

Cultural and Creative Practices as Drivers of Circular Economy: A 9R Framework Perspective

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Abstract. The transition to a circular economy demands a profound shift from the traditional linear production-consumption model, requiring not only technological innovation and regulatory support but also transformations in individual and collective behaviors. Culture plays a crucial role in shaping the values, attitudes, and practices necessary for this transition.

This paper investigates how cultural and creative practices contribute to the operationalization of the 9R framework (Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle) in the circular economy. Specifically, it addresses the research question: How do cultural and creative sectors support the implementation and social embedding of 9R strategies, and what implications does this have for sustainable transitions?

Drawing on a narrative literature review and a selection of illustrative case studies across Cultural and Creative (C&C) industries, the study highlights how cultural narratives, creative production, and symbolic meaning-making can foster behavioural change and embed circularity into everyday life. The paper proposes a conceptual framework that integrates cultural capital with circular economy thinking, revealing new synergies and identifying creativity-based pathways for systemic and enduring environmental and social impact.

Keywords: Circular Creativity · Cultural Ontology of CE · 9R Framework · Sustainable Consumption · Creative Circular Practices

1 Introduction: A Circular Economy 9R Background

A Circular Economy (CE) is an economic model aimed at the efficient use of resources through waste minimisation, long-term value retention, reduction of primary resources, and closed loops of products, product parts, and materials within the boundaries of environmental protection and socioeconomic benefits (Morseletto, 2020). Drawing on existing literature, the CE can be defined as a multidimensional, dynamic, integrative approach, promoting a reformed socio-technical template for carrying out economic development, in an environmentally sustainable way, by re-matching, re-balancing and re-wiring industrial processes and consumption habits into a new usage-production closed-loop system (de Jesus and Mendonça, 2018). The literature on circular economy (CE)

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O. Gervasi et al. (Eds.): ICCSA 2025 Workshops, LNCS 15896, pp. 283–298, 2026.
https://doi.org/10.1007/978-3-031-97654-4_18

strategies has evolved significantly, moving from traditional waste management principles to more comprehensive frameworks integrating sustainability and digitalization. Several studies on circular economy models reveal that authors now favour frameworks built around nine distinct R strategies.

Indeed, current circular economy research demonstrates a shift toward nine-strategy (9R) frameworks, though the specific evolution from other models is not explicitly documented. The foundational models, such as the 3R (Reduce, Reuse, Recycle), have expanded into more complex strategies, with the 9R framework emerging as a dominant (Alivojvodic & Kokalj, 2024; Dovgal, 2022; Khaw-ngern, 2021). The 9R framework is a comprehensive model used to structure circular economy strategies, expanding the early 3R logic into a more nuanced hierarchy. It includes nine interrelated strategies: Refuse: avoid unnecessary resource use and reject unsustainable options; Rethink: redesign products and systems to optimize sustainability; Reduce: minimize resource input and waste generation; Reuse: extend the life of products without significant modification; Repair: restore functionality of broken or worn items; Refurbish: improve or modernize products; Remanufacture: rebuild products using reused, repaired or new parts; Repurpose: use items for functions other than those originally intended; Recycle: process materials to create new raw inputs.

The list's order is not mandatory, yet this hierarchy prioritizes strategies that preserve more of a product's original value (e.g., reuse over recycling). Understanding and applying the 9R model allows for a more systemic and resource-efficient circular transition. Some scholars have further extended these principles, incorporating socioeconomic and industry-specific adaptations, leading to variations such as the 10R and even 36R models (Valencia et al., 2023). Several studies focus on sector-specific applications of the 9R framework. Muñoz et al. (2024) examine its adaptation in pharmaceutical manufacturing, while Pan et al. (2022) explore its implementation in the manufacturing and Industry 4.0 context. Beyond the traditional 9R approach, some scholars advocate for an expanded set of principles. The addition of strategies such as 'Recover' (Ang et al., 2024) and the integration of socioeconomic considerations (Valencia et al., 2023) highlight an ongoing effort to refine CE methodologies. The transition from 4R to more complex models underscores the dynamic nature of CE research, addressing contemporary sustainability challenges through a multi-layered approach (Alivojvodic & Kokalj, 2024). The critique of waste-to-energy components within the 10R framework suggests a need for a more holistic assessment of circularity beyond material recovery (Valencia et al., 2023). The role of CE indices in assessing circularity is another key development in the field. The Circular Economy Index (CEIR), incorporating 9R strategies, provides a systematic approach to evaluating sustainability impacts (Ang et al., 2024). Additionally, studies mapping circular strategies across different system perspectives (Sitadewi et al., 2021) contribute to a more nuanced understanding of how these frameworks operate in practice. Finally, a growing number of studies address the social dimensions of circular economy strategies. The inclusion of socioeconomic Rs, such as 'Regenerate,' reflects an effort to balance environmental goals with social sustainability (Valencia et al., 2023). Overall, the literature highlights an ongoing expansion and refinement of circular economy strategies, with significant shift towards a more comprehensive and adaptive approach to sustainability, aligning with broader global economic and environmental goals.

