



Temporality in visions of desirable futures: Chronos and Kairos in the case of the circular economy on Gotland

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ABSTRACT

This article explores the role of temporality in imagining a desirable future, in the case of the circular economy on the Swedish island of Gotland. By examining how temporal categories, including the present and the past and Chronos & Kairos, influence our thinking about the future, it contends that the circular economy offers a unique opportunity to remake the possibilities of what the future can be. The article argues that in articulating depictions of the future, our ideas of the past, the present and the future play a constituent role. Through an analysis of a case study on Gotland, it illustrates the ways in which different temporal understandings are entangled with visions of the circular economy. The findings of this study reveal valuable insights, illustrating that by embracing Chronos and seizing Kairos moments, the circular economy can catalyse transformative possibilities for the future. This aims to contribute to ongoing discussions about the circular economy by highlighting the importance of considering temporal dimensions in imagining sustainable futures.

1. Introduction

Our everyday lives involve a continuous dialogue between our idea of the future and our current actions. From arranging a mortgage to doing the weekly grocery shop, or planning to meet a friend later in the week, in policy making, this is not much different. As policy makers grapple with major societal challenges, the magnitude of those challenges forces policymakers to also broaden the horizon of the future. This paper acknowledges that our conception of the future, encompassing what is possible, plausible, and probable, has profound influence on our present actions (Anderson, 2010; Kovacic et al., 2019; Muiderman et al., 2020). Visions of the future go beyond mere mental representations and discourses; they become a driving force of social action (Adam and Groves, 2007; Appadurai, 2013; Emirbayer and Mische, 1998; Tutton, 2017). The future is described by Adam and Groves (2007), among others, as the *not yet*. Elaborating on this, Kovacic et al. (2019, p. 80) argue not merely to think about a singular *not yet*, but as a plural construct, to not consider it as “a coherent temporal entity that we are moving towards (...), but an object or a social artifact of sorts that we ourselves make up through various future-making practices”.

In the realm of sustainability, our ability to envision, plan and create futures is considered a valuable resource (Jasanoff and Kim, 2015; Koselleck, 2004). Conflicts arising from divergent perceptions of the future significantly impact present politics. With the transition from a

future determined by divine forces to one influenced by human actions and responsibilities, our ideas and beliefs about the future have gained greater significance (Adam, 2010). Temporality, as emphasized by Kovacic et al. (2019) plays a vital role in understanding how future visions impact our current experiences. Reveals the significant role that the perception of time plays in our understanding of the impact of future visions on our current experience. They identify three key elements that link time and temporality with the imagination of the future. First, thinking about the future is inherently social and historical contingent as our thought of what is not there yet are affected by our past experiences (Beck and Oomen, 2021; Kovacic et al., 2019). This might lead to a situation where there would be as many present futures as people, there won't be that many futures present (Adam and Groves, 2007). Second, talking about collective ideas on how the future will look like is related to the way in which we know it: via quantification of metrics (Völker et al., 2020), group discussions or scenario analysis, these futures are constructed via means in anticipatory practices where we imagine that this future will become (material) reality (Muiderman et al., 2022). Thus, it matters in which ways we do that and which (conscious) interests we do so – what should the circular economy do to our interest (Corvellec et al., 2020)? This relates immediately to the plural here: often the circular economy is imagined from a Western point of view, but we see increasingly the argument to find more inclusive ways in thinking about the collective (Kovacic et al., 2019; Völker et al., 2020).

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Thirdly, there is a distinction between ‘reflection about time to come’ and imagining futures, whereas the latter is more something that is also enacted upon via negotiations in the present in order to ‘manage’ the future (Kovacic et al., 2019).

The role of temporality in imagining a desirable future for the circular economy on Gotland is the main focus of this article, where our ideas of the past, present, and future play a constituent role in articulating future depictions. Our understanding of the future is plural and shaped through various future-making practices, making it an object or social artifact (e.g. Oomen et al., 2021). This study examines how temporal categories, including the present and the past, shape our thinking about the future, highlighting the circular economy’s unique potential to transform future possibilities. Through the analysis of a case study on Gotland, it illustrates the constitutive role of temporality in envisioning the circular economy, contributing to ongoing discussions on sustainable futures.

2. The circular economy and temporality

The circular economy is, generally speaking, understood as an attempt to move away from the traditional linear production model of take-make-dispose towards an economic system where ‘loops are closed’ and waste is eliminated and resources are conserved (e.g. Ghisellini et al., 2016). In other words, the circular economy is seen as “a new relationship with our goods and materials, [that] would save resources and energy and create local jobs” (Stahel, 2016, p.435). However, the concept has undergone numerous discussions, leading to an increasing proliferation and ambiguity of the circular economy concept (Blomsma and Brennan, 2017; Calisto Friant et al., 2020; Niskanen et al., 2020; Rödl et al., 2022), with complex temporal dimensions (Geissdoerfer et al., 2017; Korhonen et al., 2018). The temporal focus has typically been on product lifespans, usage durations, and the timing of recycling and reuse (Milios, 2018), culminating in the idea of ‘slowing loops’ (Bocken et al., 2016). For instance, Geissdoerfer et al. (2017) argue that the circular economy requires a shift from the linear “take-make-dispose” model to a more cyclical and regenerative model that extends the lifespan of products and materials. They underline the importance of designing products with longer lifespans and integrating reuse and recycling at the end of the product’s life. In this, the focus is on the relationship between the resource and products, where the circular economy is embraced to devise strategies that prioritize the reuse and extension of the lifespan of products and materials. It also stresses the importance of aligning the timing of reuse and recycling activities with resource availability and product demand.

