

## **Narratives of Change for a Resilient Future City**

Benedikt Marschuetz<sup>a</sup>, Arjan Wardekker<sup>a,b</sup>

<sup>a</sup> Copernicus Institute of Sustainable Development, Utrecht University, Utrecht, Netherlands. <sup>b</sup> Centre for the Study of the Sciences and the Humanities, University of Bergen, Bergen, Norway

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Climate change, and extreme events brought about by it, increasingly threatens an urbanizing humanity. This imposes the need for adapting to arising challenges (limiting impacts) and for mitigating further climate change (reducing greenhouse gas emissions) due to the limitations of adaptation<sup>1-3</sup>. If measures to reduce climate impacts are not taken, many people will potentially be affected by these. Impacts are often magnified in cities, leading to e.g. heat-stress and urban flooding<sup>4-6</sup>. Those places that are already vulnerable are particularly affected. For example, the Netherlands are densely-populated and low-lying and are likely to be challenged by extremes approaching from the sea, rivers and magnified by climate change<sup>7-9</sup>. To deal with such challenges, many regions and cities are developing action plans for adaptation and mitigation. Such action plans are in principal aiming on building climate resilience towards extremes, thus let e.g. a city cope with complex challenges in a dynamic way, withstand them, maintain crucial functions in the city so as to make the survival of its population more likely and aid in recovery thereafter<sup>10-12</sup>. However, such activities aiding climate resilience impact not only the way the city looks and functions, but also people's daily lives<sup>2,13</sup>. To find support and enable collaboration with and among actors and residents, measures should be rooted in people's hopes, fears and aspirations towards a desired future for the city and thus centered around people's lives and aspirations for a liveable future<sup>14,15</sup>. Since many activities around climate action and building resilience depend on behavioral changes and local action and support, it is crucial that citizens can identify with these measures and that measures align with citizens' desired futures. In this paper, we explore the use of 'narratives of change' as a tool to elicit perceptions of past, present and future weather and climate and changes in these, and how that relates to people's values, goals, desired futures, as well as possible strategies to foster climate resilience.

Narratives are stories around perceived realities and futures that people can describe, and they mediate and organize various understandings of them since narratives let people make sense of the world they live in<sup>16-18</sup>. They unfold around events and include key actors, relationships, values and ambitions, located in time and space, and are therefore both backward looking, i.e. explanatory, and future-oriented as they display aspirations and assumptions of the future<sup>15,16,19</sup>. Narratives are also shared realities and foster interaction among individuals through joint experiences of happenings. Consequently, narratives turn 'matters of fact', such as scientific observations and projections, into 'matters of concern' by connecting changes to local individual and collective memories and by incorporating them into the local societal realities. Narratives display a possible and desired future from the perspective of both society as well as individual live-situations, and allow the design of measures to reach such<sup>20</sup>. Thus, narratives become central for the quest of resilience-building and future-proofing a city: they display desires of what ought to be achieved or avoided in the future; what should be made resilient and what should be changed<sup>21</sup>. Such desires are power-laden and normative, and including them through narratives may aid in co-producing urban climate resilience with a broader set of societal actors, including those voices that may go unheard in traditional policy debates on adaptation<sup>22,23</sup>.

We studied narratives in a case study in Dordrecht, an island-city in the South-Western Dutch Delta, involved authorities and their public narratives as well as citizens and their ontological narratives. We

focused on stories around weather and water affecting the city. Furthermore, we collaborated with them to explore the options for building urban climate resilience in line with the desire of citizens and authorities. The historical port city is surrounded by rivers on all sides, located close to the sea, and vulnerable to numerous climate-related changes. It also faces various socio-economic challenges. Due to its vulnerable location, the city is already actively working on climate adaptation. Focusing on multi-level safety to foster climate resilience is the city developing a multitude of measures consisting of flood-prevention via dikes, spatial climate adaptation as well as crisis response and safety measures for times of an expected worst-case inundation of the city affecting its population of approximately 120,000 people <sup>24–29</sup>.

We assessed the narratives of authorities and citizens, using narrative interviews, historical interviews, document analysis, photo documentation, and site visits. Nine main narrative themes emerged. These shed light on the historical struggle of the city with water, that is shaping its fate until today, as well as its current exposure to water and weather, and the increasing climate-related threats for Dordrecht. Narratives of authorities and inhabitants were partly shared and partly diverging. Both organizations and citizens narrate richly about the city's long history with water and those narratives display the strong influence of history on perceptions of both present and future happenings <sup>15,30</sup>. Particularly prevalent in both authorities' and citizens' memories were the floods of 1421 (St. Elisabeth's Flood), which led to the formation of the "isle of Dordrecht", as well as the North Sea Flood of 1953 ('Watersnoodramp'), which caused many deaths across the Netherlands. Both groups narrated that a recurrence of them ought to be avoided <sup>31,32</sup>. This history is well known and well embedded in the city's cultural memory, and its influence even manifests itself very prominently in the narratives collected in the form of an 'island-identity' <sup>15,30,33</sup>. However, the narrated specificities of the ongoing struggle with water and weather diverge between authorities and citizens. Authorities focus on describing a state of vulnerability that ought to be dealt with through adapting the city towards extremes, in a strategic, managerial approach. Citizens, on the other hand, refer to hands-on experiences with a worsening situation around water, weather and climate change, and holistically state the need for broad and practical climate actions, including adaptation and mitigation. In that regard, narratives made obvious that there was a shared underlying motivator of climate change and its effects and a desire for collaboration, embedded in both authorities' and citizens' narratives <sup>15</sup>. Consequently, a shared vision emerged for a climate resilient and safe future, even though the ways in which authorities and citizens experience and prefer to respond to climate change diverged.

Several things can be learned from this study. Firstly, the narrative analysis elicited both shared and diverging understandings, perceptions and desires between actors. Narratives displaying similarities in how both organizations and citizens perceive present and future issues facilitate collaboration on tackling them and achieving the commonly wished for resilience. This 'common story' helps people identify their shared goals and interests. Narratives displaying differences indicate where people may not agree, or as in our case, where different groups can learn from and supplement each other. They can be used to explore differences in desired futures and reflect on trade-offs in specific measures. Secondly, elicited stories also showed how climate change manifests itself through various events in the live-realities of interviewed stakeholders, and what trade-offs and barriers climate action may face. Taking these onboard can make climate resilience more likely to be achieved. Thirdly, the results showed a surprising impact of historical events, embedded in local memory and identity, on how current and future climate change and climate action are interpreted and acted upon. Such memory and identity perspectives are rarely taken into account in current climate adaptation efforts, but may provide an important avenue for better local embedding of adaptation and mitigation. Consequently, narrative analysis is a useful methodology that

can aid in co-producing both knowledge and activities fostering resilience, implement them collaboratively, spot potential constraints and barriers, and aid in creating ownership for measures<sup>34–36</sup>.

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