This paper aims to investigate how cultural and creative practices can support the transition to a circular economy by operationalizing the 9R framework. It seeks to uncover the potential of cultural capital, artistic production, and creative industries to promote behavioral and systemic change aligned with circular principles. The central research question guiding this inquiry is: How do cultural and creative sectors contribute to the practical implementation and social embedding of the 9R strategies in the circular economy?

Drawing from an interdisciplinary literature base, this study addresses the theoretical gap in circular economy scholarship, which often overlooks cultural dimensions and their capacity to shift social norms, perceptions, and consumption patterns. By exploring this intersection, the paper highlights how culture is not just a complement but a catalyst for sustainable transitions.

2 Cultural Capital and Cognitive Barriers in the Transition to Circular Economy: Addressing Consumer Behaviour and Innovation Challenges

Circular economy (CE) business models revolve around two primary behavioral approaches: those that promote reuse and extend product life through repair, remanufacturing, upgrades, and retrofitting, and those that transform old goods into new resources via material recycling. At the heart of these models are people—of all ages and skill levels—who play a central role. Ownership transitions into stewardship, where consumers become both users and creators. Fundamental elements of the CE, such as reparability, durability, upgradability, recyclability, reuse, and recycled content, are driven by behavioral changes that individuals embrace as a new paradigm. Within this context, there is room to define a conceptual framework that explores the intersection of culture and CE. Specifically, the accumulation of cultural capital, both at the individual and societal level, as a result of cultural experiences, may serve as a crucial factor in fostering behaviors aligned with CE principles and foundations.

Even when CE solutions are technically feasible, their implementation is frequently hindered by economic and market constraints (de Jesus and Mendonça, 2018). The authors focus on how "transformative innovation" (economic innovations—EI) can facilitate the transition by overcoming sustainability barriers. EI can initiate a cascade of changes and generate localized pressures, stimulating complementary adaptations that collectively contribute to the formation of a new techno-economic system. This perspective suggests that transformative innovation may serve as a key driver of a "green" transition (Schot and Kanger, 2016).

Innovation within CE remains a fragmented phenomenon. As Stoneman (2009, 2010) notes, economic discussions typically emphasize hard innovation, such as R&D-driven products or cost-reduction strategies, while soft innovation—related to cultural and organizational artifacts, such as symbols and conventions—plays a more significant role than traditionally acknowledged (Mendonça, 2014). Applying these heuristics to CE, Joseph Nye (1990) differentiates between hard power, which enforces change through technical or economic means, and soft power, which drives change by attracting others through

values and institutional practices that shape attitudes and preferences (de Jesus and Mendonça, 2018).

Consumer habits and business routines evolve slowly due to inadequate awareness and understanding of CE concepts and available choices. When individuals repeatedly engage in past behaviors, these behaviors become "frozen," a phenomenon described by Ouellette & Wood (1998) as habit formation. Such habits persist when reinforced over time, within stable environments, and through rewarding outcomes (Thøgersen and Ølander, 2006). Behavioral inertia presents a significant challenge. However, emerging social trends—including heightened sensitivity to environmental concerns, shifting consumer preferences toward service-based models, and businesses recognizing reputational advantages—are fostering new routines that act as social drivers for CE. Demand-side factors, in particular, play a crucial role in propelling sustainable practices and choices (Andrews and deVault, 2009; Geng et al., 2010). Research by Valtteri et al. (2017) indicates that institutional support for CE primarily emphasizes recycling, while other CE strategies remain underdeveloped. Regulatory measures have predominantly fueled recycling efforts among both integrators and manufacturers, whereas cultural and cognitive barriers hinder reuse. Cognitive myopia and present bias further exacerbate sustainability challenges by prioritizing short-term costs over long-term benefits, reinforcing the status quo bias (Samuelson & Zeckhauser, 1988) and a lack of imaginative foresight (Weber, 2017). To mitigate these biases and enhance future-oriented decision-making, cultural capital emerges as a critical enabler, compensating for the limitations of direct experience in shaping choices (Atreya & Ferreira, 2014).

In some cases, circular business models fail to align with consumers' personal values or material interests. Unlike the linear economy, where consumers play a passive role, CE necessitates active consumer participation (Mylan et al., 2016; Ellen MacArthur Foundation, 2013). Resistance to CE adoption delays its transition, as various psychosocial and cultural-cognitive biases obstruct implementation. Within this framework, Singh and Giacosa (2018) analyze consumer experiences with circular business models, highlighting psychological, social, and cultural barriers that hinder their diffusion. The authors identify key impediments, including weak person–product relationships leading to premature disposal, psychological ownership resisting access-based models, entrenched habits reinforcing the status quo, negative consumer attitudes towards CE, social norms discouraging reusable goods, consumerist ideologies limiting sufficiency models, and psychological essentialism reducing acceptance of recycled and reused products. In societies with high power distance, consumers' preference for status brands further undermines the adoption of CE principles. Addressing these barriers requires a comprehensive approach that integrates economic, technological, cultural, and behavioral perspectives to foster a sustainable circular economy.

