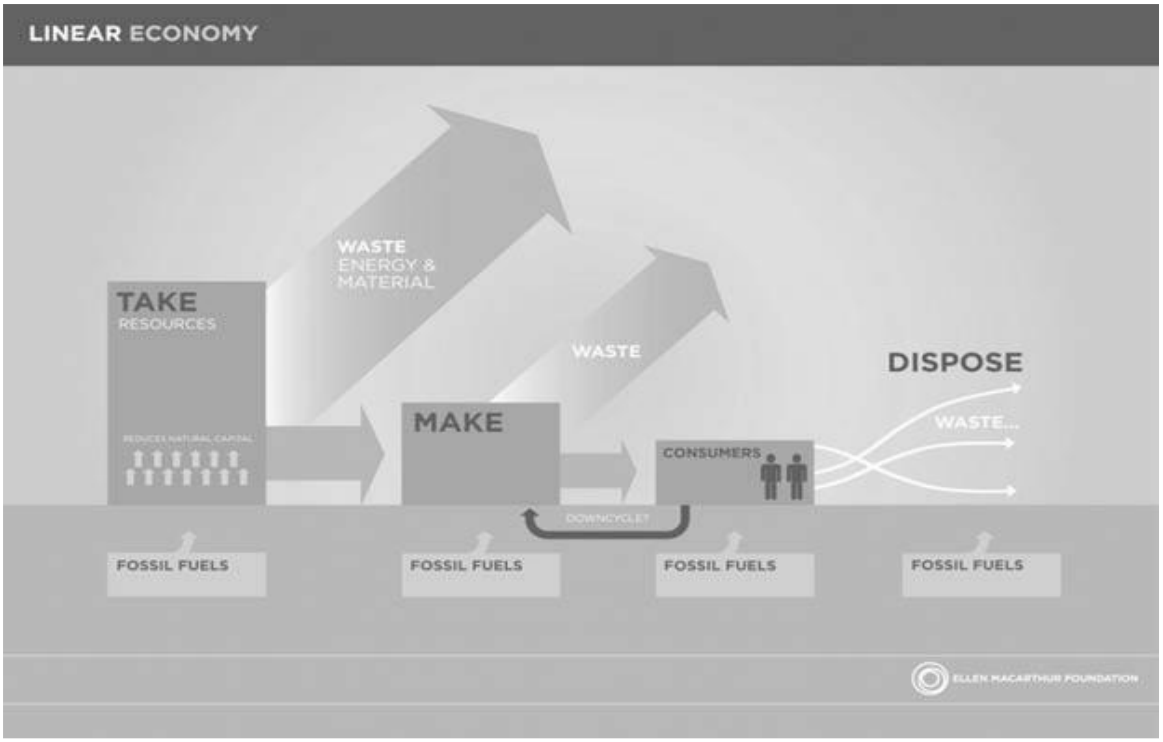

Figure 1, the linear economy (ellenmcarthurfoundation.org)

The Circular Economy is presented as a system that makes more effective use of resources: it is an industrial economy that is "*restorative by intention and design"* (Ellen McArthur Foundation, 2012). In the circular economy nothing is considered to be waste. The main principle is waste = food. Here 'food' can be seen as a nutrient that is harvested from the environment in order to create a product. The product becomes a vessel in which a collection of nutrients are collected, simply in a form that is useable by the consumer. After the product is sold and done serving its purpose, it does not end-up in landfill or the incinerator: it can be recirculated as a nutrient and serve as 'food' again for the next product (Braungart and McDonough, 2002). In addition, the waste of one company can serve as a resource for the other. The design of such an economy requires a different way of thinking, a shift of perspective from an eco-efficient economy towards an eco-effective economy. Entrepreneurs around the world are starting to innovate and explore opportunities in this direction already (Schulte, 2013; Ghisellini et.al., 2014). These entrepreneurs do business according to the circular economy principles but within the current system of a linear economy. For the purpose of this thesis, a "circular entrepreneur" is defined as an agent who promotes change and exploits opportunities, with the purpose to do business according to the principles of the circular economy concept. Entrepreneurship is the collection of actions that an entrepreneur undertakes. This thesis aims at developing a better understanding of these circular entrepreneurs, from the perspective of institutional entrepreneurship, sustainable entrepreneurship and social entrepreneurship.

The positive effects of sustainable entrepreneurship on sustainable development is well established in literature. Sustainable entrepreneurs are creating value with the goal to create sustainable development (Cohen &Winn, 2007; Dean & McMullen, 2007; Schaltegger & Wagner, 2010; Shepherd & Patzelt, 2011). *"Sustainable entrepreneurship is focused on the preservation of nature, life support, and community in the pursuit of perceived opportunities to bring into existence future products, processes, and services for gain, where gain is broadly construed to include economic and non-economic gains to individuals, the economy, and society"* (Shepherd & Patzelt, 2011). As the definition states, the value these entrepreneurs create does not only come in the form of new money, materials or products. Innovations in services and institutional change are just as important.

After all, an invention can only become a successful innovation if it is able to function in society (Ghisellini et al., 2014; Matthewman, 2011). Social entrepreneurs are similar to sustainable entrepreneurs in general. They also target problems in society that are not solved through corporate activity or governmental action (Cohen & Winn, 2007). The difference is that they enterprise to achieve their societal goals in the first place, securing funding is considered the means to an end (Schaltegger & Wagner, 2010).

