

On Top of Sustainability. Exploring Rooftops as Sites of Urban (Cultural) Sustainability Transformations

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Abstract

This article examines the role of cultural events in Rotterdam's urban sustainability transition by looking at the festival *Rotterdamse Dakendagen* [Rotterdam's Rooftop Days]. During this week-long festival, rooftops are used by citizens and cultural groups to activate urban spaces as places of learning, exchange, and DIY urbanism, thus broadening the scope of rooftops as places for *cultural* sustainability. Drawing on empirical material collected via qualitative interviews, policy document analysis, and five months of participant observation, we identify three aspects that inform urban sustainability transitions via culture: (1) the (re)activation of rooftops via cultural programming, (2) institution-building that is mindful of festivals' continuously temporary nature, and (3) the limited material, yet wide-ranging *immaterial* effects of urban cultural festivals that have accelerated the Rotterdam's urban (cultural) politics of sustainability. In sum, the article argues that culture plays an important role in *any* investigation of urban sustainability transitions and should be considered with more conceptual nuance in the future.

Keywords: rooftops, cultural sustainability, festival, public space, Rotterdam, temporary urbanism, urban sustainability transition

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Introduction

In times of rapid global urbanization, public spaces and their green infrastructures such as parks, urban wetlands, trees, or climbing flower beds are partially threatened to be displaced by grey urban developments such as new concrete buildings, parking lots or roads. These developments concern fast-growing mega-regions such as Delhi or Jakarta as well as gradually growing urban zones such as Paris, Tokyo or the many 'ordinary cities' around the globe (Robinson 2006). Accordingly, maintaining sufficient green space in cities is not a question of luxury, but a crucial asset in accompanying future-oriented cities in their transition towards (more) sustainable solutions for diverse urban communities and access to green space. Besides creating more physical green space under our feet (and/or above our heads), in this article, we examine the ways in which urban rooftops play a significant role in sustainability transitions. To advance and nuance existing knowledge on rooftops, which remains mostly focused on rooftops' technological contributions to greening the city (e.g., via solar panels, sedum roof planting, see Kouhestani et al. 2018; Porse et al. 2018), we argue that urban rooftops have remained underexplored in their potential to promote urban sustainability via specifically artistic and cultural practices – or what has been termed *cultural sustainability*. With help of Soini and Birkeland's (2014) insightful conceptualization of cultural sustainability, we examine the sustainability-building practices of the Rotterdam-based rooftop festival – *Rotterdamse Dakendagen* [Rotterdam's Rooftop Days; RDD] – to add to, and reach beyond, sustainability goals, measures, and achievements such as zero emissions or successful climate adaptation measures.

Considering sustainability not only as ecological, economic and social phenomenon, but as utterly cultural, too, we attend to diverse community practice that shape and develop self-directed urban solutions for greenery. Besides local governments who are multiply imbricated in public responsibilities that advocate for, yet also challenge sustainability as priority in urban politics and planning (e.g., affordable housing, mixed-used neighbourhoods etc.) – we study a self-organized urban initiative that foregrounds sustainability via local arts and cultural events sited on the partially public spaces of rooftops. Hence, by investigating the multiple stakeholders in such culturally sustainable arrangements, we provide insights into the manifold bottom-up approaches and practices of temporary and do-it-yourself urbanism that forge innovative solutions for urban sustainability transitions. So far, efforts to mediate said transitions with regards to rooftops have been dominated by technocratic visions of green roofs or extensive solar energy generation (Porse et al. 2018). Respectively, with this article, we argue for a more open-minded and versatile use and conceptualization of urban rooftops to alleviate some of the sustainability-related challenges that growing cities face. Ultimately, we emphasize the socio-cultural importance of rooftops to mediate urban solutions for sustainability.

The article proceeds as follows: First, we establish the theoretical contexts of rooftops as sites of urban transformations, as well as the notions of urban sustainability transition and cultural sustainability. Second, we introduce the case study of the Dutch city of Rotterdam, and the independent festival RDD, which counters challenges of urban heat, poor air quality and lack of accessible urban green space via self-organized cultural and educational events on local rooftops. The subsequent section explains the approach to data collection and analysis. Main insights are presented along three lines: (1) establishing a notion of sustainability as 'more than just green', (2) fluid institutions

working in permanently-temporary sustainability transitions and (3) the multi-level spatial impact of rooftop sustainability. The concluding paragraphs synthesize the results from our qualitative interviews, critical policy document analysis and observational protocols. We critically reflect upon further implications for sustainability policy, and civic sustainability practice.

Theorizing the cultural sustainability of rooftops

In order to unpack the case study's unique approach to cultural sustainability via cultural programming on and about rooftops, this section outlines theoretical concepts that are relevant to examine the entanglements between urban and cultural sustainability.

