

## Value Replacement Therapy: Imagining urban technologies otherwise

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5: Value  
Replacement Therapy:  
Imagining urban  
technologies otherwise

*Roy Bendor*

## Introduction

Value Replacement Therapy (or VRT in short) is a generative futuring exercise designed to draw attention to the malleable nature of technology. When applied in the context of urban design it responds to growing concerns about citizenship and agency in the smart city (Cardullo & Kitchin 2019; De Waal & Dignum 2017; Hill 2013; Shelton & Lodato 2019; Vanolo 2016). While researchers have yet to reach a consensus on how the smart city should be defined (Albino, Berardi & Dangelico 2015; Cugurullu 2019; Hollands 2008; Luque-Ayala & Marvin 2015), and have pointed out a veritable gap between the universalizing rhetoric and imagery of the Smart City and the reality of local, specific, “actually existing” smart cities (Burns, Fast & Levenda 2021; Odendaal 2021; Shelton, Zook & Wiig 2015), there does seem to be agreement that the smart city is inseparable from its responsive technological infrastructure – sensors, networks, servers and dashboards that allow the acquisition and management of large quantities of urban data (Batty 2018; Kitchin 2014; Townsend 2013). Without ‘intelligent’ technologies the smart city doesn’t appear smart at all, and so efforts to engage the public with the smart city often focus on its technological infrastructure.

The challenge, however, is double: urban technologies tend to remain *unobtrusive* (the public is often unaware of their existence),

and *opaque* (the public is often unknowledgeable about how they work and what they are meant to do). For this reason, public engagement in the smart city tends to take one of two forms: opening up the ‘black box’ of urban technologies, and/or considering the legitimacy of policies that determine which technologies can be used and how. Taking for example the issue of data acquisition and its implications on privacy, the first approach often translates into workshops aimed at increasing data literacy or hackathons that help the public generate alternative uses for urban data, while the second approach motivates events, apps or games meant to encourage critical public debate on transparency, privacy and their implications for everyday life in the city.

Whereas these approaches tend to assume the givenness of the city’s technological infrastructure, VRT makes tangible the malleability of urban infrastructure and its essential relation to values, worldviews, and different visions of urban futures. From the perspective afforded by VRT the city is seen as more than the sum of its material infrastructure and policies but as a *sociotechnical* imaginary (Sadowski & Bendor 2019), that is, a way to imagine and make sense of the city in relation to the kind of technologies used to mediate, measure and manage it.<sup>12</sup> By using VRT, public engagement can locate urban technologies in the cultural and intellectual milieu within which they are designed, allowing

the public to shed deterministic assumptions about technological design and develop a firmer grasp of how the city is envisioned and remade in and through its technological infrastructure. In this sense, VRT communicates the design and deployment of urban technologies not as a question of purely technological capacities but as one of values and worldviews. It thus manifests the ways in which values determine value (Skeggs 2014) when (human) values are translated into (infrastructural) value. This insight is made tangible by seeding the twin insights that technology is neither value-neutral nor immutable. If urban technology is malleable,

the smart city can be imagined and materialized in ways that reflect diverse public values.

## The process

VRT is conducted in small groups and proceeds in three steps: *analyzing* the values that underpin an existing technology; *reimagining* a new technology based on an alternative value; and *describing* a future world in which the new technology may be used. The exercise is currently facilitated on Miro, a virtual whiteboard that includes all the instructions and reference material participants may require (see Image 1), but it can also be facilitated by

**Step 1:**  
Using the values wheel identify the most dominant value reflected in your existing technology.

**Step 2:**  
Using the values wheel select the inverse value. If there's more than one possible option pick the one you like best.

**Step 3:**  
Re-imagine your technology based on the new value.

**Step 4:**  
Imagine you are a journalist sent to report about something that happened with the newly imagined technology. Write a headline + byline for the story.

**Step 5:**  
Reflect: what needs to change in the world (if anything) so that the new technology will be deployed widely?