Institutions structure, steer or initiate behaviours and arrangements in society (Hoffman, 1999). Entrepreneurs act as agents that navigate these institutions to create value (Anderson & Hill, 2004). Sometimes institutions are not aligned with the intentions of an entrepreneur. When entrepreneurs attempt to change or (re)create these institutions we categorize their activities as institutional entrepreneurship (Shepherd & Patzelt, 2011). Currently, the institutions in society are aligned with the linear economy. A transition towards the circular economy can only be successful if all actors in society are involved, including institutions: we need to change the way our economy works in its entirety (Braungart and McDonough, 2002; Ellen McArthur Foundation, 2012; Ellen McArthur & McKinsey, 2014; Ghisellini et al., 2014). Are circular entrepreneurs more prone to show characteristics of institutional entrepreneurship?

This thesis aims at developing a better understanding the efforts, choices and activities of circular entrepreneurs in navigating institutions. With the purpose to contribute to knowledge that could aid in facilitating a transition towards the circular economy. It does so by using literature on sustainable entrepreneurship, institutional entrepreneurship and the circular economy as the basis for a case study. The circular entrepreneur that is used as the case, grows Oyster mushrooms on used coffee grounds in the urban environment of London. Thereby addressing issues regarding feeding the city, resource depletion and food waste, while being entrepreneurial using circular economy principles.

Problem statement & Research aims

The Circular Economy can be seen as a system that integrates the economy with ecological principles, proposing a completely different way of resource utilization. Urban agriculture has the potential to reconnect the urban population with the production of fresh food products. Both are relatively new phenomena that require innovation, entrepreneurial action and institutional change (Braungart and McDonough, 2002; Ellen McArthur Foundation, 2012; Ghisellini et al., 2014). Circular entrepreneurs see an opportunity in the sustainability trend and circular economy concept, despite the fact that they will have to operate within a system that consists of institutions aligned with the linear economy. The aim of this thesis is to gain insight in how Circular Urban Farmers act within this tension of contradictory forces. How do they run an innovative business in line with circular economy principles whilst being constrained by linear economy institutions at the same time?

At the moment a theory specifically focussed on entrepreneurship in the relatively new research area of the circular economy is lacking. While the more established fields of institutional theory and sustainable entrepreneurship can potentially benefit from a fresh outlook on the topic. This thesis aims at developing a better understanding of the actions, efforts and choices of these circular entrepreneurs from an institutional perspective, in comparison to sustainable and social entrepreneurship literature. Answering the main research question:

What efforts, activities and choices do circular entrepreneurs make as they navigate the institutional system of a linear economy, while doing business in a circular economic way?

2. Literature study

This chapter lies the theoretical foundations for the case study ahead. First, an explanation of the Circular Economy provides insight in the main topic. Second, the institutional-economic theory will provide a clear overview of what institutions are and how these rules of economy are navigated by entrepreneurs. Third, a theoretical background for circular entrepreneurship is provided, since the main goal of this thesis is to gain more knowledge on the activities that these entrepreneurs undertake to transition to the Circular Economy. Finally the context for Urban Agriculture will be provided in the fourth paragraph.

Circular Economy

The circular economy (from now on called CE) concept is relatively new. Science and business are in the experimental phase often aided by idealistic organisations and institutions that promote a transition. The Ellen Mc Arthur Foundation is one of the largest organisations for promotion and development of the CE and cited quite frequently in this thesis. The foundation is established in 2010 with the aim of accelerating the transition towards the circular economy and has developed and published a wide range of reports, which has proven to be very valuable in the relatively new research area of the CE. Another frequently cited concept is Cradle to Cradle, by Braungart and McDonough (2002). These authors primarily focus on the intelligent design of products and processes with the goal to infinitely cycle the nutrients (or chemicals) of which products are made.

> *"The circular economy is a generic term for an industrial economy that is, by design or intention, restorative and in which materials flows are of two types, biological nutrients, designed to re-enter the biosphere safely, and technical nutrients, which are designed to circulate at high quality without entering the biosphere."* (www.ellenmacarthurfoundation.org)

The Circular Economy (CE) is an alternative approach to the current linear economy. The linear system is based on the take, make, dispose – as discussed briefly in the introduction – where resources are extracted from the environment, processed, used and disposed (Ellen McArthur foundation, 2012; Pitt & Heinemeyer, 2015). Companies form the spill in this system, they are the ones who create value from the resources by giving them a function that the consumers will pay for. In the process resources are discarded as waste and in the end all resources are lost in either an incinerator or landfill. This system will never be able to continue endlessly, despite many efforts to make this system more sustainable. The best tool to make a linear economy more sustainable is eco-efficiency. In an eco-efficient economy scarce resources are used as efficiently as possible, focussing on the lowest cost and the least amount of resources to reach a production goal. In a finite system, this can never uphold. It does not matter how efficient the production becomes, resources will always be lost; there will always be waste. Eco-efficiency will only lengthen the time in which resources can be extracted from 'space ship earth'. Therefore we need a transition towards a different system, where the resources in the end are not wasted but recirculated as if it were a new resource again (Boulding, 1966; Braungart and McDonough, 2002; Ellen McArthur Foundation, 2012; Ellen McArthur & McKinsey, 2014).