Simultaneously, there is growing attention towards the political, power dynamics, social aspects, and the complexity of environmental impacts associated with a transition to a circular economy (Ampe, 2022; Corvellec et al., 2022; Fratini et al., 2019; Hobson, 2021; Maitre-Ekern, 2021; Marks et al., 2023; Simoons and Leipold, 2021). Nonetheless, these engagements often lack a particular emphasis on the temporal dimension of the circular economy. Therefore, it is crucial to delve deeper into the aspect of time in these domains (Corvellec et al., 2022; Korhonen et al., 2018).

Through exploring the temporal relationships embedded in visions of the circular economy, we can gain a deeper understanding of the complexities of this concept and its potential to address issues of sustainability and waste. By recognising the intricate interplay between social and material flows, we can begin to open up the debate on what role thinking about temporality can play in the circular economy. However, this intersection has been relatively unexplored beyond the focus on products and materials, limiting our ability to fully comprehend the intricacies of circular economies (Gregson et al., 2015; Holmes et al., 2021).

This is particularly relevant when the circular economy is not understood as ‘one thing’, a static or predetermined concept, but rather as constantly evolving and emerging from the interactions between past,

present, and future temporal dimensions (Adam and Groves, 2007; Kuchler and Bridge, 2018). This is emphasized by Corvellec et al. (2020, pp. 100–101), where they ask the reader to

“not get us wrong. [circular economy] thinking has immense potential, in our view. However, its ‘emptiness’ needs to be problematized, and the way this empty space is filled needs to be questioned and interrogated”.

Building upon the concerns raised by Corvellec et al. (2020), various interpretations continually shape the circular economy concept. It is relevant to zoom in to one of these interpretations, as this allows us to examine how different temporal understandings are entangled with visions of the circular economy and influence its practical implementation.

By recognising the diverse meanings and understandings of the circular economy and the intricate interplay between social and material flows, this study addresses the drawbacks of a product and material-centric focus (Holmes et al., 2021), so its complexities can be better comprehended and its transformative potential unlocked. Furthermore, it contributes to expanding the debate on the role of temporality in shaping the circular economy by examining dominant temporalities and their implications for sustainability and waste management (Kovacic et al., 2019).

Thus, by exploring temporality within the circular economy, this research seeks to deepen our understanding of the complex interplay between temporal dimensions and the circular economy’s potential to address sustainability challenges. It aims to bridge the existing knowledge gap and contribute to the ongoing discussions surrounding the circular economy and its temporal implications.

3. Time, temporality & visions: understanding change

In examining the complex relationship between past, present, and future as they relate to the circular economy, it is essential to delve deeper into the concept of time. Time is a complex notion, particularly in its relationship with the social world (Adam, 1990; Bornemann and Strassheim, 2019). While time can be understood as a way of interpreting reality, it is also contingent and subject to interpretation (Kovacic et al., 2019). Latour (1993) uses the term “temporality” to highlight this interpretive aspect, distinguishing it from time itself (see Kovacic et al., 2019).

Cultural perceptions are entangled with our understanding of time. This includes how we perceive the duration of processes, the speed at which time passes, and the experience of time itself. These perceptions, along with our emotions and imagination, play a significant role in shaping our views on the past, future, and patterns of time (Adam, 1990). These preconceived and culturally shaped models of time become performative, shaping our understanding and actions in the social world (Jasanoff and Kim, 2015; Rosa, 2010). Time becomes a relevant reference point in governance (Bornemann and Strassheim, 2019). When exploring temporality, which encompasses a variety of understandings and uses within social science literature, here, it is being referred to it as “how the past, the present, and the future are tied together in a particular narrative” (Gokmenoglu, 2022, p. 644). This understanding aligns with Beck et al. (2021), who argue that temporality encompasses assumptions about social change dynamics and the role of time itself, providing explanations for different frameworks of understanding and their application in various empirical settings.

The concept of temporality is closely linked to debates about envisioned change and transformation (Cairns et al., 2020; Stirling et al., 2023; Temper et al., 2018), what makes it particularly relevant to explore it in the context of a transition to a circular economy. Time is not merely about duration; it also implies directionality (Oomen et al., 2021). When envisioning a future and considering changes such as a shift from a linear economy to a circular economy, we often conceive time as a linear and unidirectional process. This linear understanding of

time portrays progression where events in the past influence events in the present and future, as Adam (2000, p. 136) states: “we grow older rather than younger; cars rust; growth is followed by decay”. This vividly illustrates how we tend to see time as a process that moves forward in a straight line, with events in the past influencing events in the present and future.

However, the relationship between past, present, and future is not straightforward; it is contingent and varies across societies (Kovacic et al., 2019; Luhmann, 1973). This variation impacts how we take collective action and how shared visions of desired futures are materially manifested and enacted in public policy and technology development (Felt, 2015; Jasanoff and Kim, 2015). It also influences how “fictional expectations” assist actors in making decisions in uncertain situations based on shared assumptions and understandings about the future (Beckert, 2016). How time is imagined reflects our connections to others, groups, and historical periods (Adam and Groves, 2007). And, as acknowledged by Jasanoff (2015, p. 21), is that

“past and future connect in a complex dialectic that is widely acknowledged. The past is prologue, but it is also a site of memory excavated and reinterpreted in the light of a society’s understanding of the present and its hopes for what lies ahead (...) but why do people’s expectations of how things fit together (in Charles Taylor’s formulation), and how they ought to fit, remain stable for long durations”.