Theoretical accounts of rooftops have mainly focused on their technological opportunities, as well as challenges rooftops can impose on local communities or wider urban transformations. Rooftops have been studied as socio-technological and spatial structures that provide energy, enhanced water management capacities or lever to enact possible resources for increasing biodiversity. Kouhestani et al. (2018) and Porse et al. (2018), analyse rooftops' potential for the generation of solar power in the Canadian region of Lethbridge, Alberta, or the Los Angeles Metro region, respectively. Others, such as Li et al. (2014) or Stovin (2010), focus on rooftop greening and the resulting benefits such as reduced heat stress, and higher resilience during extreme precipitation events. Green roofs inadvertently raise questions of ecology, as explored by Oberndorfer et al. (2007), who position rooftops as "a frontier in applied ecology" (ibid.: 831). Despite these various existing approaches to urban rooftops, their potential and use as public spaces for both cultural and ecological revitalization have received little scholarly attention. It is in this research gap that our exploratory case study of RDD traces and offers to systematize some of the ways in which urban rooftops in densely populated cities can be used as culturally and ecologically sustainable platforms. The field of urban sustainability transitions [UST] is an emerging area of urban geographic study and indicates how cities target and embrace sustainability-related ideas, practices, and goals. Despite the breadth of this field, cultural aspects have been largely missing from prominent accounts such as Frantzeskaki et al. (2017). Here, the focus lies on governance-related, bureaucratic, technical, and technological aspects of transition as well as on the 'classic' dimensions of sustainability, namely the social, environmental, and economic aspects of sustainability. In light of growing interest in the potential of urban greening projects, UST has attracted increased attention pertinent to this case study in that the festival's organizational structures facilitate urban transitions that can be grasped with Frantzeskaki et al.'s (2016) framework. They explore the role of Civil Society Organizations [CSO] in communities, while Hamann and April (2013) draw special attention to Cooperative Intermediary Organizations [CIO] that can be understood as a sub-type of CSOs. Hamann and April (2013), as well as Frantzeskaki and Rok (2018) stress the importance of creating multi-stakeholder spaces of engagement in which dialogue and co-production of knowledge are forged. Similarly, public space authors have pointed out the importance of including citizens in the production of urban spaces to activate the former as agents of transformation (Robazza 2020) and have pointed to the significance of ensuring accessibility to newly designed urban spaces (Pineda 2022). Bragaglia and Caruso (2020), based on research related to temporary urban uses, classify different three kinds of urban regeneration schemes that

can be the goal of temporary uses: ‘micro’ urban regeneration (i.e., a scheme with clear temporal and spatial boundaries), ‘visions’ of urban regeneration (i.e., a more structured, comprehensive scheme that tries to trigger regeneration of all vacant areas), and lastly, neoliberal ‘logics’ of urban regeneration (i.e., dominated by market logic where temporary uses are used to improve the appeal of urban transformations). For this classification, actors, contexts, and some of the goals of a given temporary use are considered. This approach helps to further differentiate the urban regeneration schemes that are promoted by the organization types developed by Frantzeskaki et al. (2016) as well as Hamman and April (2013).

To expand our understanding of urban sustainability transitions and the ways in which civic organizations can contribute to these transitions, it is crucial to consider the dimension of cultural sustainability in these processes of change. Cultural sustainability is a far less well-known dimension of sustainability and is sometimes seen as a sub-part of the social sustainability dimension. Loach et al. (2016) and Soini and Birkeland (2014), amongst others, describe cultural sustainability as an independent pillar in the ‘classic’ three-part model of sustainability, the origins of which are unclear (Purvis et al. 2019). James (2019) has integrated the cultural dimension into other sustainability approaches to emphasize its real-world implications. The increasing prominence of cultural sustainability is understood by Soini and Birkeland (2014) as a result of the ‘cultural turn’ in geography and other spatial disciplines. The scientific debate about the exact nature, definition, and contents of the concept is still ongoing, but generally includes topics such as cultural memory, questions of identity and engagement, art, creativity, and other cultural practices (James 2019; Loach et al. 2016; Soini and Birkeland 2014). In line with Robazza (2020), we contend that strengthening cultural conceptualizations of sustainability can improve and deepen citizens’ understanding of, and engagement with more ‘conventional’ dimensions of sustainability, and thus increase community resilience as a result.

Soini and Birkeland (2014) have reviewed literature related to cultural sustainability and identified seven ‘story-lines’ that repeatedly appear: cultural heritage, cultural vitality, economic viability, cultural diversity, locality, eco-cultural resilience, and eco-cultural civilization. Out of these, cultural vitality (i.e., the sharing and transmission of cultural capital and its adaptation to the changing needs of its users over time), eco-cultural resilience (i.e., interlinked ecological and cultural processes that need to be included equally in planning), and eco-cultural civilization (i.e., ecology and culture being deeply intertwined, underscoring the need to include culture in eco-friendly transition processes) are the most relevant to examine our case study. Taken together, the above-mentioned notions of urban sustainability transitions and cultural sustainability fuse into a synergetic framework of analysis for RDD: On the one hand, cultural sustainability expands the scope through which sustainability transitions can be understood and facilitated. On the other hand, the flexible heuristic of UST specifies the cultural sustainability framework to more closely examine the diverse actors involved in the making of cultural sustainability.

Case study: Exploring rooftops in Rotterdam

Rotterdam, located in the province of South Holland in the Rhine-Meuse-Scheldt delta, is the second-largest urban centre in the Netherlands. The city is part of the ‘Randstad’

conurbation that consists of the cities of Amsterdam, Rotterdam, The Hague, Utrecht, and Leiden, amongst others (Huis van de Nederlandse Provincies n.d.). The seaport of Rotterdam is the largest in Europe and the main reason for the city's international economic importance (Port of Rotterdam, n.d.). The presence of the port has turned the city into a cultural melting pot, due to migrants' arrival from all around the world (Nientied 2018).