The CE is an eco-effective economy, not costs, but resources are the focal point. It all starts in the design phase, the nutrients of which a product is built must be used in such a way that they are able to re-circulate continuously. This can mean that a certain part can be used in the next product, that certain materials can be reshaped for re-use or that the material is brought back to the nutrient-stage where is can be transformed in a raw material again. The CE can be described following the

butterfly-model in figure 2 below. The middle, or body, of the butterfly is the processing chain. Here mined and harvested resources enter the economy. They are manufactured into parts, then products. The products reach the consumer through a service provider. When the consumer is done, its nutrients returns to either the biological cycle or the technical cycle. CE theorists often speaks of nutrients instead of resources. Because often several nutrients together form a resource. Wood for example, is made of many different nutrients: water, sunlight, carbon, minerals etc. These nutrients are what is extracted from the environment, the wood is harvested as a resource. For a truly circular system the nutrients that are used to create the resource wood must return to the same place in order to grow a new tree as soon as the wood is no longer useful (Braungart and McDonough, 2002; Ellen McArthur Foundation, 2012) The left wing of the butterfly displays the biological nutrient cycle, the right wing the technical cycle. This thesis is primarily aimed at feeding the city in a circular way, therefore the technical cycle will not be discussed any further. Biological nutrients are digestible (food), compostable (bio-materials) or burned (bio-fuel) and after use returned to their original nutrient-state and can be recirculated as such.

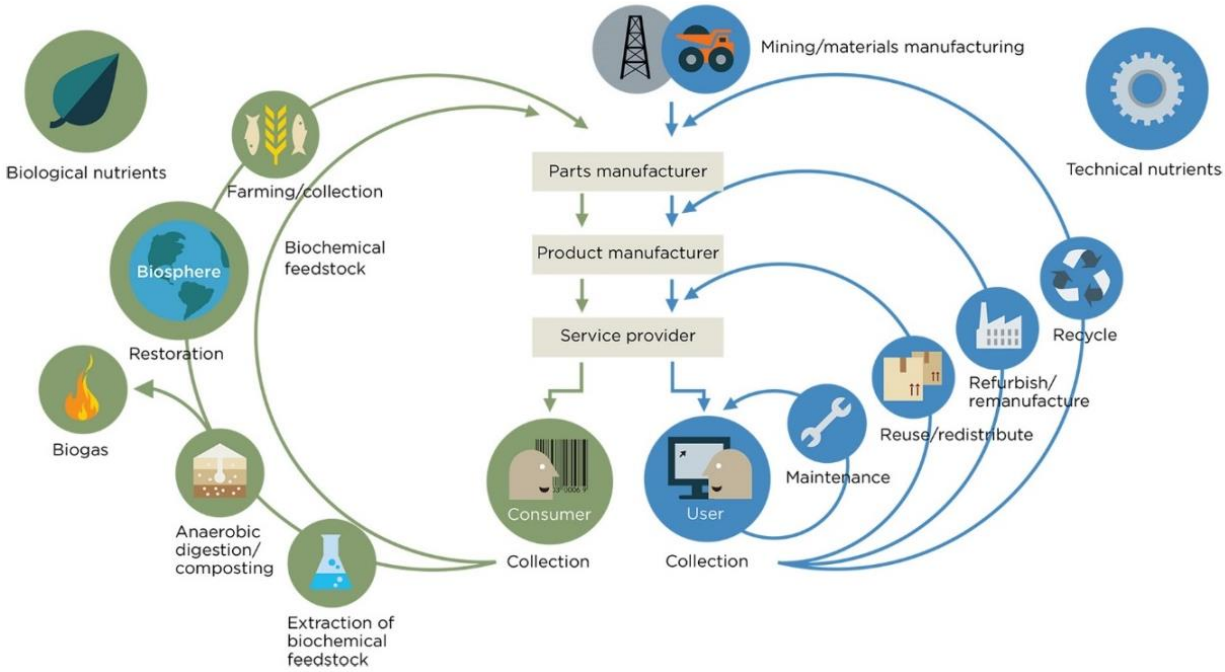

Figure 2. The butterfly model (ellenmcarthurfoundation.org).

The principles of the CE are sustainable by definition, the whole concept is built around an infinite cycle of resources powered by energy from the sun, while celebrating diversity (Braungart and McDonough, 2002; Ellen McArthur Foundation, 2012). It is a more holistic system of value creation, focused on value in general: environmental, social and economic. A transition towards a more circular economy could alleviate the problems regarding feeding the city. Currently (biological)nutrients are imported into the city form far away, consumed, and discarded through the sewage system and through food-waste. The revalorisation of this food waste can be a first step in closing the nutrient cycle within a city and could potentially aid in feeding the city in a more sustainable way. However a transition towards the CE is easier said than done. It requires institutional change and entrepreneurial action.

Institutions and entrepreneurship

Institutions are "rules, norms, and beliefs that describe reality for the organization, explaining what is and is not, what can be acted upon and what cannot" (Hoffman, 1999). Institutions structure, steer or initiate behaviours and arrangements in a very broad arena: economic, social and political. They do so informally (e.g. culturally embedded understandings) and formally (e.g. laws and regulations) (Hoffman, 1999; Garud et al., 2007). Or in short: "they are humanly devised constraints that shape human interaction" (North, 1990). Society is built by and through institutions, they ensure that all actors somehow align with the system. From that follows that institutions also reinforce the existing system. A system change requires the existing institutions to be contested (Fisher, 2015; Battilana et al., 2009; Garud et al., 2007).

Institutional economics is a branch of institutional analysis that focusses on the types, purposes and functioning of arrangements that are created for economic activity and innovation (Anderson & Hill, 2004; Battilana et al., 2009). Institutions tend to uphold the status quo. There are three main institutional pillars that constrain behaviour and enforce its rules. The regulative, which guides action through coercion and threat of formal sanction; the normative, which guides action through norms of acceptability, morality and ethics; the cognitive, which guides action through the very categories and frames by which actors know and interpret their world (Scott, 2014). Currently the institutional system is aligned with the linear economy (Fischer, 2015).