3 Cultural Consumers and the Transition to Circular Economy: Building Awareness and Shifting Consumption Habits

According to the existing literature on Circular Economy (CE), transitioning towards sustainable practices involves a crucial process of capability-building for individuals. This process entails raising awareness and expanding people's cognitive horizons, thereby

fostering a broader mental space for sustainability. It involves the continuous acquisition of information and skills, creating a virtuous cycle that supports the generation of value—social, cognitive, and identity-related (Veenhoven, 1991). CE behavior is a complex process that encompasses not only instrumental aspects but also non-instrumental ones such as values, identity, emotional, and symbolic processes. These dimensions can be supported through positional and relational consumption, which can manifest in both objects and experiences. While these two mechanisms are not mutually exclusive, the degree to which they are integrated significantly influences the definition of personal identity.

In terms of material consumption, the accumulation of objects triggers mechanisms of positional competition and "relative unhappiness." The value of the goods we possess is often not intrinsic but relational, depending on our social context, comparisons with others, or aspirations (Veenhoven, 1991). Furthermore, the relentless pursuit of material goals tends to replace meaningful relationships with opportunistic ones, leading to a deterioration in the quality of social interactions. This shift fosters social isolation, loneliness, and social impoverishment. Conversely, relational goods—such as experiences—when lost, create a void that cannot be filled by material possessions. A consumption model centered on experiential goods, however, offers enduring value once the initial access costs are surpassed, providing continuous nourishment with a "slow release effect," akin to how proteins are transformed into energy.

The process of identity building based on experiences does not trigger competitive social positioning, but instead fosters personal growth based on relationality, shared interests, values, and cooperative mechanisms. This shift away from material to experiential consumption highlights a more profound connection to others and to shared human experiences. Carter and Gilovich (2010, 2012), Rosenzweig and Gilovich (2012), and Van Boven and Gilovich (2003) emphasize the stark differences in the outcomes of material versus experiential consumption. While the latter generates positive anticipation and joy, the former leads to impatience and anxiety, creating unhappiness. The memory of an experience, however brief, provides inner satisfaction, while material goods, always external to us, can lead to disappointment. Moreover, the joy derived from experiences is amplified when shared or discussed with others, extending the experience and increasing satisfaction, something not typically found with material purchases. This further underscores that human beings are inherently relational, and that relationships contribute significantly to happiness (Diener & Seligman, 2004; Myers, 2000). Additionally, experiential purchases tend to be more social, with higher scores on "relatedness" compared to material goods (Caprariello & Reis, 2013; Howell & Hill, 2009).

Experiences, especially when shared, not only foster a sense of social connection but also create a sense of self that is self-reinforcing. This phenomenon is more profound than the sense of self derived from material goods (Gilovich et al., 2015; Hajdu & Hajdu, 2017). When individuals are able to discuss their experiential purchases, it further enhances their sense of appreciation, whereas the same effect is not observed with material purchases (Kumar & Gilovich, 2015). Experiences, therefore, contribute to a sense of self that encourages positive evaluations of one's identity and social connectedness (Aronson, 1992; Dunning et al., 1989, 1995; Kunda, 1990).

The detrimental nature of material consumption is evident when it overshadows experiential consumption. Material consumption leads to a loss of meaning, depriving individuals of lasting experiential backgrounds, and reducing opportunities for self-realization and the establishment of a rich sense of self. This lack of meaningful experiences impedes symbolic exchanges, further alienating individuals from genuine relational connections. Culture, in this context, plays a crucial role in reordering our needs—emphasizing the fundamental over the induced—thereby making space for relationships, inner life, care, and participation. By doing so, culture creates the conditions for building meaningful horizons of meaning that give life depth.

The goals outlined in the Agenda 2030 provide an innovative and universal framework for sustainable development, emphasizing the need for collective participation in change. Achieving responsible consumption patterns will require citizens who are aware of the dynamics of wealth accumulation and equipped with cognitive tools that foster critical thinking. Such awareness enables individuals to engage with the common good in a new way, promoting values like solidarity, a sense of limitation and fragility, community, and respect for differences. These values are essential to shifting the logic of production and consumption, a transformation that culture can facilitate.

Educational processes capable of deconstructing the consumption imperative are essential. By encouraging culture as a fundamental tool for developing critical thinking, individuals can challenge the contradictions of our time and derive meaning from experiences and imagination. This is a global challenge that transcends regional boundaries. To achieve the necessary paradigm shift for sustainable development, a change in mentality regarding production, consumption, and governance is imperative (Giovannini, 2020). Knowledge derived from culture—through books, movies, music, and art—stimulates behavioral change because it taps into emotions, thus deeply influencing people. As individuals' values and sensitivities evolve, cultural experiences become the drivers of significant transformations in consumer behavior and attitudes.