**Step 6:**  
Fill out the survey:  
<https://forms.gle/HZunidnZqU3x8Cz8>

|                                                                                                                                                 |                                                                                                                                                                                                                                                        |               |        |           |          |          |                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------|-----------|----------|----------|------------------|
| <p style="text-align: center;"><b>Existing technology</b></p>  | <p style="text-align: center;"><b>Dominant value</b></p>                                                                                                                                                                                               |               |        |           |          |          |                  |
| <p style="text-align: center;"><b>New value</b></p>                                                                                             | <p style="text-align: center;"><b>New technology</b></p> <p>What's it called?</p> <p>What does it do?</p> <p>Who are its users?</p>                                                                                                                    |               |        |           |          |          |                  |
| <p style="text-align: center;"><b>Headline</b></p> <p style="text-align: center;"><b>Byline</b></p>                                             | <p style="text-align: center;"><b>What changed?</b></p> <table style="width: 100%;"> <tr> <td>Demographics?</td> <td>Media?</td> </tr> <tr> <td>Politics?</td> <td>Culture?</td> </tr> <tr> <td>Ecology?</td> <td>Deus ex machina?</td> </tr> </table> | Demographics? | Media? | Politics? | Culture? | Ecology? | Deus ex machina? |
| Demographics?                                                                                                                                   | Media?                                                                                                                                                                                                                                                 |               |        |           |          |          |                  |
| Politics?                                                                                                                                       | Culture?                                                                                                                                                                                                                                               |               |        |           |          |          |                  |
| Ecology?                                                                                                                                        | Deus ex machina?                                                                                                                                                                                                                                       |               |        |           |          |          |                  |

Image 1. VRT worksheet hosted on Miro. The worksheet includes instructions, sticky notes, and designated spaces to place the notes and to add external material (such as additional images)

using pen and paper.

## Value analysis

In the first step, participants select the urban technology they would like to work with. For the purpose of the exercise participants may consider both artefacts (bench, street light) and infrastructure (sidewalk, rain gutter). There are no rules for which technology to select, and in some cases technologies can be pre-selected in order to save time. However, the more complex and multifunctional the technology (more “concrete” in French philosopher Gilbert Simondon’s terms) the more difficult the value analysis may become because

different functionalities often reflect different values.

To begin the value analysis participants are asked to identify the most dominant value that is reflected in their technology of choice. For this, VRT draws on Shalom Schwartz’s (2006) model of motivational human values. Although Schwartz’s model refers to values held by individuals we found that they work equally as well for considering collective values. Participants are provided with a list of 9 basic values: self-direction (preserving autonomy), stimulation (pursuing excitement and novelty), hedonism (desiring personal pleasure and

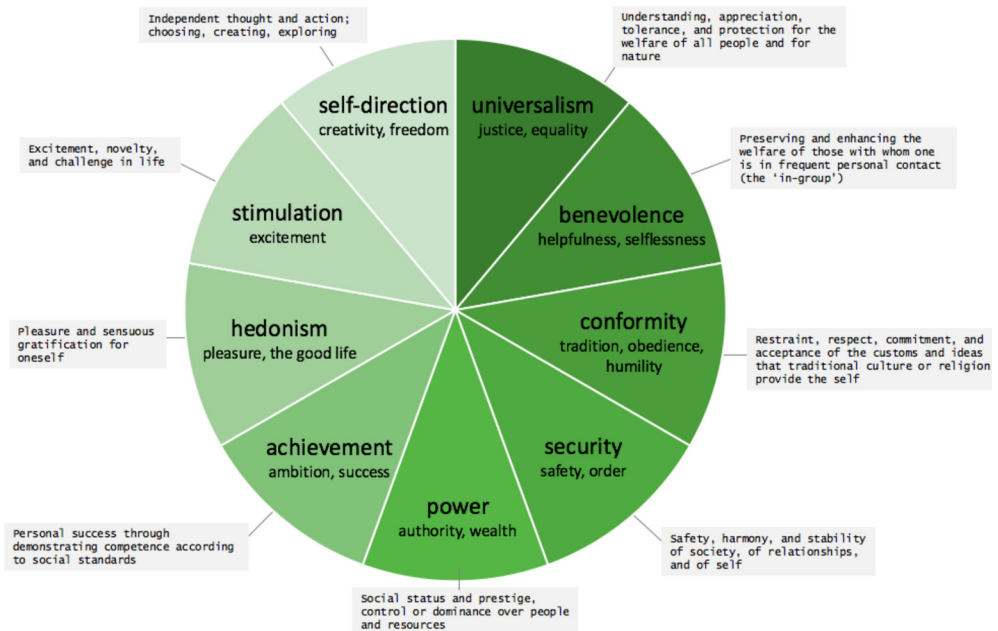


Image 2: Values wheel adapted from Schwartz (2006). Laying out the values on a wheel allows participants to quickly identify inverse values, while keeping to 9 values guarantees that every single value will have 2 possible inverse values