3.1. Engaging with the future

Our shared assumptions and understandings of the future matter, as those ideas are entangled with our actions in the present (e.g. Polak, 1973). Skjølsvold (2014, p. 27) illustrates this relationship with a straightforward example: when a couple expects their first child, they prepare for it not because they can predict the future with certainty, but because they have a repertoire of visions of a future life with children. These visions serve as practical tools for navigating their present.

While the future is often approached as a linear progression from the past, the interplay between past, present, and future is ongoing (Kovacic et al., 2019). We draw upon resources from the past, including inherited values (Jasanoff, 2015) to envision the future, sometimes romanticising elements of the past to construct a desirable and feasible future (Ezrahi, 2012). The past plays a key role in envisioning the future, mainly through the justification of certain ideas about futures, what can be understood through the process of naturalization (Ezrahi, 2012). Naturalization refers to a shared understanding within society that certain elements are inherent to the social and material world. However, the process of naturalization can lead to treating certain historical interpretations as self-evident and universal, obscuring the political, ideological, or cultural biases that shaped them. It is important to critically engage with the past and recognize that our understanding of history is not static but influenced by interpretation and context (Taylor, 2004).

This process of naturalization involves reifying historical trends or events as inevitable or universal, obscuring the political and cultural processes that shape them (Ezrahi, 2012). This can lead to treating certain historical interpretations as self-evident, undermining critical engagements with the past (Ezrahi, 2012). In the context of sustainability, naturalization occurs when the past is being stylized as a “golden era of sustainability”, (Auclair and Fairclough, 2015), potentially hindering efforts to address environmental challenges effectively. Thus, we must recognize that our understanding of history is not static, but rather influenced by interpretation and context. Hence, this study is above all to gain a better understanding of how the engagement with the circular economy is “about grasping the possibilities and stakes of the present.” (Kenis and Lievens, 2017, p. 9), and on which resources from the past is being drawn to envision the future to solve today’s problems. So the question remains, how does this come forward in visions of the circular

economy?

3.2. Two faces of temporality: Chronos and Kairos

Besides engaging with the past, present, and future, it is valuable to consider the duality of temporality: Chronos and Kairos, inspired by Aristotle (see Rämö, 1999). This perspective provides a comprehensive perspective of how time influences our understanding of the circular economy. This insight can be used as the fertile ground for developing new ways of engaging and understanding the concept, in theory and practice. Chronos quantifies the duration of time based on Newtonian sequential and linear causality, offering a structured framework for planning and execution (Garud and Gehman, 2012; Kumaraswamy et al., 2018; Susur and Karakaya, 2021). In contrast, Kairos represents the quality and significance of particular moments, embracing flexibility and readiness for opportunities and challenges (Bergson, 1946; Gallagher, 2020; Hawhee, 2002; Ricoeur, 1980). Within the circular economy, this balance entails moving beyond a discourse dominated by systematic resource management through critically interrogating with how the concept is being filled (Corvellec et al., 2020).

Over the last decades, a homogeneous understanding of time has been prioritized, favoring Chronos over Kairos (Taylor, 2004). However, embracing Kairos allows us to reclaim a richer experience of time and a deeper sense of human agency (Taylor, 2004). It enables a reconnection with our authentic selves, engagement with profound experiences, and the ability to make significant decisions. Kairos moments are characterized by a shared sense of urgency, significance, and intuition. In the context of the circular economy, this shift could involve focusing on the rise of the sharing economy, the development of technologies for reuse and recycling, or the increasing awareness of the environmental impact of waste, leading to demands for more sustainable solutions.

Balancing Chronos and Kairos is crucial; Chronos provides structure but can lead to rigidity, while Kairos encourages adaptability and transformative opportunities. In the context of the circular economy, this balance involves integrating short-term planning with long-term thinking, efficiency with flexibility, and control with care. Embracing Kairos moments can lead to more fulfilling engagements with time, (Taylor, 2004) ultimately facilitating a shift from a linear and wasteful economy to a circular and regenerative one. Thus, focusing on Chronos and Kairos helps us both to learn from past unsustainable practices, navigate current sustainability challenges, and seize moments for transformative change.

3.3. Understanding engaging with the future

In this article these two perspectives on time, temporality & visions are brought together, by examining their role in shaping our understanding of the circular economy. Specifically, I’ll explore how the interplay between the past, present and future influences our conceptions of the circular economy, while acknowledging that these relationships between the temporal aspects is related to the dichotomous understanding of Chronos and Kairos. Actors constantly shape what the circular economy means (Dembek, 2020). This process highlights which aspects of the present require change or should be maintained, as well as which elements from the past are deemed valuable and should be reintroduced. The *Empirical analysis* that follows will illustrate the intrinsic connections between these dimensions, and how both Chronos and Kairos play a vital role in how we envision the future. This has implications which elements become embedded into more institutionalized forms of these visions, such as regional policy, organizational & business practices, and the inclusion and exclusion of certain (imagined) communities. But before moving towards the *Empirical analysis*, I will first introduce the background and research design of the case study.

4. Materials and methods

The previously mentioned theoretical insights played an integral role in shaping the research design and provided a lens through which to examine and interpret the empirical data concerning the circular economy on Gotland. It served as a guide that enriched the analysis by shedding light on the temporal dimensions of the circular economy and how they are entangled with the island's visions of a circular future. It does so in three ways.