4 From Cultural Experience to Circular Economy Behaviours

Culture is a fundamental driver in the transition to a circular economy, influencing perceptions, behaviors, and decision-making processes. Cultural capital—understood as both shared experiences and intangible knowledge—enables individuals and communities to adopt innovative and sustainable resource management practices. The accumulation of cultural capital fosters proactive attitudes toward rethinking product life cycles, reducing waste, and embracing regenerative economic models.

Moreover, shared cultural experiences and community engagement strengthen social bonds and disseminate sustainability-oriented norms. These dynamics encourage the adoption of economic models that prioritize reuse, repair, and recycling, thereby embedding circularity into daily life. Through educational initiatives and awareness campaigns, culture enhances critical understanding of resource value, guiding both individuals and institutions toward responsible consumption and sustainable development. Consequently, culture emerges as an indispensable element in shifting from a linear to a circular economy, where efficiency, resilience, and environmental consciousness drive socio-economic progress.

Cultural capital, defined as the accumulation of knowledge, experiences, and skills acquired through cultural engagement, plays a crucial role in fostering behavioral and social transformations. According to Sen's capability approach, cultural participation enhances critical and cognitive capacities, empowering individuals to adopt sustainable behaviors. Similarly, Billett (2014) emphasizes the socio-psychological dimension of cultural capital, which fosters proactive attitudes that positively influence societal structures. Research by Kalmijn and Kraaykamp (1996) and Cuesta (2011) highlights how the replication of cultural experiences in socially favorable environments facilitates social mobility and the formation of resilient communities. Furthermore, Huggins and Thompson (2015) argue that diverse and inclusive cultural ecosystems stimulate the diffusion of sustainable and innovative practices, positioning cultural capital as a strategic lever in the transition to a circular economy.

The relationship between culture and behaviour finds solid ground, from the cognitive and empowerment side, in the many similarities between the two processes in terms of capacity building through experience. Such a form of cultural experience accumulation can therefore be considered as a form of capacity building (Sen, 2000) with a professional socio-psychological dimension (e.g. Billett, 1994). The latter is based on the assumption that favorable conditions for the accumulation of culture-driven experiences can be reproduced in social contexts. If properly exploited and supported, the accumulation of cultural experiences can become a facilitator of social mobility once the mediating role of the intervening variables is properly understood and addressed (Kalmijn and Kraaykamp, 1996; Cuesta, 2011) and can improve local resilience promoting an open, diverse local culture (Huggins and Thompson, 2015).

At the social level, social interactions due to cultural participation are driven by the production of a particular type of relational goods (Uhlaner, 1989), which cannot be financially sustained by self-interested optimization, but relies upon an articulate set of pro-social attitudes (Benkler, 2006). Hypothetically, relational goods may be produced everywhere, but, due to the nature of the specific interactions that characterize them, the cultural context is one of the most effective since people show strong intrinsic motivation to participate in meaning production. These kind of participation shapes a cultural attitude, which is not only a prerogative of the creative class, but is a diffused behaviour relevant in the perspective of economic and social innovation (Nuccio and Pedrini, 2014).

These goods, produced by relationships and which can show how the latter good can be valid for its own existence (Nussbaum, 1986) are "affective components of social relations, valued in themselves and not instrumentally, as means for other purposes" (Sugden, 2002), generate goods independent from the relationship itself (Gui, 2002), produced by non-instrumental motivations, guided by the principle of reciprocity and sharing, endowed with historical value (valid over time) and reflexivity (Donati, 2005), represent a social phenomenon and are generative of commons (Bruni, 2014) - which, as cannot be excludible, require protection to be reproduced - and other particular types of intangible outputs, with a relational nature that influence the level of human capital of the interacting subjects (Gui, 2002; Crociata et al., 2020). They are produced within a context of significant social situations associated with a human activity of some kind and, in particular, with the activities of consumption and production (Gui, 2002).

Good-based relationships have a dual value, social and economic. In essence, Sacco and Zamagni (2006) suggest that goods that are particularly important in encouraging economic activity come from interpersonal relationships and, therefore, establish relational goods, which shall fosterdissemination of knowledge and protection, as well as social support and coordination, enabling cooperation and reciprocity in society.

Arts are a key source for relational goods since they build and rebuild relationships: at the cultural level, they produce meanings; at the social level they combine and confront diversity; at the economic level, they point at alternative modes of exchange. It is not a single blockbuster event, however extraordinary and catalyst for tourism, which generates these effects, but the continuous presence of cultural participatory activities. For example, Smith (2017) in Sustainable Design Futures explores how a multidisciplinary approach—blending artisanal traditions with technological innovations—acts as a strategic lever for fostering sustainable behavior. Similarly, Muir (2024) in The Theatre of Waste illustrates how waste can be reinterpreted as a performative and creative resource, challenging conventional perceptions and promoting sustainability through artistic expression.