In general entrepreneurs navigate this institutional system to exploit opportunities and create value for themselves, society and/or the environment. Sometimes (and especially in the case of CE) these opportunities lie outside the current institutional system. Institutional entrepreneurs attempt to exploit these opportunities and therefore need to create new institutions or reform old ones to reach their goal, while at the same time they are restricted by those institutions (Anderson & Hill, 2004; Schaltegger & Wagner 2010; Fischer, 2015). "*An institutional entrepreneur is an actor that has an interest in developing new institutions or facilitating change in existing institutions (replacing the old with the new), and leverages resources to achieve this change" (Fligstein, 1997 in Shepherd & Patzelt, 2011, P148).* From this perspective, innovative entrepreneurial activities can be described as creative destruction (Schumpeter, 1934). Entrepreneurs, when engaging in opportunities that the Circular economy concept poses, destroy the current linear system and are creative in building the circular system. Here the Circular Economy can be seen as a wider system that sustainable entrepreneurs can adopt to help them change the institutions into a new, more supportive system. "*The challenge is, how to transition to a circular economy when constrained by an institutional system that is aligned with the status quo of a linear economy*" (Fischer, 2015).

A theory of circular entrepreneurship

For the purpose of this thesis, a "circular entrepreneur" is defined as an agent who promotes change and exploits opportunities, with the purpose to do business according to the principles of the circular economy concept. The concept of circular entrepreneurship has been developed with the purpose to stimulate research on this kind of entrepreneurial activity. Furthermore the labelling of entrepreneurs that act outside the linear economy might interest researchers in the circular economy. The theoretical distinction might help in the understanding of entrepreneurial activities and might aid in facilitating a transition.

The concept is derived from theory on sustainable, social and institutional entrepreneurship (Battilana et al., 2009; Zahra et al., 2009; Schaltegger & Wagner, 2010). In the current linear system several different types of entrepreneurs can be distinguished, this will be the case in the circular economic system too. For the sake of further development of circular entrepreneurial theory it is important to characterize different types of circular entrepreneurs. The focus of this thesis is on the goals of these social, sustainable and institutional entrepreneurs as described by Schaltegger & Wagner (2010), under the assumption that these goals are the main motivations for an entrepreneur's efforts and choices. The main goal of a social entrepreneur is described as *"achieve societal goals and secure funding to achieve this",* the main goal of a sustainable entrepreneur is described as *"creating sustainable development through entrepreneurial corporate activities"* and the main goal of an institutional entrepreneur is described as *"developing new institutions or facilitating change in existing institutions"* (Schaltegger & Wagner, 2010) shown in table 1.

For this thesis it is argued that, when sustainable-, social- and institutional entrepreneurs pursue their efforts according to the principles of the circular economy, they are circular entrepreneurs. Thus, a circular entrepreneur can fit within the definitions of a social entrepreneur, sustainable entrepreneur and an institutional entrepreneur, simply adding the CE principles to its cause. The other way around: when a circular entrepreneur acts to achieve societal goals, creates sustainable development through entrepreneurial corporate activities and facilitates institutional change together: can a circular entrepreneur then be a social, sustainable or institutional entrepreneur at the same time? This makes sense, as the concept of CE is aimed at improving society and the environment and at the same time needs a new institutional system to support it (Braungart and McDonough, 2002; Ellen McArthur Foundation, 2012; Ghisellini et.al., 2014).

To clarify, table 1 provides an overview of the different goals and the different entrepreneurial types. The 'yes by definition' blocks link the type of entrepreneurship to the main goals they pursue, making overlapping goals visible. The other cells of the table present the likeliness that a certain type of entrepreneurship also pursues the corresponding goal. Yes means; yes the entrepreneurship type in question is very likely to also pursue this goal. Possibly means; this type of entrepreneurship can exert the corresponding trait, but does not necessarily have to. No means; the entrepreneurship type in question is very likely not to pursue this goal. This is elaborated on further in the second part of this chapter.

Main goal [1] / Type	Enterprise according to the circular economy principles	Creating sustainable development through entrepreneurial corporate activities	Achieve societal goals and secure funding to achieve this	Developing new institutions or facilitating change in existing institutions
Circular entrepreneurship	Yes by definition	Yes	Yes	Likely
Sustainable entrepreneurship	No	Yes by definition	Possibly	Possibly
Social entrepreneurship	No	Possibly	Yes by definition	Possibly
Institutional entrepreneurship	No	Possibly	Possibly	Yes by definition

Table 1. Main goals of different types of entrepreneurship, compared to their entrepreneurial typologies.

Sustainable entrepreneurs act in order to create sustainable development through entrepreneurial corporate activities (Schaltegger & Wagner, 2010). These entrepreneurial corporate activities are described as realizing sustainability innovations aimed at the mass market (Schaltegger & Wagner, 2010). The principle of circular economy is built on the notion that all resources should be able to sustain indefinitely, thereby covering the entire realm of sustainability: resources, energy, labour (Ellen McArthur Foundation, 2012). This means that in essence: circular entrepreneurs are always sustainable entrepreneurs, but not the other way around (table 1).

Social entrepreneurs are very similar to sustainable entrepreneurs. The difference is that social entrepreneurs act in order to achieve their societal goals in the first place, securing funding is considered the means to an end (Zahra et al., 2009; Schaltegger & Wagner, 2010). From that follows logically that a social entrepreneur (when striving to a goal that promotes environmental sustainability as well as social benefits) can in some cases be called a sustainable entrepreneur as long as the entrepreneurial corporate activities are a means to an end. Therefore, circular entrepreneurs are always sustainable entrepreneurs and sometimes social entrepreneurs but not the other way around (table 1).