First, by distinguishing between Chronos (linear time) and Kairos (opportune time), it guided the empirical analysis in understanding how the island balances structured planning and opportune moments in the pursuit of a circular economy. It allowed for a nuanced exploration of how the island leverages both linear time and opportune moments to achieve its circular goals. Second, it allowed for a deep dive into how historical, present, and future elements interplay within the context of the circular economy, highlighting that the island's temporal dimensions are not straightforward but rather contingent and influenced by various factors, echoing the framework's emphasis on interpretive aspects of time. And, third and finally, it drew upon the concept of naturalization, introduced in the framework, instrumental in the analysis by highlighting the need to critically engage with the past. It underscored the importance of recognising that historical interpretations are not static but influenced by interpretation and context. The analysis used this insight to explore how the island's historical trends were being reified as inevitable or universal, potentially hindering effective responses to environmental challenges. In line with this approach, the research adopted a perspective aligning with [Jasanoff \(2015\)](#) assertion, and studying these visions "by attending to the means by which imaginaries frame and represent alternative futures, **link past and future times**, enable or restrict actions in space, and naturalize ways of thinking about possible worlds." ([Jasanoff, 2015](#), p.25, bold added for emphasis).

It is important to stress that the case study is temporally and spatially situated, emphasising the need for historical and processual awareness. This was necessary not only to understand the local and beyond-present dimensions but also for acknowledging how the interplay between the past and the future influences the boundaries of the case. Although the research has actively been carried out in a particular time, from 2018 to 2020, resources that are being drawn upon are ranging from a wide length of time. [Bartlett and Vavrus \(2016\)](#) call for 'unbounding' to pay attention to these processes, where the context and the cases are not seen as autonomous or primordial, but thus constituted as the result of social interactions. Rethinking this context allows us to not "bound" a priori, but lets the case grow alongside of the visions.

4.1. Data collection and analysis

The study analysed regional perspectives on the circular economy through written documents and interviews with actors involved in shaping the concept on Gotland. By conducting interviews with actors engaging in the public debate and analysing relevant documents, such as strategic documents and policy briefs, this research explores how the circular economy is imagined and negotiated on Gotland and how understandings of temporality shape these processes. For example, it could investigate whether the island's history of sustainable resource management is seen as a source of inspiration for the circular economy, or perceived as a constraint that limiting the adoption of new approaches. It could also examine how the island's unique setting affects the development and implementation of circular economy initiatives.

This study collected data spanning from October 2020 to November 2021. The data was gathered through document reviews of 32 documents identified through research on policy documents, newspapers, and references from exploratory interviews conducted in the region. These documents encompass a wide range of sources, from statements made by grassroots initiatives focused on circular economy to

governmental policy documents. Sixteen interviews were carried out with diverse stakeholders, including government officials, entrepreneurs, researchers, and representatives of societal and network organizations (see [Appendix 1](#)). The selection of interviewees was based on their active involvement in promoting the circular economy on Gotland. These individuals had either participated in public events, or had authored relevant documents related to the circular economy on behalf of the government. The interviews, conducted in English, lasted between one and 2 h each.

The primary objective of the study was to understand the underlying assumptions informing visions of desirable futures in the context of the circular economy. The interview questions focused on several themes, commencing with the motivations driving the interviewees' engagement with the circular economy and their understanding of the concept itself. Subsequently, the study explored the changes perceived as necessary to achieve a circular economy and identified the key actors who should be involved in this transformation.

After gathering the corpus material, an interpretive analysis was conducted using an abductive process of iterative reading and coding. This process helped identify different conceptions of temporality. The coding followed a structured approach based on the theoretical framework, with one cluster encompassing different elements of the circular economy and another cluster involving different elements of temporality. The themes in the empirical analysis emerged inductively from the coding, resonating with the different temporal categories. The themes span different temporal and spatial levels. The first theme, "We have everything here" reflect a specific focus on the here and now, where we see throughout the different themes an extension, both spatially and temporally. In the last theme, "Who's not part of the past, present and future" it extends to questions of inclusion in regional and national policies, highlighting the multi-level dynamics of the island's circular economy visions.

4.2. Empirical setting: Gotland

Gotland is a Swedish island located in the Baltic Sea, known for its rich history, natural beauty, and vibrant cultural scene. Gotland has the unique setting in Sweden of being the largest island as well as having various governmental levels overlap with the entire territory. As such, the same territory is shared among the county (län), province (region), and municipality (kommun). Unlike the rest of Sweden, these governments, while having different responsibilities, all encompass the same geographical area. In recent years, the island has also gained attention for its efforts to transition to a circular economy.

Gotland has a long history of sustainable resource management, dating back to the Middle Ages when the island's inhabitants developed advanced systems for conserving and regenerating resources ([Zucchetto and Jansson, 2012](#)). On Gotland, the uptake of the concept of a circular economy gained momentum explicitly during, and immediately after Almedalsveckan in 2014¹, the annual public seminar week where the national public arena of political figures, policy makers, news media and business leaders meets in a conference setting before the summer break takes place on the island. Since 2016, the engagement with the concept on the national and local levels became more apparent ([Heshmati and Rashidghalam, 2021](#); [Niskanen et al., 2020](#)).