gratification), achievement (aiming for success measured by social standards), power (being able to influence or dominate others), security (craving safety and stability), conformity (restraint and compliance with social norms), benevolence (promoting the welfare of one's community), and universalism (promoting the welfare of everyone, including nature).<sup>13</sup> The process of selecting the dominant value is interpretive and fluid. There is no 'right' answer not only because every technology may embody more than one value but also because different possible uses reflect different values. In this sense, functional ambiguity is seen as a strength because it invites discussion and reflection (Gaver, Beaver & Benford 2003).

After participants agree on the dominant value that is reflected in their technology of choice, they are asked to use Schwartz's values wheel (see Image 2) to select the inverse or opposite value. Here, too, there is no single 'right' answer, an insight reinforced graphically by the uneven number of values (geometrically speaking no value is perfectly opposed to another). Discussion among participants about which alternative value to choose is integral to the process for it provides participants with the first glimpse of the malleability of technology.

## *Reimagining alternative technologies*

Once participants have selected the inverse (alternative) value, the generative part of the exercise begins. Participants are asked to reimagine their selected technology based on the alternative value and give it a name, describe what it does, and specify who will use it. The detail and granularity of this step depend on time limitations and the skills of participants. Some may be able to sketch the new technology in detailed ways (see Image 3), while others may find it easier to represent it with a collage or only with words. Ultimately the amount of detail or the quality of the description matter little for the exercise's objectives because VRT is not meant to foster technological innovation but to trigger ways to think about technology critically.

## *Worldbuilding*

In this step participants are invited to sketch and 'thicken' the description of a future world in which their alternative technology could be used. The future, in other words, is created from the technology outward. Participants are first asked to imagine that they are journalists sent to report about an event in which the new technology was involved. They are asked to write a short news story – or only a headline and a byline for their report – a very concise, economical way to bring together

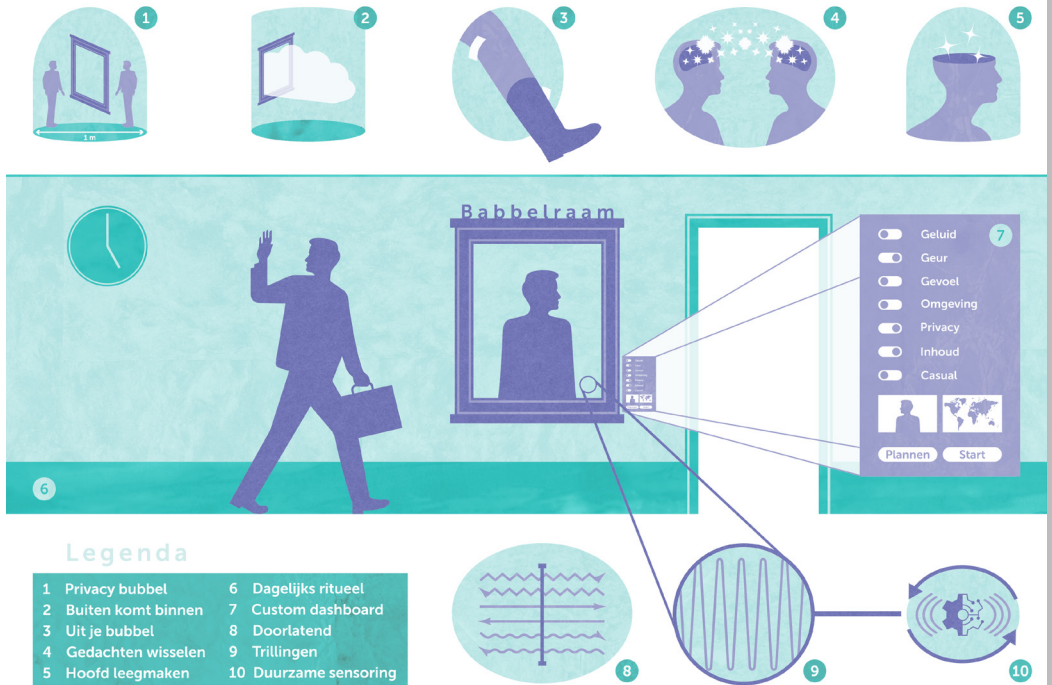


Image 3. “Babbelraam” is a proposal for an alternative window design that encourages innovation and conviviality among office workers. The design emerged during a workshop hosted by the Department of Sustainable Living Environment and Circular Economy at the Dutch Ministry of Infrastructure and Water Management, and the Urban Futures Studio at Utrecht University (May 2021). On the right-hand side is a short news story (in Dutch) that describes the technology in action. (Illustration by Frippery/courtesy of Open Concept; the workshop was facilitated by Roy Bendor, Holly Robbins and Lenneke Kuijer)