Rotterdam has been studied by urban researchers, who have focused on the city's urban climate and ecosystems (Heusinkveld et al. 2014; Derkzen et al. 2015) as well as the city's adaptation to climate change. Additionally, gentrification dynamics have been traced by Uitermark et al. (2007), arguing that gentrification operate as a government-enforced strategy. Hochstenbach and Musterd (2013) observe suburbanization of the urban poor in Rotterdam and other Dutch cities. Public space, urban innovation and regeneration schemes have been investigated (van Melik and Lawton 2011) as zones of different opinions. Mulder (2012) and Zebracki and Smulders (2012) investigate innovative living labs in the city. Not only due to its large seaport has Rotterdam become an interesting object of scholarly investigation. Moreover, Rotterdam stands out for its unique urban architecture and landscape, markedly shaped by a major air raid in 1940, conducted by the German air force during the earlier stages of World War II. A significant portion of the city centre was destroyed by the attack, and the reconstruction efforts, along with the loosening of building height regulations, have resulted in a unique mix of modern architectural styles (Rooijendijk 2005). Today, the city features a skyline consisting of many high-rise buildings, as well as many landmarks that have attracted international acclaim. This blend of embracing modernity and innovative design remains an important part of the city's self-marketed identity (Rotterdam Tourist Information n.d.).

Considering the unique architectural fabric, Rotterdam's rooftops have received special attention as the city features large areas with flat roofs. This is also a result of the post-war reconstruction, which is unique in its scale in comparison to other Dutch cities. The total rooftop area amounts to 18 km² across the city, of which one km² can be found in the city centre alone (Gemeente Rotterdam 2019). While the conversion of urban rooftops presents a distinct urban space, the particular implications of artistic and cultural uses of rooftops have remained little explored and studied. In other international contexts, cultural uses of rooftops have indeed been studied: Two of the most well-known examples of culture-led rooftop use include the privately-funded Marina Bay Sands resort in Singapore (Arnold 2006) as well as the publicly-funded High Line in New York City (which, despite its location on a former rail track, can be understood as a rooftop utilization; High Line n.d.). These projects have received international praise and have led to similar schemes being planned and implemented in other cities around the world, one of those to be found in Rotterdam itself (Holmes 2021).

Within the city centre, a number of initiatives and organizations have formed around the use of urban rooftops as a result. On the one hand, these approaches focus on specific rooftop usages, such as habitation on rooftops in the case of *Dakdorpen* or urban agriculture on a pilot rooftop in the case of *Dakakker* (Dakdorpen n.d.; Dakakker n.d.). The initiative *Rooftop Revolution*, on the other hand, examines the potentials of rooftops for transformation towards a more sustainable urban practice (Rooftop Revolution 2020). This initiative also works closely together with Esther Wienese, an

independent advocate and influencer for innovative rooftop use in the city (Wienese n.d.). In addition to these independent organizations, Rotterdam’s municipality assists and supports this transformation actively through the provision of policy frameworks, such as the *Multifunctionele Daken* (see Table 1; Gemeente Rotterdam 2019), as well as through funds and collaborations, such as in the case of the local *LIFE@Urban Roofs* project that is part of the larger LIFE program by the European Union (European Commission n.d.; Gemeente Rotterdam 2020).

Rotterdamse Dakendagen

The *Rotterdamse Dakendagen* is a festival organization that hosts an annual festival on the city’s rooftops, where different rooftops throughout the city are made publicly accessible to diverse audiences (Over ons - Rotterdamse Dakendagen). This means that both citizens and ‘experts’ such as urban planners, designers or architects can visit the rooftops to gather during the festival’s *Knowledge Day* to exchange know-how and expertise. The festival is increasingly recognized by domestic and international media for its pioneering role when it comes to the creative transformation of rooftops (Field Diary 22.04.). In this context, RDD has been cited as an “inspiration” for similar initiatives (Interview 04.05.2021). In the landscape of rooftop pioneers in Rotterdam, the festival stands out due to its broad and multi-genre approach to host events, including lectures on *Knowledge Day*, silent disco on the *Hofbogen* rooftop, yoga on the *Concertgebouw* or a plant market on the *Thornico* building. The festival took place for the first time in 2015, and since 2019, has secured funding from the city to entertain its venture. The organization’s ambitions are reflected by the festival’s own categorization of hosted events, ranging from architecture to knowledge sharing, arts and culture, and the facilitation of community encounters.

Rainbow Rooftops: Approaching RDD’s cultural rooftop functions

The municipality of Rotterdam, in cooperation with the landscape and urban design office *De Urbanisten*, developed a unique, color-coded way of classifying rooftop uses. This framework assigns a specific color to each way of using rooftops, including a designation for multifunctional uses as golden (Gemeente Rotterdam 2019). Such multifunctional use is seen as the gold standard for rooftop use, incorporating many uses and functions instead of solely relying on a single type of use, such as energy generation (see Table 1).

Table 1: Rooftop Colors (Municipality of Rotterdam 2019: 9).

Color	Function	Example in Rotterdam / Festival
Green	Green rooftops are roofs covered with plants that reduce urban heat stress, increase biodiversity, or grow food.	Roof gardens or parks, such as the <i>Dakpark</i> or the <i>Hofbogen</i> . These roofs are essential spots during the festival, thanks to offering large spaces for visitors to gather.