Policy makers well-understood this creation of added value, and creative interventions have played a significant role in advancing sustainability in urban environments. Diverse artistic, cultural, and design-based strategies employed to foster environmental responsibility, social cohesion, and sustainable urban regeneration. Several studies highlight the integration of artistic and design-based approaches to reimagine urban spaces in an environmentally responsible manner (Crane et al., 2013; Andersen & Frandsen, 2018; Gren, 2019; Allameh & Heidari, 2020). Art and creative practices serve as powerful tools for fostering community engagement, social inclusion, and participatory urban planning: experiences like "Hip-hop ecology in Boston, USA" (Cermak, 2012) integrates music and culture with environmental education, or like "Community-led greening strategies in Dublin 8, Ireland" (Clavin et al., 2021) demonstrate how local participation in urban renewal enhances environmental awareness and civic involvement. Moreover, creative methods are increasingly employed to bridge scientific research with public engagement in climate action (Bentz et al., 2021; Asplund et al., 2023; Campbell et al., 2024).

So, cultural institutions such as museums, theatres, libraries and cultural events such as concerts, art exhibitions and festivals are typical environments for the production of relational goods, as the appreciation of the aesthetic experience is typically strengthened by the social experience of joint enjoyment with others human beings and the opportunities for social exchange that are favoured by such situations (Jafari et al. 2013). They are also the place for the construction of a particular type of experiential commons, that type for which Carol Rose coined the expression "the comedy of the commons" (1986), which increase their value with collective and repeated consumption.

The construction of commons and relational goods, the implementation of the human capital to which they contribute are fuelled by a lively cultural and creative environment. According to Crociata et al. (2013) cultural participation can increase individuals' open-mindedness and curiosity, raising their awareness of a multitude of socially relevant issues and stimulating them to seek engagement in a wide range of pro-social activities and practices. In this light, in the same sign of Quaglione et al. (2017), culture, through cultural experiences, could influence behavioural patterns that can be regulated by no

conscious deliberation that authorizes the consciousness of the agents. At the social level a concentration of cultural institutions creates a favorable social environment that functions as a spatial enabling factor to generate different "socio-cognitive environments" (Brown et al., 1989).

Not only: going beyond the mere Nudging, which is utilized since many years as a creative strategy for influencing eco-sustainable behaviors with a short-term effect (Sunstein, 2017), art practice and participation can change life allowing people to see themselves in a completely different way. Artistic experience have mind changed about things in ways that are unforgettable. This experience of change is slow and painstaking and cumulative; it builds capacity, it builds strength and resilience and solidarity, at its best (Matarasso, 2019).

Arts participation is embedded in larger systems of meaning and impact on values and attitude (Di Maggio, 1996). In particular the role of attitude is particular important and with subjective norms, and perceived decision makers behavioural control positively influence organizations' intentions to implement best practices of circular economy (Khan, 2020). Ajzen (1991, p. 188) defines attitude as "the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behavior […]". An individual positive or negative attitude towards a certain behaviour strengthens or weakens her/his intention to perform that certain behaviour in question respectively.

Studies support the relationship between attitude and behavioural intention (Khan et al., 2019a; Tonglet et al., 2004) and values have been the vehicle through which dimensions of culture have been established (Robbins, 2001) and they are among the first things that people learn and are more enduring than attitudes or perceptions: advances in theoretical understandings of cultural orientations have been applied to the prediction of job satisfaction (White, in press, a), lifestyle analysis (Sun et al., 2004), managerial behaviour (Smith et al., 2002; Sun et al., 2004), responses to marketing stimuli (Lowe & Corkindale, 1998), service quality (Furrer et al., 2000), product evaluation (Crotts & Erdmann, 2000), occupational choice (Brown, 2002), persuasion (Aaker & Maheswaran, 1997), social behaviour (Lee, 2000; Triandis, 1994) and behavioural intentions (Maio & Olson, 1995; Mattila, 1999). Correlations between cultural values and behavioural intentions have been considered low for a long time (Smith et al., 2002). One of the most influential models developed to explain human behaviour and its antecedents was proposed by Fishbein and Ajzen in 1974. What originally started as the Theory of Reasoned Action (TRA) was then refined to become the Theory of Planned Behaviour (TPB) (Ajzen, 1991). The rationale behind this model is that human behaviour is influenced by beliefs about the outcomes of behaviour, which in turn produce a positive or negative attitude towards the behaviour. Beliefs about the normative expectations of others leads to subjective perceptions of social pressures, and beliefs about control give rise to perceptions of the degree of control one has over factors that may impede or facilitate the behaviour. The beliefs that are more strongly held are more likely to influence behavioural intentions (Ajzen, 2002). According to the author, a tri-component model of attitudes proposes that attitudes are formed by the interaction of beliefs, affect and behavioural intentions: the cognitive component consists of knowledge and perceptions that take the form of beliefs; the affective component consists of the emotions, moods and feelings one has toward the object and the conative component is the likelihood or tendency that one will behave

in. Emotions contributes to the explain variance in behaviour (Stauss & Neuhaus, 1997; White, 2005; Yu & Dean, 2001). Individuals are governed by personal, cultural, social and religious values and each of these value systems is likely to influence an individual's choices and behaviours.