Sometimes material, product or organisational innovations require a change in market-conditions in order to become successful (Matthewman, 2011). Sustainable entrepreneurs dealing with these kinds of innovations will have the ambition to change these institutional barriers in their favour (Schaltegger & Wagner, 2010). Hence: when sustainable or social entrepreneurs are creating a more supportive institutional setting by changing or creating new institutions, it follows that they are also institutional entrepreneurs. This is not always the case for social or sustainable entrepreneurs. Circular entrepreneurs, however, will encounter institutional barriers almost by definition. After all, they propose an alternative economic system with which the institutions still have to be aligned.

Concluding; some social or sustainable entrepreneurs are also institutional entrepreneurs, but circular entrepreneurs are likely to also be institutional entrepreneurs. Institutional entrepreneurship should be an almost necessary characteristic of circular entrepreneurship and as a potential beneficial characteristic of social- and sustainable entrepreneurship.

[1] For the creation of this table, insights from Schaltegger & Wagner (2010) are used.

Urban Agriculture

Many know urban agriculture as a small scale 'green' practice, informing the neighbourhood about the origins of their food often aided by volunteers. They pop-up on rooftops and vacant lots and their business models often focus on environmental awareness and escaping the rush of city-life. However another form of urban agriculture is on the rise, using the newest insights to produce large amounts of fresh food on little space. There urban agriculturalists focus on a more circular system where less fossil fuels, water, fertilizer and pesticides are used while challenging the concept of waste (Smit & Nasr, 1992). They address the scarcity of arable land in the city by using alternative growing technologies and using vacant urban spaces. In addition they attempt to waste less food or at least utilize all nutrients to its full potential (Smit & Nasr, 1992; Specht et al., 2016; Schnitzler, 2013; Goddek et al., 2014).

There are some who use new techniques like vertical hydroponics (soil-less horticulture) and aquaponics (producing fish and vegetables in a human controlled ecosystem) (Schnitzler, 2013). Others use resources that were discarded as waste and turn it into food (Smit & Nasr, 1992, Pauli, 2010). A relatively popular form of urban agriculture is the kind that grows mushrooms on used coffee grounds, as proposed by Gunter Pauli in his ZERI project Blue Economy book (Pauli, 2010).

3. Methodology

This chapter provides necessary context and background on the case subject, complemented with literature on case-study design. The first aim of this chapter is to explain the relevance of a case-study as a method for answering the main research question. The second aim is to explain the relevance of this case subject in particular for the advancement of new understandings on circular entrepreneurial activities. For the purpose of this thesis, a "circular entrepreneur" is defined as an agent who promotes change and exploits opportunities, with the purpose to do business according to the principles of the circular economy concept.

Research design

A single case study design was selected to explore the efforts, activities and choices of circular entrepreneurs as they navigate the institutional system of a linear economy, while doing business in a circular economic way. A single case study provides a relevant method for the exploration of a phenomenon (Yin, 2003) like circular entrepreneurial activities. Especially in the early stages of a new research area (the circular economy) or to provide a fresh outlook on an already researched topic (Eisenhardt, 1989). This fits the research needs for this thesis: a theory specifically focussed on entrepreneurship in the relatively new research area of the circular economy is lacking (Fischer, 2015). Plus the more established fields of institutional theory and sustainable entrepreneurship can potentially benefit from a fresh outlook on the topic. In addition, this thesis aims at developing a better understanding of the actions, efforts and choices of these circular entrepreneurs from an institutional perspective, in comparison to sustainable and social entrepreneurship literature. A case study can examine a person in order to extrapolate key themes and results that help illuminate previously hidden issues that can be applied to practice (CSU, 2010). The characteristics of the case subject must be as such that they adhere to the main research question. Meaning that: the person fits in the definition of a circular entrepreneur; the person has experience in and currently navigates the institutional system of the linear economy and potentially the institutional system of the CE. Furthermore, Yin (2003) states that a case study should be considered when; the behaviour of those involved in the study cannot be manipulated and when the contextual conditions must be covered because they may be relevant for answering the research question. It is logical that contextual conditions and institutions are of importance when studying entrepreneurial efforts and choices (Welter & Smallbone, 2012).

Consequently, this research is shaped around the case of a circular entrepreneur that grows Oyster mushrooms on used coffee grounds in the urban environment of London. Thereby addressing issues regarding feeding the city, resource depletion and food waste, while being entrepreneurial using circular economy principles. The focus lies on the efforts, activities and choices that the circular entrepreneur makes in order to navigate institutions. These can be institutions aligned with the linear economy, as well as institutions that facilitate a transition towards a more circular economy. The case was selected through online search for circular entrepreneurs in the urban agriculture field and checked for characteristics that are necessary for a contribution to the understanding of the circular entrepreneurship concept.

Research subject

The circular entrepreneur in question is Eric Jong. Eric runs a company called Future Fungi CIC and a project called GroCycle together with Adam Sayner in Devon, United Kingdom. The core concept of

their business is the revaluation of coffee waste through the production of gourmet oyster-mushrooms in an urban area.

Business characteristics

The business model of GroCycle consists of three elements: 1) *Mushroom production*: An unused office building in the centre of Exeter (UK) is converted into a small vertical urban mushroom farm (fig. 3). Coffee waste is collected in and around Exeter and turned into an alternative growing media for oyster mushroom cultivation, the mushrooms are sold locally. 2) *Grow kit:* Production of Grow kits for direct sale. Customers can use these kits to grow their own mushrooms on coffee waste from the countertop of their kitchens (fig. 4). 3) O*nline course*: The sales and development of an online course and community for learning about growing mushrooms on coffee waste and the CE concept.