Blue	Blue roofs serve to retain water and thereby decrease runoff in cases of strong precipitation; they can serve as storages for droughts.	Sponge buildings or rooftops, such as the <i>Slimdak</i> at the <i>Schieblock</i> . During the festival, this roof is used as a good practice example.
Yellow	Yellow roofs serve to generate energy through a variety of methods, such as solar panels or wind turbines.	Rooftop solar panels, such as the roof of the <i>Central station</i> . Little use during the RDD festival.
Orange	Orange roofs serve to facilitate transportation to for example, to enable connectivity between roofs or delivery drones and air taxis in the future.	There are no such rooftops yet serve this function. The Roofwalk event connected several roofs with walkways in 2022, creating orange roofs for the festival.
Red	Red roofs cater to social functions and can serve as places for recreation or as places for activity and sports.	Tennis courts or rooftop bars, such as the <i>Suicide Club</i> on the <i>Groot Handelsgebouw</i> . The festival features a red element on all or most roofs.
Violet	Violet roofs are places for living and human habitation, for example, in the form of self-sufficient 'tiny houses'.	There are no rooftops in Rotterdam yet that serve this function. The festival has experimented with co-habitation in the past which led to the creation of <i>Dakdorpen</i> .
Grey	Grey roofs serve the need for space for the different technical components that are needed by many buildings, such as chimneys or A/C units.	This is the dominant type of rooftops in the city today. Many grey rooftops see new and diverse uses during the festival, changing their colors as a result.
Golden	Golden roofs are roofs that creatively combine different functions with one another.	The rooftop of the <i>Schieblock</i> unites green, blue, and red functions. The festival strives to convert as many rooftops as possible to golden during the festival.

This classification of rooftops, based on their functions, is being used by the different rooftop stakeholders in Rotterdam and helps to convey their goals and visions. This can also be seen in the case of the *Rotterdamse Dakendagen*, which focuses on adding a red element to rooftops in order to reach the goal of golden rooftops.

Data and methodological approach

The festival organization was investigated using a case study approach, following Zainal (2007) and Van Thiel (2014). This approach offers the possibility for a holistic, in-depth understanding of a phenomenon that is not yet covered in existing academic literature. A single case study approach lends itself to offer detailed and comprehensive insight into a specific field. Seven semi-structured expert interviews were conducted with members of the festival organization as well as rooftop advocates of other independent

organizations in the city as well as a key administrative representative of the municipality.

Semi-structured expert or stakeholder interviews were chosen due to their ability to provide deep insights into the case at hand and to contribute to further research (Bogner, Littig and Menz 2009). The interviews further allow interviewees to formulate individual answers that offer specific information (Aberbach and Rockman 2002). An observational diary was kept to collect additional data during a five-month-internship at RDD, during which first-hand insight into the festival organization was gained. This provided a better understanding of various aspects of RDD, its organizational structure and goals. Daily work routines of festival organizers were shadowed; employees and members of the team interviewed separately. Various site visits were conducted prior to data collection in preparation for the festival as well as during the 2021 edition of the festival.

In addition to existing research literature and the primary data discussed above, the case study was complemented with a critical study of grey literature on the topic, such as policy documents from the municipality of Rotterdam, and the festival's self-designed plans, evaluations, and visions for each of their annual festival editions. Municipal policy documents offer one such vision on the topic, by introducing the color-coded scheme of rooftop use, (see Table 1). Through various rounds of qualitative coding, analytical patterns were inductively derived from interview transcripts, policy documents and grey literature pertaining to the festival organization. This resulted in three overarching, and closely interrelated facets of (cultural) urban sustainability transitions leveraged by RDD to be discussed in the following sections.

Results and Discussion

1. "More than just green": Tracing cultural sustainability in Rotterdamse Dakendagen

Most project team members of *Rotterdamse Dakendagen* expressed visions about the festival that included concerns about cultural sustainability, although without explicitly referring to the term as such. In the process of analyzing the interview data, interviewees' statements were comparing in relation to indicators and characteristics of cultural sustainability as discussed in the theoretical section above. Similarly, respondents of other rooftop organizations, such as the *Dakdorpen*, and of the municipality, expressed future-oriented views of rooftops or the *Rotterdamse Dakendagen* that revolve around ideas of cultural sustainability. One RDD producer expressed that "sustainability is more than just green" (Interview 19.03.2021) and put particular emphasis on the importance of liveability in the city. A prioritization of a high quality of life in the context of sustainability shows a possible way to imagine cultural sustainability in a more integrated manner. With the goal of liveability in mind, the city is being transformed towards a more equitable environment, which enables access to urban green and public spaces for all inhabitants, and to cultural offers and events. RDD festival organizers recognize that some connectivities with already-existing public green spaces could be improved and create more interconnectedness (Interview 19.03.2021). Implementing these culturally and socially sustainable public space measures would position the festival as a more active stakeholders in the practice and stewardship for a broader approach to sustainability. This wish was echoed by both internal and external festival interviewees. Still, more traditional ideas about sustainability – especially in

regard to the environment – play a key role in the organization of RDD, according to its director (Interview 31.05.2021). Beyond the need for a green urban environment, interviewees stressed the importance of recreational spaces “where you can just be and recreate”, as an Antwerp-based rooftop festival organizer puts it (Interview 04.05.2021). The notion of ‘just being’ draws attention to the need for creating and maintaining non-commercial spaces on rooftops, which could be reinforced in future iterations of rooftop festivals in general.