Rohan (2000: 265) proposed that cultural value systems are ' (...) people's perceptions of others' judgments about best possible living or functioning, that is, others' value priorities'; therefore, when one focuses on 'others', then cultural value priorities are at issue. Value systems are primarily cognitive structures (Schwartz & Bardi, 2001) that occupy core positions within attitudes and beliefs, although it has also been argued that values are linked to affective processes (Rohan, 2000). In terms of cultural values, it appears that there is fairly strong evidence for and against the likelihood of cultural values influencing behaviour but the link between cultural values and behaviour rests more with assumptions than with empirical support (Rohan, 2000).

5 C&C Sectors: How Industries and Practices Impact, According to the 9R Principles

The intersection of cultural and creative practices with the circular economy presents a compelling paradigm shift in sustainable development. The circular economy extends beyond technological solutions and industrial processes; it requires a profound cultural and social shift. The transition to a circular model is guided by an integrated framework of principles, including *Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, and Recycle.*

As we have seen, research highlights the role of cultural traditions, local knowledge, and interdisciplinary innovation in transforming behaviors and practices. These examples underscore the transformative power of culture in embedding circularity into everyday practices and cultural consumption.

This study adopts a qualitative, interdisciplinary approach grounded in narrative literature review and interpretive case study analysis. The literature was selected through academic databases (e.g., Scopus, Google Scholar) using keywords such as "circular economy," "9R framework," "cultural capital," and "creative industries," with a focus on works published between 2010 and 2024.

Case studies were identified based on their relevance to specific 9R strategies and their integration of cultural or creative dimensions. These examples span various creative sectors, including design, visual arts, fashion, architecture, and digital media. The clustering into the 9R categories follows a conceptual alignment: each case illustrates one or more R-strategies in practice, showing how cultural actions translate abstract principles into everyday practices.

While exploratory in nature, the selection aims to represent diverse geographies, scales, and disciplines, offering insight into how creative practices are fostering a transition toward circularity beyond the technological and industrial domains.

Starting from **"Refuse"**, category where the focus is on rejecting wasteful practices, avoiding unnecessary resource extraction, and promoting alternative, dematerialized consumption, examples like the one of *Studio Formafantasma* (Italy & Netherlands) show how design practices can question industrial production systems and advocating

for waste-free approaches. By prioritizing bio-based and fully recyclable materials, they promote a design philosophy that refuses resource-intensive and environmentally harmful materials. *Precious Plastic* (Netherlands) (Spekkink et al., 2020) is an open-source initiative that while primarily focusing on plastic recycling, also educates and encourages individuals and businesses to refuse single-use plastics by demonstrating the potential for reuse and transformation. Artists like *Jane Perkins* (UK), by exclusively using discarded materials such as buttons and plastic for her artworks, promotes a "refuse" mentality, demonstrating how creative practices can eliminate reliance on virgin materials; or like *Aurora Robson* (USA) who works with ocean plastic aligning with the refusal of unnecessary waste production, as she turns discarded plastic into sculptures, advocating for waste reduction and conscious consumption.

Also urban actions or street art interventions that transform neglected spaces without extensive demolition or new construction, such as the *FestiWall* (Italy), promotes a "refuse" approach by repurposing urban surfaces instead of creating new ones.

Considering **"Rethink"**, C&C industries professionals can assume a leading role, already well-recognized by design-driven innovation in several sectors. Creative industries are pivotal in rejecting unsustainable consumption models and rethinking product lifecycles. Initiatives like Fashion Revolution encourage transparency and ethical production, urging consumers and brands to refuse exploitative and wasteful practices. Similarly, movements such as the *Cradle-to-Cradle* design philosophy, evident in material innovation like *Econyl* (obtained from the recycling of fishing nets and ocean plastic) which rethink traditional manufacturing by prioritizing regenerative principles over extractive processes. Innovative textile material, used by sustainable fashion brands (Colucci & Vecchi, 2021). It has been adopted by brands such as Prada, Stella McCartney, and Adidas, has enabled the recovery and transformation, reducing marine pollution and CO_2 emissions compared to virgin nylon production.

To support this wave, films like *The True Cost* amplify this cultural shift, reinforcing the imperative to refuse fast fashion and unsustainable production. The documentary has raised awareness of fast fashion's environmental and social effects, influencing consumers, brands, and policymakers. It has inspired movements for ethical and sustainable fashion and encouraged companies to revise their production practices. Studies show increased interest in sustainable fashion following its release (Sung, 2021).

