A care-infused market tale

on (not) maintaining relationships of trust in energy retrofit products

de Wilde, M.

DOI
10.1080/17530350.2020.1741016

Publication date
2020

Document Version
Final published version

Published in
Journal of Cultural Economy

License
CC BY-NC-ND

Citation for published version (APA):
https://doi.org/10.1080/17530350.2020.1741016

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: https://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

*UvA-DARE is a service provided by the library of the University of Amsterdam (https://dare.uva.nl)*
A care-infused market tale: on (not) maintaining relationships of trust in energy retrofit products

Mandy de Wilde

Department of Anthropology, University of Amsterdam, Amsterdam, The Netherlands

ABSTRACT
Issues of maintenance offer exceptional opportunities for advancing our understanding of how market-driven innovation can meet societal objectives for energy transitions. In this article, I present a case study of ongoing attempts by two spin-outs and one start-up to stabilise innovative socio-technical agencements – ‘customer journeys’ – designed to catalyse economic exchange of certain singular goods – energy retrofit products – in the Netherlands. This market-driven innovation relies on sustaining carefully crafted relationships of trust among supply-chain actants and homeowners. I mobilise the analytical lens of ‘care’ to show how the multiplicity of connections that form through socio-technical agencements – and function as a market – are tentative, contested, and unpredictable. Trust relationships are in a constant process of becoming through contestation and convergence among supply-chain actants. In doing so, I expose the precarious and arduous work involved in maintaining a market for singular public goods. This implies a knowledge politics as well: in a call to sensitise us, market scholars, to processes of maintenance integral to market-driven innovation for energy transitions I propose to advance Callon’s call to civilise markets by sharing troubled, though encouraging, care-infused market tales in an effort to counteract the storiﬁcation of energy transitions as innovation fairy tales.

ARTICLE HISTORY
Received 18 April 2019
Accepted 16 February 2020

KEYWORDS
Market maintenance; care; market devices; trust; energy retrofit

Introduction
Setting our sights higher will encourage innovation and bring us closer to a low-energy, sustainable, circular economy. – Prime Minister of the Netherlands, 2018

Private homeowners experience the market for energy saving and decentralised energy regeneration [hereafter: energy retrofit products] as unclear and complex. In the coming years, trade associations and municipalities will handle this issue by offering an integrated solution for servicing homeowners… Homeowners have to be able to rely upon accessible advice and guaranteed improvement in the energy performance of their homes. Market actors will enable this by ensuring good chain cooperation, demand-driven supply, quality assurance, and after-care. Municipalities and provinces will play a facilitating role. – Sociaal-Economische Raad, Energy Agreement for Sustainable Growth 2013, p. 43, italics in original, translation by author

In the Netherlands, as in many Western European countries, energy transitions are framed as an opportunity for market-driven innovation (Grandclément and Nadai 2018) with a special focus on ‘ﬁtting people, and their varied relations’ (McFall et al. 2017, p. 4) into new, sustainable products
so that desire for these products endures. Notably, market-driven innovation with regard to energy retrofit products is facilitated by energy policies that seek to decrease residential energy consumption, which contributes 10% to annual CO2 emissions. With almost 70% of the 3.4 million owner-occupied dwellings in the Netherlands rated with an energy label C or lower, privately owned housing stock is in dire need of improvement (Bouwend Nederland 2016). Persuading private homeowners, in their role as consumers, to refurbish their homes by investing in energy retrofit products – insulating floors, roofs, or walls, or installing double-glazed windows or photovoltaic panels and heat pumps – remains a challenge. Annually, only 3% of homeowners adopt two or more energy retrofits (Bouwend Nederland 2016). Studies show that this low percentage is a result of homeowner hesitancy regarding the necessity of retrofitting their home, ignorance of the quality of insulation equipment and renewable energy technologies, and questions surrounding the reliability and accuracy of professional expertise (Owen et al. 2014, Wilson et al. 2015). In new economic sociological terms, energy retrofit products could be qualified as suffering from a lack of market attachment (McFall et al. 2017).

From a consumer’s perspective, energy retrofit products are perceived as ‘singular goods’ (Karpik 2010) characterised by three conditions. First, they are multidimensional. For instance, a choice of insulation entails the following: considering multiple aspects, such as which surface area to insulate (floor, wall, and/or roof), a variety of available insulation materials (EPS pearls, PUR foam, or Tonzon foil), and the type of contractor to commission (specialised in insulation procedures or not). Second, singular goods abound in quality uncertainty. Solar power systems, for example, come in an array of options with individual components (photovoltaic panels, inverters, rack systems) in various brands (Sunpower, LG, Qcells), with fluctuating prices, and manufacturing countries (Germany and/or China) notorious for extreme variance in product quality. Third, singular goods are incommensurable. Comparing floor insulation to wall insulation, or different types of floor insulation, remains difficult due to disparate prices, materials, and impacts. Studies show that attempts at making energy retrofit products measurable and calculable – by means of energy performance certificates, for example – are unsuccessful, because ‘energy retrofits are not a question of giving homeowners the “right” information and motivating them, as technological and economic models assume’ (Bartiaux et al. 2014, p. 536, Gram-Hanssen 2014). All this makes it cumbersome for homeowners to navigate, evaluate, and ‘judge’ their retrofit options. Put differently:

When products are singularities, when the actors give more weight to qualities than to price … choice takes the form of judgment. (Karpik 2010, p. 39, italics in original)

Or, as a homeowner I came across as part of my ethnographic fieldwork, who considered floor insulation and had compared a contractor’s installation advice against her neighbour’s experience, expressed:

What I found difficult is that sometimes you’re busy or you just don’t have enough energy to go and do all the research yourself or compare all the information you get. Basically, you just have to rely on others. (see also De Wilde 2019)

Karpik (2010, p. 44) argues that reliance on others ‘to dissipate the opacity of the market’ might come by means of ‘judgment devices’:

[These] act as guideposts for individual and collective action … [and are part] of the diversified range of practices that combine, among others, teaching, persuasion, and seduction. (Karpik 2010, pp. 44–45)

Thus, for a functioning market for singular goods to come about, consumers must employ judgment devices in their search for the right product (see Kharchenkova and Velthuis 2017).