Rooftops should also become “culturally interesting” (Interview 20.05.2021), according to the founder of another rooftop-focused initiative in Rotterdam, because they offer new spaces for urban cohabitation with unique perspectives on the city. Rooftops’ potential is only realized, however, when actively making use of possibilities for engagement, encounter, and new everyday uses, while also ensuring both physical and social accessibility. This concern is being reflected in the festival program, where both cultural events and recreational activities take centre stage. For example, during the award-winning *Dakiftar* [rooftop iftar], an interreligious dialogue forum between Muslim and non-Muslim citizens is provided. Building on the sentiment expressed above by the founder of another Rotterdam-based rooftop initiative, she states that the festival helps visitors to ‘zoom out’ of their hectic urban life and relate to the urban ecosystem in new and embodied ways, reminiscent of urban ecology ideas of the Chicago school of urban sociology (Interview 20.05.2021).

Furthermore, experiencing rooftops “help[s] [visitors] to realize what they are part of” (Interview 20.05.2021). This presumably gives insight into the complexity of contemporary urban challenges, including those of different kinds of sustainability. This leads one interviewee to propose the notion of the ‘layered city’, which describes the way of imagining and creating the city in a more than two-dimensional (Interview 07.05.2021). Imagining the city as composed of various spatial ‘layers’ acknowledges a multi-dimensionality of urban space which transcends the two-dimensional street-level experience. Put differently, underground and above-ground buildings, infrastructures etc. heavily influence the urban experience and produce the city this high in the air, too. This mindset thus enlarges the scope of where and how sustainability transitions can take place. According to this interviewee, Rotterdam is an especially layered city, owing to the prominence of skyscrapers in its urban landscape in comparison to other Dutch cities (Interview 07.05.2021).

The festival’s director was quoted by another rooftop festival host from Antwerp, arguing that the former advocates: “Green roofs are for other people – I want to talk about *public roofs*” (Interview 04.05.2021, emphasis added). The ‘other people’ in this context appeal to achieving more environmentally sustainable cities by the extensive greening of rooftops (e.g., through sedum-covered roofs) or through the installation of solar panels. In contrast, the notion of ‘public’ roofs goes further than that: It also prioritizes accessibility and community integration, without being exclusive of many other uses such as simple greening. This ties back to the color-coded differentiation of rooftops, which sets multi-functional, socio-ecological ‘golden’ rooftops as the gold standard (see section ‘Rainbow Rooftops’). Making rooftops golden can either be achieved through the addition of a public (i.e., red) element to an existing roof, or by inspiring other changes in existing red or grey rooftops. As previously mentioned, this is only possible with low-threshold accessibility to these rooftops (both in terms of physical and socio-cultural accessibility) – the former of which is sometimes challenging

to guarantee at these sites. Easy access has been mentioned as a key challenge for the long-term success of rooftop conversion schemes, both with regards to physical access and to reduce barriers of entry to cultural events (Interview 04.05.2021). In sum, these different notions of sustainability push for a more public and accessible notion of roofs. We have identified the need to go beyond ‘just green’ and mere street-level understandings of both sustainability and cities. This more integrated approach could help to reduce the city’s ecological footprint – especially in sealed surfaces – while simultaneously providing new spaces of encounter for diverse citizens.

2. *Building institutions in the face of a permanently-temporary sustainability transition*

The organization’s self-image as well as the impression of closely associated stakeholders vary when it comes to the event’s temporary nature and its effect to foster sustainability longer-term. This is also where some internal criticism and reflections on limitations of the festival’s scope come in: One of the associated, external stakeholders in Rotterdam raises the question of the festival’s societal reach. The festival is mostly of interest to a relatively narrow part of urban society (namely those already interested in art, architecture, or rooftops). A perceived exclusivity by outsiders could thus impede the dissemination of the aspired rooftop transformation into a wider societal context. Also, the potential effect to inspire non-expert visitors can be challenged at this point, since the examples discussed here tend to focus on large roofs and presentation of exceptionality rather than small roofs and day-to-day uses (Interview 10.05.2021). A limitation that is repeatedly mentioned by internal and external interviewees is the festival’s inherent temporality – the temporally limited presence of the core festival events on a single weekend a year puts pressure on the festival to be and stay relevant within such a short time (Interview 31.05.2021). Members of the festival team also see this as a risk in terms of longer-term funding – about half of the festival’s funds were provided by public institutions, with major uncertainties about the festival’s future inclusion in the municipality’s Four-Year Cultural plan (Field Diary, 04.03.2021).

While the *Dakdorpen* initiative works towards the establishment of permanent rooftop villages and the municipality’s efforts are focused on the permanent conversion of select rooftops (e.g., the *Hofbogen*), RDD is characterized by impermanence and temporariness. The festival itself only lasts for a weekend in June, but the organizational efforts start much earlier. Similarly, for some rooftops, the procurement and setup of necessary equipment starts months prior to the festival but is quickly dismantled again after the festival’s closing. The most extensive RDD edition in 2022 created a *Rooftop Walk*, constructed in the city centre between several buildings for the duration of a month. Many buildings are recurring RDD locations offering similar activities each year, owing to the specific possibilities of their respective rooftops, but each year also offers new locations and different programming.