GroCycle is a project deployed by Future Fungi CIC, a Community Interest Company (from now on called CIC). This corporate form was created by the UK government under the Companies Act of 2004 to recognize for-profit companies that have a stated purpose beyond profit. The purpose in this case is waste reduction and promotion of CE principles and activities through education. Enterprise owners can make up to £60,000 per year; beyond that amount justification is required (website). In essence this means that the activities of GroCycle can have a for profit motivation but all profit made is returned into their social and environmental aims.

Figure 3. GroCycle mushroom farm.

Figure 4. GroCycle Grow kit.

Figure 5. Eric (left) and Adam (right).

From a CE or resource effectivity standpoint the GroCycle business model has several advantages over regular mushroom-production method:

a. Use of a growing medium that was considered to be waste. According to GroCycle, only about one percent of the ground coffee used to brew a cup of coffee ends-up in the hot beverage itself, the other 99% is thrown away. Worldwide about 6.06 million tons of coffee are produced, corresponding to about 15 billion cups of coffee daily (Wintgens, 2009). In the UK approximately 80 million cups are consumed daily and this figure is likely to increase (Mintel Coffee report, 2012). Coffee is generally grown within 1000miles (North and South) of the equator (British Coffee association, 2012). Considering the distance coffee must travel from countries around the equator to a coffee cup in Exeter, the extraction of only 1% seems quite resource ineffective. The large amount of coffee used makes it worthwhile from an eco-effective standpoint to put the other 99% to good use.
b. The necessity to heat-treat the growing medium (also called substrate) before the production of mushrooms. Usually a mushroom farmer uses a growing medium like straw, wood chips, cotton waste, hay, banana leaves, corn stalks or other agricultural waste products. For many species of mushroom this substrate must be heat-treated to remove unwanted competitive microorganisms (Royse, 1997). For oyster mushrooms wheat straw is pasteurized at 60C for two

hours before it is spawned (Royse, 1997). A cup of coffee is brew by pouring or pressing a relatively large amount of boiling water through a relatively small amount of ground coffee beans. Thereby instantly pasteurizing the coffee and providing a suitable substrate for the oyster mushroom.

The entrepreneur

In 2009 Adam Sayner founded a company, Woodfruit Gourmet Mushroom Co., in Devon. Cultivating different kinds of mushrooms on conventional growing media and supplying them to local restaurants around Totnes, as well as making and selling DIY mushroom grow kits for consumers. In the search for a cheaper and more sustainable way of pasteurizing the substrate, he found that coffee waste would be a suitable alternative. This lead to the founding of Fungi Futures CIC in 2011 with the aim to keep coffee waste out of landfill by using it to grow gourmet mushrooms. In 2012 Eric Jong entered the company, he joined the business because he was 'searching for a more idealistic means of making a living'. Eric was previously employed at ExxonMobil and EDF Energy and has a background in business and financing. Together the two entrepreneurs started the GroCycle project.

Within the company, Adam is most knowledgeable on growing the mushrooms and specific innovations. Eric provides the knowledge and skills of his education in business & finance and his experience from working in large corporations. Studying Eric and his experiences in circular entrepreneurship provides an opportunity to advance new understandings about the research problem. As a fellow initiator of GroCycle he has an equal say in the company as his partner and has been working in the business for about 4 years. This should be more than enough time spent in that position to have experienced plenty barriers, breakthroughs and institutional encounters. During that time he has been pioneering in working with CE principles in a linear economic society. Educating and promoting CE principles through the creation of an online course and community. While navigating the institutional web to secure funding and build a networks as a CE entrepreneur. In addition, he is connected to several organisations that promote a transition towards a more sustainable society; like the Transition Network (aiming to connect and inspire actions that increase resilience and reduce CO2 emissions) and Schumacher College (focussed on nature based education). The focus lies on Eric as a circular entrepreneur, not on the business GroCycle, because the research is aimed at understanding entrepreneurial efforts, activities and choices. Nevertheless, the activities of GroCycle are very important because they are initiated through his role as a circular entrepreneur.

Data collection

Data is gathered through a guided interview of about 40 minutes through Skype (annex 1). Time limitation was instigated by Eric, a longer time to interview would have provided more detailed data. Questions were sent through email in advance. In addition to the Skype-call, the websites of FutureFungi CIC[2] and GroCycle[3] were studied, including a membership of the mushroom-cultivation course. Also a recording from an interview with 'the field guide' (an online platform for a regenerative economy) was used for background information[4]. Eric accepted to spend his time on a skype-call because he is familiar with Wageningen University and because he is partly Dutch. Important to acknowledge is that in the negotiations for doing the interview, the researcher has

[2] http://www.fungi-futures.co.uk/our-story/
[3] http://grocycle.com/
[4] http://fieldguide.capitalinstitute.org/grocycle.html

promised to write a short blogpost about the GroCycle Company with the purpose to promote the GroCycle course among students and staff of Wageningen University.

4. Discussion

In this chapter the most relevant findings from the case study are described and analysed. The findings are concisely presented then systematically explained, interpreted and analysed. The second part of the chapter is focussed on what these actions, efforts and choices say about the transition towards the CE. The third part compares the circular entrepreneurship theory, as explained before, with the case. The fourth part critically acknowledges the study's limitations and suggests areas for further research. All with the purpose to answer the main question:

What efforts, activities and choices do circular entrepreneurs make as they navigate the institutional system of a linear economy, while doing business in a circular economic way?

Findings 1

The circular entrepreneur is educating and spreading the circular economy-story behind coffee revaluation through marketing his products and an online course. He chooses to actively educate and promote the CE concept and mushroom growing-principle, thereby stimulating others to start their own coffee waste revalorisation projects for both hobby as well as business purposes. Eric explains that the choice to develop and extend the educational part of their business was both an idealistic and a strategic choice.