Some generic examples of circular economy initiatives on Gotland include a recycling program for discarded fishing nets, which are turned into new products such as clothing and bags,² and a project that converts

¹ <https://program.almedalsveckan.info/24413>

² <https://www.svt.se/nyheter/lokalt/ost/de-samlar-in-100-tals-fiskenat-och-fiskeredskap-pa-gotland>.

organic waste into biogas for use in transportation.³ There is also a strong connection to renewable energy, with a goal to increase the share of renewable energy in the island's energy mix to 100% by 2030.⁴ In addition to these specific initiatives, the governmental focus on Gotland is to create a supportive environment for sustainable business and collaboration between different sectors. This includes efforts to educate and engage the local community, as well as the development of a circular economy roadmap and the formation of a circular economy network. Being a region with a rich history of sustainable resource management, where the link with the past is omnipresent, it is to be expected that Gotland's past experiences and traditions have influenced its current approach to the circular economy. This makes it a suitable case to explore how temporality is being envisioned.

To advance the circular economy on the island, the Swedish environmental institute IVL is supporting the desire on Gotland to explore opportunities for industrial symbiosis, wherein companies collaborate to share resources, energy, and equipment to achieve economic and environmental benefits (GOT_IVL). Currently, a small industrial symbiosis network operates on Gotland, producing biogas from biowaste generated by a dairy processing plant and a slaughterhouse, which is then converted into vehicle fuel (GOT_RUS). As emphasized in the regional development strategy by the regional government, the island's unique characteristics offer a fertile ground for testing and developing innovative collaborations in industrial symbiosis, with plans to establish a symbiosis park as a central hub for such initiatives. As articulated by IVL, as well in the Regional Development Strategy for 2040 (*Regional Utveckling Strategi, RUS*), Gotland aims to attract industries and businesses that contribute to its goal of transitioning to a 100% renewable energy system and fostering circular systems (GOT_RUS; GOT_IVL).

The county board (*länsstyrelsen*) actively promotes the use of residual products and waste as raw materials, provides business advice on circular innovations and models, and facilitates the exchange of products and knowledge through physical and digital platforms that foster symbiotic relationships among various stakeholders on the island (GOT_Lansstyrelsen). The establishment of industrial symbiosis networks and plans for a symbiosis park represent Kairos moments where opportunities for collaboration and resource sharing are recognized as opportunities for achieving.

On Gotland, the circular economy is intertwined with the concept of sustainable consumption, with a particular focus on waste reduction and increasing public awareness of sustainable consumption practices, including waste prevention measures (GOT_Lansstyrelsen). It is acknowledged that sustainable consumption and production are currently disconnected, posing challenges to achieving a circular economy. The ongoing efforts to define the concept of system growth and foster collaboration in sustainable consumption highlight the recognition of an opportune time to align consumption practices with circular economy goals (GOT_Lansstyrelsen, p.40). The visions of a circular economy on Gotland explicate the relationship between past, present and future, by envisioning the alignment of existing ways of life, resonating with notions of collaborative supply chains among dairy companies and the rural tradition of repairing and caretaking (I9; I14). The circular economy, therefore, is perceived to find a natural fit with the island's ethos and the timeless practices it embodies.

5. Results

In this empirical analysis section, we will delve into the manifestation of the temporal aspects discussed before within the context of the circular economy on Gotland. By exploring various themes related to

³ <https://via.tt.se/pressmeddelande/3301533/pressinbjudan-arla-och-brogas-brogas%20gotlandinvider-bioenergianlaggning-pa-gotland?publiseringid=3235978>.

⁴ <https://energicentrum.gotland.se/energikallor-pa-gotland/>.

temporality, we aim to gain a deeper understanding of how the past-present-future continuum and the concepts of Chronos and Kairos are entangled in the visions of a circular future on the island.

5.1. We have everything here

On Gotland, the island's boundaries are perceived as a natural entity that facilitates the pursuit of the circular economy. This vision involves closing loops and retaining value within the contained spatiality (I16). This vision of the circular economy entails a reconfiguration of local resource ownership and the reshaping of supply chains, departing from the prevailing notion of self-sufficiency ("we have everything here") (I1; I8). Within this framework, ideas about the future, the present reality, and the past are articulated.

The significance of the island's spatiality is exemplified by phrases like "the land is ours and that we love the land" (I7), reflecting a deep connection to the past and the present state of the land. The diversity of landscapes across Gotland is appreciated for their distinct functions and is seen as a source of potential and independence. This is particularly conveyed by individuals who have roots on the island and are connected to long-established communities through the phrase "dig where you stand" (I9; I10). Additionally, the island is metaphorically employed as a symbol of independence, harkening back to a past era when Gotland was a thriving centre of Hanseatic commerce. While this sense of independence is no longer prevalent in the present, the idea of reclaiming autonomy and self-sufficiency in the future persists as an inherent aspect of island identity (I16). Here, it is the explicit reference to historical prosperity that informs the aspirations for a circular future being self-reliant.

The circular economy on Gotland primarily focuses on resource security within the water-energy-food nexus, envisioning an alternative economic system that ensures self-sufficiency in these essential elements (I1; I11; I15). This aspiration for self-reliance contrasts with the island's present dependence on the Swedish mainland for energy infrastructure, exemplified by the connection to the main Swedish grid via a single cable spanning nearly 100 km. Simultaneously, opportunities for achieving 100% renewable energy are acknowledged and embraced, with Gotland designated as a pilot area for the transition to a sustainable energy system (GOT_IVL).

5.2. What used to bring prosperity, brought us here, but will not bring prosperity

The focal point of the circular economy on Gotland can be comprehended as a means of rendering supply chains transparent, as articulated by several societal and network organizations focusing on energy and material supply chains (Austerland Energi; RE:Source) and examining the island's role within these intricate networks. In this context, the impetus for engaging with circularity is closely tied to resource extraction activities in the northern part of Gotland, particularly around Slite (I16). A profound connection exists between economic pursuits and the materials extracted from the region. Since 1919, a significant industrial hub has thrived on the island's northern side, extracting a diverse array of metals and materials from the surrounding area. Prior to this era, the region remained relatively secluded, characterized by limited economic activity, and those who inhabited it are remembered as living in poverty (I2; I16).