A representative of the municipality considers a temporary festival as a “very efficient way to set the agenda”, and a means to discuss urban development possibilities “in a playful, light way, [and] through culture” (Interview 04.05.2021). Impermanent interventions are also seen as less contentious and easier to realize than permanent changes in the urban landscape. Reducing ephemeral events or practices to mere temporariness, however, also runs the risk of depoliticizing them. While festivals such as the *Rotterdamse Dakendagen* might indicate new practices of urban cohabitation for a

limited time span only, the trend of festivalizing urban culture also brings challenges with regards to sustainability to the fore (see Häußermann and Siebel 1993; Zou et al. 2021). In the worst case, a one-off big event weighs heavily on urban green spaces because it does not use existing natural resources in a sustainable way. Yet, temporary festival concepts such as RDD can also inspire new modes of sustainable festival organization and thereby “broadening the notion of what a festival can be” (Interview 31.05.2021). A potentially practicable utopia can be experienced through arts, fun, and knowledge exchange. In this low-key, multiply accessible, and entertaining way, it inspires visitors to re-imagine their relation to rooftops, and to the city more broadly. In order to achieve the festival’s goals, the organization frequently ties together many initiatives and stakeholders that would otherwise have continued to work on their own projects individually, as the respondent from the municipality points out (Interview 07.05.2021). RDD’s efforts for longer-term change seek to foster a “nice [and] friendly [dialogue], without being too formal” (Interview 31.05.2021). According to the interviewee from the municipality as well as an internal interviewee, this can result in more cooperative and mutually beneficial interactions. Especially the aforementioned *Knowledge Day* is key for facilitating this dialogue. A fellow rooftop festival organization points out that both the organization as well as external stakeholders can – through cooperation – look for ways to “use that knowledge to actually have an impact on multiple layers of the city” (Interview 20.05.2021). ‘Layers’ in this respect can not only be understood on a spatial level, but also on an institutional-organizational level: creating impact for the many different urban actors and organizations that are involved in the sustainable transition of the city, such as real estate developers, city administrators, architects, or local NGOs. The relationship the festival currently enjoys with other stakeholders, however, was not immediately given but rather grew gradually: Initially, the city administration was hesitant to grant permits to the festival since most rooftops and the associated guidelines were not designed to accommodate the visions of the festival (Interview 07.05.2021).

The ongoing institutionalization of the festival, combined with its focus on urban sustainability and knowledge-sharing advances the *Rotterdamse Dakendagen* as an actor in the local urban sustainability transition. Its actions and goals fit the characteristics of a cooperative intermediary organization [CIO]. As Hamann and April (2013) point out for this type of organization, the RDD seek to establish a forum for dialogue and knowledge transfer, in which visions of the city can be experimented with, and co-created. This requires negotiation and compromise, which are necessary for the relative success of multi-stakeholder governance (Frantzeskaki and Rok 2018; Hudson and Marvin 2010; Landau 2020). This dialogue between organizers, policymakers, visitors, and other stakeholders furthermore serves to co-produce crucial knowledge between involved parties, which has been identified as a keystone for local transition initiatives by Frantzeskaki and Rok (2018) as well as by Pannone et al. (2019). Solution-oriented discussions, such as the one the festival organization enables about rooftops, often help to find new pathways of collaboration between involved actors. Also, the role of trust between the organization and the civic stakeholders it seeks to engage, as well as amongst participating stakeholders themselves, has been noted positively by two respondents (Interview 22.04.2021; Interview 07.05.2021). In line with points made about civil society organizations (CSOs) in sustainability by Frantzeskaki et al. (2016), interviewees also pointed out the benefits of RDD’s relative institutional independence,

which ensures the organization's creativity as well as its function as a mediating platform for dialogue. The institutionalization of the *Rotterdamse Dakendagen* towards a more CIO-inspired role from a more general cultural CSO role remains subject to further inquiry.

The festival's future plans show a continuous increase in the breadth and priority for knowledge-sharing throughout the festival, also putting an emphasis on making this knowledge easily accessible and available for everyone attending the festival (Rotterdamse Dakendagen 2020a). While the representative of the municipality argues that the "focus of the annual festival is on fun" (Interview 07.05.2021), the organization's self-ascribed goal goes beyond that.

RDD not only achieves the aforementioned community engagement with regards to involving experts and stakeholders, but also when it comes to ordinary citizens and civic initiatives, who are "invited to rethink how they see the world" (Interview 19.03.2021), as a producer of the festival puts it. Furthermore, the RDD is changing as an organizational interface with each edition: the organization becomes more permanent and seeks to expand its activities throughout the rest of the year. An example of a more permanent addition is the 'Sleeping Giants' rooftop on the *Maassilo* – a painted artwork on top of the building, illustrating the potential of rooftops metaphorically through a sleeping giant. This temporal expansion points to RDD's self-reflexivity and its valuation to institutionalize the festival longer-term – to create both an ecological and cultural longer-standing impact on the landscape of urban rooftops in particular, and sustainable solutions for a diverse city more broadly.