For what concerns the Framework's objective **"Reduce"**, design and architecture demonstrate how creative practices integrate resource-efficient methodologies. It focuses on cutting waste at the source. Various creative sectors—ranging from product design to education—are embedding the reduce mindset into everyday practices, reshaping production, consumption, and disposal habits. Reducing waste in consumer goods is one of the most important challenges. *Loop Store* and *TerraCycle* tackle, through creative design, one of the most visible and persistent sources of waste: packaging. By redesigning how everyday products are sold and disposed of, these initiatives intervene at the consumer level to promote reduction. Loop Store is a revolutionary retail system that replaces single-use packaging with high-quality, durable, reusable containers conceived by creative designers. *TerraCycle* complements this approach by focusing on waste streams that are difficult to recycle, such as cigarette butts, snack wrappers, and personal care products. By collecting and repurposing creatively these items, it prevents millions

of tons of waste from entering landfills. Of course, the most powerful tool for waste reduction is education and its creative alternative strategies. Serious Games like *Recycle City* takes a different but equally impactful approach, fostering behavioral change through education and gamification. This interactive digital tool teaches players how to reduce waste, optimize resource use, and implement better waste management strategies in a simulated city environment. By making sustainability engaging and accessible, the game empowers individuals—especially younger generations—to integrate waste reduction practices into their daily lives. Literary initiatives such as *Earthkeepers* by Feltrinelli also contribute by disseminating knowledge on sustainability, reducing misinformation and fostering conscious consumption: the series has the aim of increasing awareness of ecological issues through popular science works by international authors. It has made complex concepts related to climate crisis and ecological transition accessible, influencing public debate and environmental policies. Reading environmental essays has been linked to a greater tendency among readers to adopt sustainable behaviors (Young, 2018).

C&C industries often find strategies for extending product lifecycles: **"Reuse"**, unlike recycling which requires breaking down and reprocessing materials, extends the lifespan of products and resources with minimal additional energy or intervention. Some projects are directly focused on artistic and design practices that reuse discarded materials, for instance, in architecture and urban design cases, reuse emerges through modular, dismantlable structures; some initiatives, such as the *Rebuild Foundation* or *New European Bauhaus* projects, emphasize the encounter between aesthetics and sustainability, designing for disassembly so that parts can be reused across different constructions, reducing demand for new raw materials. Moreover, C&C sectors are used to develop systems of sharing, extending the life of cultural goods with best practices like *Libraries of Things*, tool-sharing initiatives, or costume rental services for theatres and festivals demonstrate how access to goods can replace ownership and promote repeated use of the same items by multiple users. Also creative co-housing projects feature shared studios, reused furniture, and communal workshops where materials are continuously circulated.

With **"Repair"**, these are two points touched when cultural sector fosters a repair and reuse culture by transforming waste into valuable assets. Several cases of repair cafés, makerspaces, and circular hubs in the cultural sector actively revive repair cultures, encouraging citizens to reuse by maintaining and fixing instead of throwing away. The well-known best case of *Patagonia*'s "Worn Wear" program normalizes garment repair, while Mud Jeans introduces a leasing system that extends product longevity (Lijzenga, 2020). Similarly, urban interventions such as *Book Forest* in Berlin recontextualize fallen trees as public bookshelves, promoting reuse both materially and intellectually. The project has encouraged free book exchange and reuse culture, reducing paper consumption and promoting reading in public spaces. It has also contributed to urban regeneration, transforming salvaged tree trunks into cultural exchange points.[1] Studies on book-sharing initiatives highlight their role in spreading sustainability and creating more engaged communities (Fassi & Motter, 2017). Projects like *Restart Project* and

[1] https://inhabitat.com/book-forest-fallen-tree-trunks-transformed-into-a-free-book-exchange-in-berlin/

Trash Hack Campaign (UNESCO) align with the "Repair" category of the 9R Framework, focusing on extending the life cycle of products by fixing them instead of discarding them. The first initiative organizes community repair events where people learn to fix their broken electronic devices rather than throwing them away. It promotes right-to-repair policies, advocating for manufacturers to make their products more repairable and durable. The project raises awareness about the environmental impact of electronic waste (e-waste) and empowers individuals to develop skills in repair and maintenance.

The Trash Hack Campaign (UNESCO) is a global educational initiative encourages schools and youth groups to reduce waste by repairing and reusing items instead of discarding them. It provides resources and guidance on sustainable consumption, including how to extend the life of everyday objects. By emphasizing repair culture in education, it fosters long-term behavioral change toward waste prevention and sustainability. In the transition toward a circular economy, reuse plays also a crucial role in reducing waste and maximizing the value of materials. Food waste represents a major sustainability challenge, but projects like *Disco Soup,* and *Refettorio Ambrosiano* show how surplus food can be creatively repurposed rather than discarded.