The emphasis on this historical linkage with the industrial hub, reflects a linear understanding of the progression of time (Chronos). However, the past role of resource extraction is envisioned as diverging from its future trajectory. While the benefits derived from such activities are evident, it is increasingly recognized by a variety of different interviewees, ranging from policy makers to individuals engaged in societal organizations, that the side effects, when not understated, have become pervasive, adversely impacting the environment (I2; I9; I15; I16). And, as explicitly added by interviewees addressing the local

perspectives around Slite, the economic activities no longer confer value upon the local residents (I15; I16). The recognition that the value dissipates alongside the depletion of materials is accentuated. Presently, those who possess ownership rights over the extracted materials are no longer integrated into the community. Consequently, closing the loop entails a focus on retaining value on the island, potentially by ceasing extraction altogether or, at the very least, mitigating its intensity (I2; I15; I16). In contrast, the existing economic benefits and the historically entrenched relationship with the local economy are acknowledged as highly significant and emphasized. These conflicting interests engender a state of profound tension, encompassing both a past characterized by evident prosperity derived from economic activities and the burgeoning voices contesting this trajectory, asserting that it fails to secure a desirable, circular future (I7).

5.3. Doing it with what you have, to achieve flourishing

The circular economy is consistently referred to as an approach of “doing it with what you have” (I16), concurrently emphasising a distinct sense of community or collective action, often described as an “island feeling” or the notion of “doing things together” (I3). It encapsulates the vision of a “creative island with room for a full life” (GOT_RUS). The regional understanding of the circular economy is closely intertwined with national governmental policy, which asserts that each region should thrive based on its unique circumstances and prerequisites. This emphasis is particularly evident in the *Regional Utveckling Strategi* (RUS), and the seminars on the circular economy organized by the county board, *Länsstyrelsen*. The strategic goals for Gotland are threefold: firstly, to foster a “safe and inclusive society with good quality of life for all”; secondly, to position Gotland as a “role model in the energy and climate transition”; and finally, to establish Gotland as an “innovative growth region with development capacity” (GOT_RUS). The notion of flourishing explicitly connects the past, present, and future, where the articulation of Gotland’s essence and preconditions in the present is crucial for achieving a state of flourishing. As expressed by a regional government official burdened with this responsibility:

“The very point of our regional policy is that every region has to flourish based on its specific regional preconditions, the regional environment, and so on. And actually, from what I can see, for example, when you look at Gotland, what we need from the administrative or policy level is to be much more honest about articulating what Gotland is, what we are, and how we do things. Because what I’m trying to say is that, I think we have often felt at the regional level that we should answer to the national level, trying to fulfill what we believe the national level wants, rather than sitting down as regional leaders and stating, “This is Gotland. These are our preconditions, and this is the desired outcome” (I12).

This re-evaluation also implies, as highlighted in the regional policy, the need to critically examine the concept of growth in relation to the goals of the circular economy and climate positivity. There is a call for a comprehensive definition of growth (GOT_Lansstyrelsen, p.25). It is worth noting the connection with the previous section, where the pursuit of increased economic activity, particularly concerning the industrial activities around Slite, is increasingly problematized. The implicit goals of the circular economy and the envisioned future are being reassessed, encompassing notions of growth and its meaning. This implies, according to the same governmental policy (GOT_RUS, p.11), that “the importance of the circular economy has increased, and nature is utilized to protect ecosystem services and secure the island’s biological diversity” (p.11). By asserting “here, we have an eye for animals” (I13), it conveys both the understanding that this perspective may not exist elsewhere and the perception that it is a defining characteristic of the locality.

5.4. Summer is magic, is it not?

The notion of urgency is intricately intertwined with the perceptions of the past, present, and future. It is not only the scarcity of water and energy that shapes the concept of the circular economy; engaging with the circular economy also influences ideas about how the water and energy situation could be transformed in the (near) future. The reimagining of Gotland’s future is rooted in the current reality where water and energy play pivotal roles. However, the problems associated with water and energy are distinct. The water challenge on Gotland revolves around the scarcity of freshwater and managing the substantial fluctuations in demand, particularly during the summer months when the island experiences an influx of tourists. This urgency is expressed through the following quotes:

“The water crisis in Gotland is very, very, very urgent to solve” (I1).

“Every summer we’re talking about the lack of water” (I5).

“[W]ater is a big question. And it’s a complicated question” (I12).

Since 2019, collaborative efforts between Region Gotland, the IVL Swedish Environmental Institute, and the Baltic Sea Forum have been underway to address the water scarcity issues. The objective is to develop techniques that enable large-scale water self-sufficiency (GOT_NextGen). This underscores the idea that what was once a source of prosperity now poses challenges, emphasising the need for a different future trajectory. The urgency surrounding water scarcity during the summer months highlights the temporal dimension of resource management. Collaborative efforts initiated in 2019 signify an acknowledgment of the need for long-term, sustainable water solutions.

5.5. Local development for a desirable future

Another form of organization related to the circular economy can be observed on Gotland through the establishment of *utvecklingsbolag*, or development companies. Over the past decade, more than a dozen such companies have emerged on the island, addressing specific local challenges (I8; I9). These companies are formed by individuals from smaller villages who join forces to tackle distinct, localized problems. Their initiatives range from revitalising struggling harbours to purchasing school buildings that were slated for closure by the regional government. The repurposed school buildings then serve as venues for new activities, such as hosting for-profit organizations or reinstating libraries. This approach reflects a present sentiment of being let down in the present and recent past, prompting a future recourse to resources from the more distant past as a means to forge a better future within their local communities.