The first reason is idealistic. Eric sees it as his task to lead by example, he wants to turn their alternative mushroom-growing concept into mainstream practice. He aims to promote a circular, eco-effective way of dealing with resources because it makes so much sense as a concept. More importantly, he wants to inspire others to act upon it. The first efforts he undertakes as an entrepreneur is promoting their produce and Grow kit, the more people know about their products and how it is produced, the better. The next activity is to sell the online course to those who already display interest. The course is specifically designed to be for everyone, it is a very basic course consisting of video-lectures that display hands-on instructions on growing mushrooms on coffee waste. Also a lecture about the CE is incorporated.

The second reason is strategic. The circular entrepreneur specifically focusses on education in the business model because this provides a social aspect. Which is beneficial for two reasons: 1) it gives GroCycle access to the legal framework of CIC. This is beneficial because there are many forms of financial support available for social enterprises that regular enterprises cannot access that easily. The benefits in this case include support from UN ltd., a company that provides mentoring and funding to social enterprises, a gift from a philanthropist and a head-start in a crowdfunding campaign. 2) Being a social enterprise adds an extra advantageous label to the circular economy enterprise. When looking for funding Eric found that being a social enterprise weighs heavier for people to support you than the circular economy concept does (providing a head-start for the crowdfunding campaign). However when Eric is out to sell the course or grow kit, it proves to be much more interesting for potential clients to explain the concept of CE. So he cleverly uses both labels to his advantage, the social label for reaping the benefits regarding financial support and funding, the circular enterprise label for marketing their product.

Analysis 1

The circular entrepreneur is purposefully educating the masses and stimulating action; creating the future change agents. He sees it as part of his role to facilitate a transition towards the CE, with regard to mushroom cultivation on coffee. He is active in 'branding waste' as something positive (Pauli, 2010). Thereby actively changing people's perception of economy and resources, changing their perspective on waste: thus altering cognitive institutions. In addition, his actions might even be interpreted as changing the normative institutional guides: changing the norms around coffee waste. Especially for the people who become part of the GroCycle community, as a course member, frequent customer or partnering café. Throwing coffee grounds away can now be perceived as wasteful instead of necessary.

Findings 2

A large share of the circular entrepreneur's efforts and activities is spent on issues that are connected to funding. Factors such as a location, cultivation-equipment, and initial pre-sales production costs of grow kits and the time to create an e-learning programme require sufficient funds to start. Because they do not have a for-profit only business model, funding is hard to find within the linear economic system. The strategy to overcome this funding problem is becoming a CIC, thereby gaining access to funding from crowdfunding platform Kickstarter, UN ltd., and philanthropists.

According to Eric, the choice to become a CIC also has some negative effects, especially on the amount of sales activities that can be executed. Activities that are necessary to gain funding (networking and crowdfunding in particular) require a lot of time and effort. The balance between searching for funding (that can potentially provide a larger farm or better course) and executing marketing activities and sales (that must keep the business going) is hard to find. He expects that the sales of the course will create a more steady revenue, so more time can be spent on activities that are related to searching for funding to increase production and sales of mushrooms and grow kits.

Analysis 2

A large share of the circular entrepreneur's efforts and activities are spent on issues that are connected with funding. This is not in the first place a choice, it is a consequence of being a start-up and a circular enterprise. Because he is running a business that has a purpose of creating value other than financial alone, initial funding is hard to find. They see funding as the means to an end: converting coffee waste and educating is the main goal. This social entrepreneurial attitude is complemented by the goal to create sustainable development through corporate activity. The legal structure of CIC offers them both of these freedoms, they can create a company that is aimed at making financial profit as long as it is re-invested in creating environmental and social profit. The business is aimed at making money to re-invest in this social-environmental purpose.

The circular entrepreneur deals with financial and regulative institutions but without the efforts or intention to change them. There is regulation that works in their favour and there is funding available from the existing linear economic institutions.

Consequences for a transition towards the CE

In the first place the circular entrepreneur is very active in changing the cognitive and normative pillars of the institutional system. Primarily through educational activities. The more the cognitive and especially normative institutional systems change, the more likely it is that the regulative pillar might change (Scott, 2014). However, no clear activities or efforts are directed towards changing the

regulative pillar. In the second place the circular entrepreneur is actively seeking the same institutions that support the status quo of the current linear economy. This forces circular entrepreneurship in the corner of doing good to solve the problems that capitalism creates. While the concept of CE is intentionally created as an alternative to the current capitalist linear economy and will only succeed if this is the case (Braungart and McDonough, 2002; Ellen McArthur Foundation, 2012). The CE should not be a capitalism-fix, it should be an alternative to the current capitalist system. A transition will only happen if change in the regulative pillar is achieved.

Does the circular entrepreneurship theory hold up in real life?

Despite being purely theoretical, the development of circular entrepreneur as a concept in CE studies can prove to be valuable as a perspective.

It appears that the circular entrepreneur, at least in this case, fits within table 1, which is reported hereafter again for review. Eric is attempting to *"achieve societal goals and secure funding to achieve this",* while at the same time *"creating sustainable development through entrepreneurial corporate activities"* (Schaltegger & Wagner, 2010). In addition he is intentionally attempting to facilitate change in existing institutions, albeit only in the cognitive and normative institutions. It would be very interesting to investigate more circular entrepreneurs and improve this theory in order to develop a better understanding of entrepreneurs that have the goal to create more value for society than monetary value alone.