The festival's director expressed that various cultural events throughout the city could include rooftop activities (Interview 31.05.2021). Urban, rooftop and sustainability experts who met during the festival's *Knowledge Days* were said to be keener to talk with RDD in the future (ibid.). This hints at a growing emphasis on knowledge-sharing in conversations about urban sustainability in its multi-faceted appearance. In response to the various efforts to strengthen rooftop initiatives' contribution to urban sustainability transitions, in 2021, a European network uniting rooftop initiative, the *European Creative Rooftop Network* [ECRN], bringing together stakeholders from several countries and cities was founded. So far, Amsterdam, Antwerp, Barcelona, Belfast, Chemnitz, Faro, Gothenburg, Nicosia, and Rotterdam are part of this network (ECRN, n.d.). An increasing desire to formalize rooftop urbanism also becomes visible through the growing retention of employees in recent years. An indicator of becoming "a more stable organization" itself (Interview 31.05.21), as the festival's director formulates it, means that even though RDD's actions and interventions will predominantly remain temporary, its public presence will nonetheless become more continuous and long-lasting. By securing additional funding from the city via a multi-year grant for cultural institutions (Field Diary 04.03.2021), RDD continues its activities with a more stable financial base, and planning security for the upcoming years. This offers the organization an opportunity to grow into a (relatively) permanent organization that coordinates temporary interventions in the city with an outlook on bigger-picture sustainability transitions ahead.

Similarly, another Rotterdam-based collective of architects and artists, namely *Zones Urbaines Sensibles*, explores the notion of 'permanent temporality' (Boxel and Koremann 2019: 307). This concept provides a new framework for urban practice and action, originating from their own partly permanent, partly temporary projects in Rotterdam.

The concept of permanent temporality indicates that sustainable urban development is constitutively open-ended, but that it is yet possible to create incremental adaptive development in the face of the future's inherent unpredictability. In practice, this approach of permanent temporality can be located in interventions such as the *Rooftop Walk*, which was hosted as a temporary addition to RDD in May and June 2022 in collaboration with the '*Luchtsingel*' – a pedestrian bridge spanning over train tracks and a busy road, conceived by the aforementioned collective. This leads to the festival being a 'temporary' organization that promotes a vision of urban regeneration in the city, according to the definition of Bragaglia and Caruso (2020), which advances a semi-structured development scheme that (re)activates a variety of vacant lots in the city. This type of temporary organization constitutes a comprehensive and structured civil society organization, which promotes a longer-term vision for urban regeneration in vacant areas, without confining development to a clearly defined area to be monetarized. The RDD organization thus overcomes the dilemma of festivalization, and potential commercialization, by continuously expanding its activities to engage stakeholders and decision-makers in longer-term plans and activities. In sum, by fusing a broad notion of sustainability with DIY approaches to community outreach, engagement and knowledge transfer, RDD leverages a novel approach to festivals that are temporary but leave a potentially longer-lasting mark on urban organizers' and residents' sense of place and belonging in the city.

3. Towards a multi-level impact on top of sustainability

The manifold impacts of the festival organization are described by interviewees in three main ways: the mind shift the festival has mobilized (1), structural impacts on public and private urban planning and development in Rotterdam (2), and knowledge/networking impacts (3). According to an RDD organizer, the festival helps to change "the idea of people that work for the *Dakendagen* [...] the owners of the buildings, and all involved parties" (Interview 19.03.2021). In brief, this statement illustrates some of the immaterial or intangible transformational effects that can be leveraged in the city by the festival that go beyond metrics of mere measurement and/or quantification. This can be relevant for other cities, too.

According to the same RDD producer, festival visitors and participants "are challenged to think about the space they live in" (Interview 19.03.2021). It opens new possibilities to change and adapt everyday practices. Furthermore, residents "have plans to do something on [their] rooftop" (Interview 22.04.2021), according to the director. A representative of the municipality, and the founder of a rooftop festival in Antwerp, states that the festival helps to make rooftop use "more and more mainstream" (Interview 07.05.2021). RDD pursues a "structural campaign" (Interview 04.05.2021), by gradually redirecting resources of the municipality with the goal of transforming the city's rooftops. As mentioned before, knowledge on sustainabilities, which is shared and programmed by RDD, constitutes more tangible impacts that the festival has brought about. Again, collaborating across sectors, and even countries, makes all rooftop-related initiatives stronger in comparison to working separately (Interview 07.05.2021). In terms of the actual, more or less permanent conversion of unused rooftops into fertile grounds for cultural activity and environmental education in the larger sense of that term, the municipality representative states that more and more property owners of large rooftops in the city plan to "do something" on their rooftop (Interview

07.05.2021). The festival is seen as “only one part of that decision” (Interview 22.04.2021) to actively use rooftops, but as an inspiring one, nonetheless. Its impact can be seen as fragmented throughout the city but focused on mainly one aspect of the layered city – rooftops in their basic above-ground function across the city. This also relates back to the previous classification of RDD as Cooperative Intermediary Organizations (CIO): the impact of a CIO is largely immaterial but can result in indirect material impacts in the future. It achieves a significant ‘trickle-down’ effect on the rooftops in Rotterdam.