While each development company focuses on its unique set of problems and solutions, there exists a broader collaborative network known as GUBIS (*Gotländska Utvecklingsbolag I Samverkan*), which brings these companies together in a non-hierarchical manner (I8; I13). Additionally, there is the related local financing company, *Gotlands Lokalfinansiering*, which is part of this network. Although their primary focus is not explicitly on the circular economy, these organizations concentrate on rural development while aligning with certain aspects of the circular economy. They aim to retain value within the island and local communities through their business activities (I13).

While energy, water, and material flows, including logistics and waste, remain prominent concerns, the social aspect is also emphasized as a means to rebuild a sense of community on the island. This sentiment is captured by the following quote:

“It’s obviously energy, it’s obviously water and material flows in general, logistics. It’s obviously waste as part of that flow. I guess those are the main ones and then really, I want to emphasize the human side of it. We really want to create a workplace, which brings

things forward that help everybody who was involved there to develop" (I6).

5.6. Who's not part of the past, present and future?

The notion of belonging to Gotland, or being excluded from it, is intricately woven into conceptions of the past and the future. The definition of the collective "we" not only adheres to existing material and social boundaries but is also formed by processes of othering, often manifested through comparisons with the sociocultural, political, and economic centres of Stockholm and other national capitals. There is a sense of distance and being unheard by the national government, with the capitals serving as symbolic representations of this disconnect. On Gotland, this tendency exists not only in relation to Stockholm but also internally, creating a divide between Visby and the rest of the island. This internal division is argued to be influenced by the historical relationship between the town of Visby and its surrounding hinterland (I2; I9).

Throughout the centuries, Visby has been a town oriented towards the sea and the possibilities in the distance, renowned in the Baltic Sea Region for its trading activities. The focus has been on collaboration with the outside world rather than on the rest of the island. During times of economic downturn, the tensions between Visby and its hinterland have become more pronounced than ever. This is exemplified by the concept of the city wall, which delineates what happens within Visby's boundaries, where regional political power is concentrated, and what happens outside the city walls. As a result, one of the aims of organising within the *utvecklingsbolag* and embracing elements of the circular economy is to reduce dependence on the decisions made within the city (I8; I13). Visby's position is perceived as being in the middle between the capital Stockholm and the rest of the island, particularly in its stance toward urbanization and economic centralization. The pace of urbanization is seen as a driving force behind the need for a change in the economic system. However, there is a discrepancy in attitudes regarding whether urbanization is perceived as a natural law or a societal process that can be influenced (I9).

Notably, historically important employers such as the regional energy company Gotland Energi AB (GEAB) have relocated from smaller towns like Slite to the larger city of Visby (I16). This shift further exemplifies the historical authority invoked to argue for the development of alternatives to the current economic system, highlighting past instances where the capital, Stockholm, has failed to fulfil expectations (I9).

6. Discussion

This analysis has shown that the way that the circular economy is being constructed, represented, and understood implies and affects an understanding of temporality. One recurring theme in the empirical findings is the notion of the circular economy as a way to reshape supply chains and change the ownership of local resources, reflecting the ideas of past, present, and future. By focusing on keeping value within the contained spatiality of the island, Gotland embraces the holistic and meaningful engagement with time advocated by the concept of Kairos (Hawhee, 2002; Rämö, 1999). This ties in with the emphasis on reclaiming autonomy and self-sufficiency in the future, drawing upon the island's past as a symbol of independence, aligns with the discussion of Chronos and Kairos, about both appreciating the progression of time, as well as giving weight to particular aspects. At the same time, this feeds back into the naturalization of the island as an autonomous entity (Ezrahi, 2012).

This becomes visible in how the circular economy is seen as a means to achieve prosperity and self-sufficiency, emphasizing the importance of balancing the structured resource management framework of Chronos with the flexibility and readiness to respond to opportunities or

challenges highlighted by Kairos.

However, this balancing creates a tension, visible through the historical link between resource extraction and prosperity on Gotland that underscores a linear temporal understanding (Chronos) of economic progression. However, the increasing recognition of the environmental consequences of the resource extraction signifies a shift in temporal perception, wherein the past model of prosperity no longer seems to align with a desirable future. Furthermore, the island's history of prosperity is being juxtaposed with a present-day dependence on the Swedish mainland, signifying a temporal shift in resource management. This desire to regain self-reliance creates an opportune moment (Kairos) to reshape the island's future, where this shift is not solely spatial but fundamentally temporal, as it involves reclaiming a past notion of independence to give form to a circular future.

Furthermore, the regional emphasis on flourishing, based on its unique preconditions, represents a Kairos-driven approach to development. This temporal perspective acknowledges the opportune time to articulate its regional identity and align development with specific circumstances. The reassessment of economic growth in relation to the circular economy concept reflects a nuanced temporal understanding, shifting from linear notions of economic expansion to more holistic, place-based development. Similarly, the urgency-driven approach related to the present water-issue reflect the intersection of present challenges and future aspirations (Rosa, 2010), embodying both Chronos and Kairos elements.