action and drama by focusing only on those details that are most important (foregrounding the “difference which makes a difference”, in Gregory Bateson’s (1972: 456) words). News stories can include protagonists and settings, motivations and consequences in attention-grabbing ways. Since their format is both simple and intuitive, they allow participants to bring the new technology to life rather quickly (see the right-hand

side in Image 3).

Whereas newspaper stories or headlines are meant to be evocative, “shortcuts” to a future world, participants are asked next to be more reflexive about the future world in which the new technology could take hold. Future worlds are not required to be entirely plausible or universally desirable (inasmuch as any future can be universally desirable, or, as



## Babbelraam, het nieuwe overgangsrutueel aan het einde van de werkdag?

Vandaag spraken we gebruikers die aan het einde van de werkdag gebruik maken van het *Babbelraam*. Hoe ervaren zij de nieuwe mogelijkheden op de werkvloer?

Gebruikers geven aan dat deze innovatie laat zien hoe multifunctioneel een raam kan zijn ten opzichte van vroeger, toen een raam een een-dimensionale functie had. Doordat het raam een 'product-as-a-service' is, konden er gedurende de afgelopen maanden steeds meer functies worden toegevoegd aan het raam, zonder dat het ministerie daar extra voor betaalde. Het circulaire en klimaatpositieve *Babbelraam* wordt op verschillende manieren ingezet om sociale innovatie te bevorderen. Het ene ministerie gebruikt het facultatief, bij de in- en uitgang van het gebouw. Het andere ministerie gebruikt het met een meer verlichtend karakter voor een praatje en contact aan het einde van de werkdag. Bij de ene gebruiker leidde dit tot een 'mindshift' in het dagelijkse werk, terwijl het voor de ander meer therapeutisch is.

author Zadie Smith (2016) writes, "Time travel is a discretionary art: a pleasure trip for some and a horror story for others"). They must, however, be relevant and convincing. This is to say that a convincing future world is one in which the new technology would fit comfortably (and in this sense function like a "diegetic prototype" (Kirby 2010)). To help participants flesh out their future world they are provided with 6 categories that represent areas in which future trends or "weak signals" may emerge: demographics, politics, ecology, media, culture, and 'deus ex machina' – the latter standing for the possibility that "wildcards"

or what Taleb (2007) calls "black swans" will change the future in unanticipated ways.

At the end of the exercise each group has created an urban technology based on an alternative human value, and a future world in which the new technology could be deployed. This allows participants to consider the entanglement of urban technologies and urban futures. Once groups complete the exercise they are ready to share their creations and learn from each other.

## Outcomes

At the time of writing 4 VRT workshops were conducted with nearly 100 participants in total, including policymakers, academics (both faculty and students), employees of private sector companies, and members of the public. At the conclusion of the exercise participants are asked to fill out a short anonymous survey, but since the survey is not mandatory only about a third of all participants completed it. Nonetheless, the answers of those who did complete the survey, along with observations made during VRT exercises, allow us to draw a few preliminary conclusions about how participants experience VRT and what they take away from it.

## *The technologies*

The majority of technologies imagined by participants prove thought-provoking, playful, and often optimistic. Public benches that match those sitting on them through Linked-In, street lights that double as a communicative device for residents, crosswalks that change their paths to create a sense of adventure, and urban gardens that become platforms for municipal voting are some examples of the kind of alternative technologies imagined by participants. In most sessions the new technologies are unrealistic. On the one hand, this is not very surprising since the exercise is speculative in nature and is not meant to produce market-ready products. On the other hand, the question of plausibility (i.e., will this new artefact or technology actually work and be used) is often developed in the worldbuilding stage, where it may be too late to reimagine the technology. Either way, and as described below, this is well within the exercise's aims to stretch participants' imagination by seeding possibility instead of remaining committed to plausibility.<sup>14</sup>