With this trickle-down, multi-level effect, the festival organization changes not only one layer of the city – that of and on rooftops – but also affects other layers, thus producing further-reaching spatial consequences to affect and transform the layered city – for example, on the ground, on storefronts, backyards, front yards, cellars, garages etc. The festival itself rarely actualizes permanent architectural adaptations on existing rooftops, yet its effects can materialize in future rooftop-making in Rotterdam and other cities. An example of this are the rooftop-related initiatives and groups that have grown, and continue to grow out, of the festival, such as the *Dakdorpen*, but also the *Rooftop Walk* (plans for 2024 still open at the time of publishing this article). The latter serves as the most large-scale example of the inspirational force the RDD creates among stakeholders, architects, and visitors alike.

These impacts reflect that RDD matches the characteristics of a CIO (Hamann and April 2013): The festival’s impacts on the city are less permanent from a material point of view, but are nonetheless widespread immaterially, and in many ways materializing. RDD initializes a mind shift, and larger-scale, yet gradual changes in city planning and policy through discussion, encounter, and facilitating co-creation between citizens, property owners and cultural organizations. Furthermore, this strategy highlights individual rooftops on a micro scale and presents those rooftops to stakeholders and decision-makers on a city-wide, mesoscale of urban reach. Thereby, the significance of individual rooftops as examples of ‘good’ – i.e., socio-ecologically sustainable – urban practice is enhanced and made visible, to residents, visitors, other civil actors, as well as local decision-makers and stakeholders. The diversity of rooftop uses is especially present during the festival since “multiple types of rooftops and multiple types of solution” (Interview 20.05.2021) are presented and discussed during the festival. In sum, RDD performs an intervention in urban spaces, both public, private and the many shades in-between to demonstrate multi-level benefits and possibilities of rooftop utilization for urban sustainability transitions.

Conclusion: Towards more golden rooftops in urban sustainability transitions

This article has highlighted that the role of cultural practices in urban settings of rooftops can foster urban sustainability transitions. The case study has demonstrated how citizen-engaging and knowledge-creating cultural practices on already-existing rooftops can leverage more awareness for the multiple ways in which urban sustainability transitions can take shape. RDD is at the centre of this culture-sensitive sustainability approach by utilizing bottom-up approaches and taking a catalysing and inspiring role as a CIO in Rotterdam as seen in Figure 1. With this intermediary role, it not only expands the scope of what urban sustainability means in Rotterdam, but also

advances traditional understandings of sustainability more broadly, for example, by encouraging and facilitating actions that engage multiple stakeholders and festival visitors. Thus, our exploratory case study has illuminated an example of innovative urban change-making practices that so far have not been widely represented in the discussion on cultural sustainability. We have demonstrated how conceptions and experiences of sustainability are crucially permeated by everyday cultural practices that facilitate and leverage new forms of knowledge creation and exchange, yet are also challenged by accessibility concerns, lack of structural funding and partial difficulties to communicate across diverse communities. While RDD seeks to subtly change patterns of movement and sustainability practice in the city, it also works within existing frameworks of the densely populated and built city.

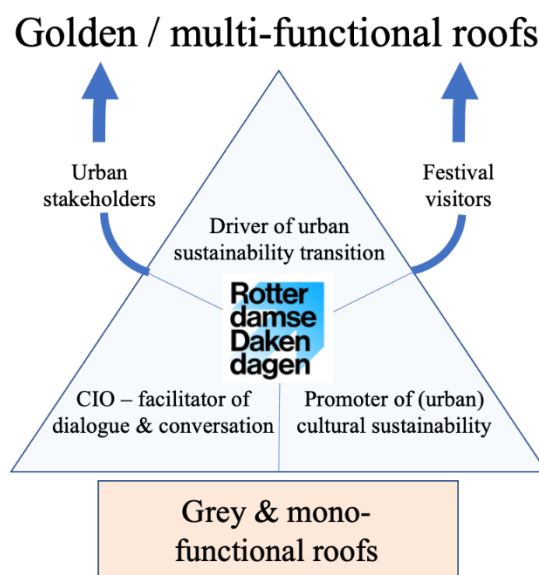


Figure 1. Towards golden rooftops (Source: the authors).

In cities where grey roofs currently dominate – with the occasional exception of solar panels and sedum roofs – more flexibility, creativity and versatility of approaches is needed to spur long-term material and cultural change. When given opportunities or invited, urban creatives such as the RDD organizers can take the initiative to transform previously dull, underused, and invisible spaces on the city's higher layers. By adding red functions of rooftops, for example, i.e., spaces for social/community encounter, more multi-functional, golden roofscapes can emerge. Those two rooftop colours can also be seen as relating most directly to cultural sustainability: When ensuring accessibility to a red roof, the space give a more diverse urban community access to urban cultural life, education, and DIY practice. Golden roofs, that also include a red element, constitute crucial future-oriented spaces that also significantly advance environmental sustainability concerns (e.g., by providing additional greenery for carbon storage, air filtration, heat dissipation etc.). By creating rooftops that are not only a part of the city's technical and built environment, but also of lived urban space, golden roofs can become everyday

zones of encounter, in which values such as difference and diversity take place, and are actively appreciated (Valentine 2008; Wilson 2018). With our proposition of golden rooftops, we have thus not only attempted to enhance the cultural implications of claiming space on rooftops, but also to build an understanding of rooftops as inherently diverse and self-directed spaces for citizens to engage with sustainability in multiplicity of tangible and intangible ways.

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