The formation of development companies and collaborative networks on Gotland embodies a Kairos-driven response to localized challenges. These initiatives emphasize seizing the right moment to address pressing issues and revitalize communities. The consideration of social aspects, alongside material flows, reflects a holistic temporal perspective that aligns with the circular economy's goals. This is also visible in the sense of belonging and othering on Gotland that underscores the temporal dynamics of identity and regional development (Felt, 2015). Comparisons with Stockholm and internal divisions reveal Kairos moments where the timing of regional autonomy and identity assertion is seen as opportune. This highlights the interplay between spatial and temporal dimensions in defining Gotland's unique identity.

The circular economy on Gotland aims to close the loop and promote a regenerative, sustainable model, revealing contradictions within the prevailing economic development paradigm and necessitating a re-evaluation of its goals. It emerges that the regional understanding of the circular economy could align with the pursuit of flourishing and regional development, placing Gotland at the heart of achieving a high quality of life for all. It is about the practices and material traces left behind by actors on Gotland that are indicative for their understanding of, and commitment to the circular economy. These traces reflect the efforts to create a circular economy that is integral to a resilient and sustainable community (Watts, 2019). The island's unique characteristics, such as its scarce resources and ecosystems, seem to necessitate a need for an eye towards animals, and a specific need to care for the water. Other challenges also still exist, including tensions between the town of Visby and the island's hinterland, and the perception of being unheard by the national government. This brings back the discussion about the relationship between the circular economy and sustainability, and what this should entail (Geissdoerfer et al., 2017). On Gotland, the circular economy is seen as a means to overcome these challenges and build a more sustainable and inclusive future for the island, and a way to locally respond to global challenges (Watts, 2019).

Thus, the emphasis on sustainable consumption, reducing waste, and fostering a sense of community on the island are all hints and traces towards notions of authentic selves, profound experiences, and human agency discussed in conjunction with the discussion about Kairos moments (Taylor, 2004). It is about making conscious decisions towards a greater good, both referring to past experiences, as well as referring to potential future states. It becomes evident that time is not merely a neutral means in identifying and constructing the circular economy, but

rather, that temporality can be seen as constitutive in how it brings together past-present-future, while both acknowledging the duration of time, in terms of Chronos, as well as the important and profound experiences in the past, in terms of Kairos.

7. Conclusion

By maintaining a Chronos take on the circular economy – on Gotland, the pendulum of biophysical life and social life swings towards the biophysical side. Instead, our social means to engage with a concept as the circular economy has great implications for our understanding of grand societal challenges, and our contemporary means to deal with it. If something is unprecedented, and there are no past experiences to draw upon, it is considered to be impossible, until it happens (Pohl, 2023). Only then, or when parallels are being drawn, it is considered possible, allowing ourselves to bend our memories of the past into visions of the future. It is to say, that to envision a desirable future also as a possible future, it is to partially recast the past, or to re-understand the past in its “glory”. A golden age of circularity can be envisioned by drawing upon elements of the past, where problems that occur these days – related to grand societal challenges – were not present yet. It provides us with the illusion that there was a time that we had something like a circular economy, by focusing on the single elements in there, rather than taking it, and understanding it as a whole. Maintaining a primarily Chronos-oriented approach to the circular economy on Gotland may lead to an imbalance favouring material and biophysical aspects, potentially overlooking crucial social dimensions that are clearly feeding back into the vision. To effectively address societal challenges and envision a desirable future, Gotland could strive for a balanced perspective that considers both material and social elements, by being explicit about the social dimension and by trying to overcome the naturalization of certain elements. Embracing lessons from the past, challenging the notion of impossibility, and actively reinterpreting historical practices can guide Gotland towards a more holistic and

sustainable circular economy.

Hence, a final remark to transcend the Chronos idea of calendars and clocks to gain a deeper understanding of the temporal dimensions of socio-environmental life (Adam, 1990). While engaging with the circular economy, without grasping the complexities of time, our environmental actions and policies will likely fail, and we won't be able to move forward from the problems we've created. Time has various aspects that show it's not just a neutral idea but a constantly changing set of relationships. By studying these different aspects, we become aware of the political implications of envisioning sustainable futures. This research has been a first attempt to look at temporality in this way in relation to the circular economy. However, hopefully this is not the last time that social constructs that are fundamental to the circular economy will be questioned and opened up, but rather this research will be seen as encouraging, offering fertile ground to develop new approaches. Developing this understanding helps us put all our collective efforts into context as we work towards a better future.

CRedit authorship contribution statement

Abe Hendriks: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix

Appendix 1: List of interviewees

Interviewee 1 [I1]	Director of a business network organization focusing on sustainability
Interviewee 2 [I2]	Chair of a network organization focusing on sustainability
Interviewee 3 [I3]	Founder of a circular economy oriented business
Interviewee 4 [I4]	Regional government official concerned with regional development policy
Interviewee 5 [I5]	Director of a business network organization focusing on sustainability
Interviewee 6 [I6]	Government official in a network organization focusing on sustainable energy
Interviewee 7 [I7]	Co-founder of a <i>development company</i>
Interviewee 8 [I8]	Co-founder of a <i>development company</i>
Interviewee 9 [I9]	Regional government official concerned with regional development policy
Interviewee 10 [I10]	Founder of a circular economy oriented business
Interviewee 11 [I11]	Founder of a circular economy oriented business
Interviewee 12 [I12]	Regional government official concerned with regional development policy
Interviewee 13 [I13]	Co-founder of a <i>development company</i>
Interviewee 14 [I14]	Director of a societal network organization concerned with rural development
Interviewee 15 [I15]	Member of a societal network organization and former elected politician
Interviewee 16 [I16]	Co-founder of a <i>development company</i>

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