Main goal [5] / Type	Enterprise according to the circular economy principles	Creating sustainable development through entrepreneurial corporate activities	Achieve societal goals and secure funding to achieve this	Developing new institutions or facilitating change in existing institutions
Circular entrepreneurship	Yes by definition	Yes	Yes	Likely
Sustainable entrepreneurship	No	Yes by definition	Possibly	Possibly
Social entrepreneurship	No	Possibly	Yes by definition	Possibly
Institutional entrepreneurship	No	Possibly	Possibly	Yes by definition

Table 1. Main goals of different types of entrepreneurship, compared to their entrepreneurial typologies.

Limitations and suggestions for further research

Despite the fact that a single case study is a suitable method for answering the main research question, a comparison between several cases of circular entrepreneurs would have provided a more substantial base of evidence. This was not possible due to limited time and limited availability of circular entrepreneurs. Also the case study could have been more valuable if a participant observation or several interviews would have taken place.

The theoretical development of the circular entrepreneurship concept could provide new insights in future studies regarding entrepreneurship and the CE. The theoretical distinction might help in the understanding of entrepreneurial activities and might aid in facilitating a transition towards the CE. However the literature study in this thesis was mainly focussed on a somewhat

[5] For the creation of this table, insights from Schaltegger & Wagner (2010) are used.

superficial discussion about definitions. In addition the findings show little difference between the strategy of sustainable entrepreneurs and circular entrepreneurs, thus limiting the relevance of the circular entrepreneurship concept. A more thorough review of the different types of entrepreneurship could provide a more substantiated view on entrepreneurship according the CE principles.

5. Conclusions

The circular entrepreneur is purposefully educating the masses and stimulating action; creating the future change agents. He sees it as part of his role to facilitate a transition towards the CE, with regard to mushroom cultivation on coffee. He is active in 'branding waste' as something positive (Pauli, 2010). Thereby actively changing people's perception of economy and resources, changing their perspective on waste: thus altering cognitive institutions. In addition, his actions might even be interpreted as changing the normative institutional guides: changing the norms around coffee waste. Especially for the people who become part of the GroCycle community, as a course member, frequent customer or partnering café. Throwing coffee grounds away can now be perceived as wasteful instead of necessary.

A large share of the circular entrepreneur's efforts and activities are spent on issues that are connected with funding. This is not in the first place a choice, it is a consequence of being a start-up and a social enterprise.

The circular entrepreneur deals with financial and regulative institutions but without the efforts or intention to change them. There is regulation that works in their favour and there is funding available from the existing linear economic institutions.

Circular entrepreneurs use institutions that are set-up to mitigate the externalized costs of the linear industrial economy. Those are the same institutions as sustainable entrepreneurs and social entrepreneurs use to gain support for their business. The consequence is that a transition towards a CE is far away. As long as circular entrepreneurs do not contest linear institutions the status quo is uphold. Circular entrepreneurs should be able to make use of circular economy institutions or build these institutions themselves in order to facilitate a change.

A transition requires creative destruction as well as construction. CE institutions should be built to contest linear institutions. As long as CE is just a mitigation for the negative effects of the industrial linear economy, an inherent system-change cannot yet occur.

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Annex 1 - Semi-structured Questionnaire for Eric Jong, July 2015

0. According to your personal view, how would you explain the concept of circular economy?

a. Understanding the business model and major entrepreneurial activities

1. Could you explain the core activities of your company?
    i. Product; service; mission; vision

2. Could you explain your business model?
    i. Customer relationship, largest streams, channels, value, main cost
    ii. Use canvas for identification of all aspects

b. Understanding the major drivers for starting the company

1. Can you list the main reasons for you to start this company?
    i. Idealistic; financial; opportunity; access to technology; market availability; economic necessity; environmental necessity.

2. What was the main opportunity for starting this company?

3. Could you explain other important reasons/drivers?
    i. Specific event; necessity; unemployment,

Identify push and pull incentives

4. Did you identify a specific customer-segment that would be interested in your product?
    i. Sustainability; local oriented; low cost;

5. Was there any specific kind of support that triggered the start of your company?
    i. Subsidies, loans, financing, debt, crowdfunding; university; research-budget/outcome

c. Understanding the major barriers for starting the company

Identify 'go or no-go' barriers

1. What barriers did you meet before starting your company?
    i. Law; financing; knowledge; policy; bureaucracy; opinion; clients; competition clients-knowledge/beliefs;

2. Where did you experience resistance, while starting your business?
    i. Law; financing; knowledge; policy; bureaucracy; opinion; clients; competition clients-knowledge/beliefs;

d. Gain insights in the most important institutional constraints or benefits for the entrepreneur

1. Where do/did you encounter resistance, while doing business?
    i. Law; financing; knowledge; policy; bureaucracy; opinion; clients; competition clients-knowledge/beliefs;
    ii. Follow the business model canvas to identify all possible stakeholders. And their beliefs, practices that were potential constraints/benefits.

2. What resistance was most impactful/crucial in the development of your business?

3. Was there resistance from an area you did not expect?

4. Where do/did you encounter support, while doing business?
    i. Follow the business model canvas to identify all possible stakeholders. And their beliefs, practices that were potential constraints/benefits.

5. What support was most impactful/crucial in the development of your business?

6. Was there support from an area that you did not expect?

e. Gain insight in the entrepreneurial activities that create/shape institutions

1. What did you do to pass/overcome this resistance?
    i. Follow the business model canvas to identify all possible activities. Ask for practical examples.

2. What methods did you use in order to overcome this resistance?
    i. Did you set-up any initiative? Network? Contract?

3. In what way did you utilize the support you received?

f. Expectations for the future of the CE. What are the major constraints/promises?

1. What are, according to you, the most important promises for the CE?

2. What are, according to you, the most important problems for the CE?