Disco Soup takes a more community-driven and cultural approach, organizing collective cooking events where volunteers prepare meals using recovered food that would otherwise be wasted. By combining creative food reuse with social engagement, Disco Soup turns waste prevention into a celebratory, shared experience, strengthening public awareness. Refettorio Ambrosiano, initiated by chef Massimo Bottura, reimagines food surplus as a tool for social good. By transforming surplus ingredients into gourmet meals for vulnerable communities, the project highlights the intersection of sustainability, gastronomy, and social justice. This initiative shifts perceptions of food waste from being a problem to being an opportunity for inclusion and nourishment. Beyond food, experiences like the one of *Plastic Bank* take a unique economic approach to plastic reuse, treating waste as a valuable resource. By setting up collection centers in coastal areas, it enables people in economically disadvantaged communities to exchange plastic waste for money, goods, or services. The recovered plastic is then reintegrated into new products, demonstrating how reuse can simultaneously drive environmental sustainability and social impact.

Also **"Refurbish"** and **"Remanufacture"** are practices evident in architectural, design and artistic approaches. Reclaimed architecture, as seen in the repositions disused spaces into dynamic cultural hubs. Indeed, refurbishing in the cultural and creative sectors involves restoring, repairing, and transforming existing materials or spaces to extend their lifespan and enhance their value.

In the 9R Framework, **"Repurpose"** means using an object or material for a new function that is different from the one it was originally designed for—without extensive reprocessing. It's about giving new life to things that might otherwise be discarded, by transforming their meaning, role, or use. In the Cultural and Creative sector, repurpose has a powerful and creative meaning that goes even beyond materials—it involves rethinking value, storytelling, and imagination. Contemporary art knows well this mental and semantic process, especially since 1913 Duchamp's read-made and Dadaists' objects like Man Ray and Francis Picabia: instead of repairing or reusing something for the same purpose, artists reinterpret discarded materials and invent new identities

for them. Monuments are often re-signified through performances or installations that challenge their original narratives. For instance, *Monument Lab* (Philadelphia, USA) is a public art and history project that literally re-signifies old monuments through site-specific performances, installations, and public engagement (Eron, 2023); artists were invited to create temporary installations that challenged or expanded the dominant narratives. Karyn Olivier reimagined a Civil War memorial by surrounding it with a reflective installation that invited viewers to see themselves in the history of civil rights, not just the official heroism of the past. Tania Bruguera, a Cuban artist, proposed a counter-monument to mass incarceration, focusing on the voices of those affected by systemic injustice. And again, in London's Trafalgar Square, the Fourth Plinth—originally intended for a statue of a military leader—is now repurposed to host contemporary artworks that often challenge ideas of power, colonialism, and history. Spaces themselves can be repurposed, maintaining their structure but radically transforming their function—creating cultural value from forgotten or underused assets: there are many examples of how a former factory becomes an art gallery or cultural center, or a disused train station becomes a music venue.

"Recycle" remains fundamental within the creative economy. The adoption of circular practices in film production, such as Albert Certification in the UK, ensures that audiovisual industries reduce waste and carbon footprints. Vik Muniz's *Waste Land* exemplifies how art can transform discarded materials into powerful social commentary, reinforcing the role of culture in circularity. The fashion industry follows suit with brands like Stella McCartney adopting alternative materials such as Mylo (mushroom-based leather), demonstrating how repurposing aligns with high-end fashion. Similarly, digital initiatives like *Minecraft Education: Sustainability City* integrate circular principles into interactive learning, embedding recycling awareness into early education.

6 Conclusions: A Creative Future for Circularity

The shift toward circular economy models is not solely dependent on institutional momentum or technological innovation. A key driver is consumer demand for ethically produced, low-environmental-impact products. Studies indicate that a niche of consumers is willing to pay for sustainable alternatives, yet widespread adoption requires cultural engagement. Cultural institutions, media, and creative industries play a crucial role in shaping these demands by embedding sustainability into everyday life through aesthetic, emotional, and participatory experiences.

Indicators used in CE, such as those classified by Moraga et al. (2019), tend to focus on material efficiency and technical metrics. However, cultural indicators—such as behavioral shifts, value reorientation, and engagement levels—should be integrated to measure the true impact of CE in fostering long-term, systemic change. Creative and cultural sectors provide the narratives, experiences, and symbols that make circularity desirable, understandable, and actionable.

Cultural and creative practices are not mere complements to circular economy strategies but essential drivers of systemic change. By embedding circularity into cultural narratives, artistic practices, and creative industries, we move beyond technical solutions to cultivate a shared societal shift towards sustainability. Understanding culture as the ontological framework of circular economy allows for a more holistic transition, ensuring

that high-value, high-quality material cycles are not only implemented but embraced. As CE continues to evolve, integrating cultural dimensions within its frameworks will be crucial to making sustainable economies both resilient and desirable.

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