## *The experience*

The overwhelming majority of those who conducted VRT reported that the experience was both fun and insightful. A common refrain was that getting started was

difficult but once the imagination is 'loosened' things become easier. As one participant told us: "in the beginning, the 'creative thinking' in my group was a bit stiff, so I thought: should I have included an out-of-the-box thinking art academy student or artist to talk to? But in the end it turned out to be not necessary at all and a lot of wild and fun ideas were suggested". The prompts given during the reimagining stage proved useful in this regard. As another participant wrote, "You can quickly come to something creative as a group using the right little incentives such as having to come up with a new product name". That said, some participants complained that the exercise could get a bit confusing and that there was room for a preparatory assignment. In addition, when VRT was conducted in less than an hour participants reported that they felt a bit rushed, although they also said that the time allocated to sharing results at the end of the exercise helped them collect their thoughts into a coherent narrative, effectively overcoming the drawbacks of the fast-paced process.

## *The learnings*

When participants were asked about the most important things they learned when conducting VRT their answers clustered around 3 themes:

*Technology is value-based.* Given the prompts that set VRT in motion

it did not come as a surprise that participants ‘discovered’ the links between technology and values, or, as one participant wrote, “Different people attach different values to technology”. When looking at the whiteboards used by groups it is apparent that participants considered more than one value before settling on the most appropriate one, making the multivalued nature of technology visible. Furthermore, the discovery that values are “attached” to technologies led in some cases to very interesting discussions about the interpretive nature of technological functionality.<sup>15</sup>

*Urban infrastructure is malleable.* When VRT was conducted in the context of urban design participants reported discovering “new ways of thinking about mundane technologies”. This was evident in the creative uses participants imagined for infrastructure such as sidewalks, crosswalks, and rain gutters – all form of infrastructure that may appear at first both ‘natural’ and unchangeable. New ways of thinking (as the above participant states) led to new design proposals, thus reflecting the fact that, as another participant wrote, “there is so much potential in a single object”. Once the notion that urban infrastructure could be reimaged was coupled to the observation that technologies are value-laden, participants noted the possibility of imagining the city in ways that respond to citizens. As a different participant added: “Prioritizing

people [...] and what they may be needing, [...] leads to very different (and better) technologies than the ones we most often see deployed”. Of course, the question of whose needs should be met is itself valutive and contentuous but the exercise helps to surface it as an issue that preceeds and not merely follows the design of urban technology.

*Urban futures are plural.* Working outwards, so to speak, from technology to world proved useful in helping participants discover the power of their imagination. A typical reflection of this was given by a participant who noted that “just a small change can have big consequences on the long term”, and another participant’s observation that “In little time you can come up with real interesting ideas for another world (the future)”. Another interesting outcome of the “stretching” of participants’ imagination was to go beyond simple utopian/dystopian dichotomies to seeing the future as a space of possibility.

## Conclusion

Much more research needs to be done before the potential of VRT as an urban futuring tool can be fully assessed but early results are promising. The movement outward from technology to world, implicit in the exercise’s three stages, takes participants on a guided journey from relatively simple tasks to much more complex ones. In the process,

participants testify to discovering that small technical changes may yield big future outcomes. The focus given to technology, however, seems to influence the kind of futures imagined by participants, who appear to gravitate toward techno-solutions. Becoming aware of the important role values play in imagining and shaping urban infrastructure does not prevent participants from seeking designed, object-centred solutions. Although this is clearly a result of VRT's framing (the exercise is structured around technology), it indicates that VRT may be better utilized as part of a larger effort to move beyond techno-fixes than as a standalone exercise.

At the same time, the mere observation that the smart city is not given nor immutable seeds potential for new forms of agency. While it is true that the smart city is complex and its inner workings are often obscure and difficult to grasp, pointing to the malleability of the smart city's technological infrastructure signals to participants that alternative urban futures are indeed possible. Urban dwellers do not necessarily have to buy into the technocratic, efficiency-driven logic of the smart city – an urban imaginary that often presents itself as the only realistic option. If we can imagine the city otherwise we may just be able to change it.



*Image 4. The author and Lenneke Kuijer facilitating a VRT session during the Urban Futures Studio summer school, Futuring for Sustainability (July, 2020); via [digitalsustainability.com](https://digitalsustainability.com)*

*(Photo by Hilde Segond von Banchet)*