In this article, I unpack a specific type of market-driven innovation in existing markets for energy retrofit products, namely ‘customer journeys’ and operationalise these as socio-technical agencements that contain a set of judgment devices, yet also operate more broadly as market devices (cf. Muniesa et al. 2007). Socio-technical agencements are materially heterogeneous formations across
which the work of bringing (variants of) markets into being is distributed. Customer journeys imply the planning and organising of people, expertise, infrastructure, communication, and other material components of a service with the aim of ‘creating emotional connections’ between consumers and products (Zomerdijk and Voss 2010, p. 68). A customer journey might be a mix of a specific review system, quality brand, and warranty label, but may also include independent professional expertise or community support. In the Dutch energy transition customer journeys are developed by start-up companies and spin-outs which are initiated, facilitated, and regulated by municipalities, energy network companies, and utilities. Dutch politicians developing energy policies have experimented with debuting customer journeys in various localities as an ‘integrated solution for servicing homeowners’ (Sociaal-Economische Raad 2013). These customer journeys target relationships of trust as emotional connections between homeowners and suppliers of energy retrofit products. As an interim report commissioned by the Association of Netherlands Municipalities on the functioning of customer journeys piloted in various localities emphasises:

Our documentation shows that, with respect to trust in the customer journey, more ground can be gained. [For homeowners] to accept information, it needs to come from a trustworthy source … Who is considered trustworthy differs amongst homeowners. (Vereniging van Nederlandse Gemeenten 2015, p. 6)

Economic sociologists have long argued that ‘trust is a salient feature [and a] norm that is strongly present in relational exchanges’ (Fligstein and Dauter 2007, Varman and Costa 2008, p. 148). Trust, therefore, is an important feature of economic exchange. Karpik (2010), deepening this claim, adds that as singular goods feature competition over quality, qualifications, and value more than competition over price, this creates a need for an active consideration of information from trustworthy sources configured in judgment devices.

Despite trust being lauded as essential to economic exchange, the question of how relationships of trust emerge and are sustained is a strikingly understudied topic within both old and new economic sociology. This is rather surprising as, in their influential research programme on the study of markets, Çalışkan and Callon (2009, 2010) argue that trust should be studied as part of the emergence and the mundane operations of markets:

Their focus on maintenance as an essential market issue worthy of study ensues from an ontological shift regarding what (or where) markets are. Markets are no longer located in a realm known as the social (cf. Latour 2007) or the economic (cf. Callon 1998a). Rather, markets are operationalised as ‘socio-technical agencements’ that (1) ‘organize the conception, production and circulation of goods’ and attached ‘property rights’ via ‘monetary compensation,’ (2) that deploy material, ‘heterogeneous constituents’ and (3) ‘delimit and construct a space of confrontation and power struggles’ (Çalişkan and Callon 2010, p. 3). Their focus on material performativity sets Çalişkan and Callon’s agenda aside from social constructionist approaches to markets, and widens the analytic scope of attention to the mundane while deepening an understanding of essential issues at stake in marketisation, such as the pacifying of goods, price-setting, and most notably, market maintenance.

Precisely because materiality is deemed key to engendering trust relationships – those elusive emotional connections targeted in customer journeys – Çalışkan and Callon object to studies of trust relationships as merely a social phenomenon. They claim that this only leads to the use of trust ‘as an undifferentiated explanation of coordination that black-boxes maintenance operations and socio-technical devices, instead of demanding that these be studied’ (Çalişkan and Callon 2010, p. 21). Studying market maintenance thus entails empirically unpacking socio-technical agencements, configured in market devices (cf. Muniesa et al. 2007), which catalyse the formation (or not) of trust relationships. While their research agenda has led to a proliferation of insightful studies revealing the intricacies of market design – for animal-free food (Mouat and Prince 2018), wind power (Pallesen 2016), and heat network infrastructures (Webb and Hawkey 2017), all by deploying
a material semiotic lens – the intricacies of market maintenance remain empirically unaddressed (with the notable exceptions of Çalışkan 2010, Kirkegaard 2019, Kirkegaard and Çalışkan 2019). Moreover, examining and understanding the role of trust relationships in market maintenance, still a crucial motivator of this research programme, has largely dissolved into the material background.

In an attempt to advance this research programme, in this article, I make use of insights drawn from recent feminist-inspired studies in science and technology studies (STS) which have emphasised the often-overlooked, yet continuous labour of repair and maintenance necessary to enact and sustain a socio-technical order (De Laet and Mol 2000, Denis et al. 2014, Denis and Pontille 2015, Sormani et al. 2019). In line with Callon (1998a, 1998b) and Akrich et al. (2002), these studies depart from fragility – ‘overflows’ – as a mode of existence of matter that must be considered if socio-technical ordering processes – ‘framing’ – are to be investigated in their full complexity. Put differently, socio-technical agencements are contingent and require constant maintenance work. Reformulated as ‘care’ (Mol 2008, Mol et al. 2010), the ongoing work of adjusting socio-technical agencements speaks to the shared and local work of arranging, modulating, and mending relationships to act in the constantly shifting common interest.

I use this analytical lens of care to show how market maintenance takes unexpected twists through the notion of trust. On the basis of organisational ethnographic fieldwork I present a case study of ongoing attempts by two Dutch spin-outs and one start-up to obtain the most cost-efficient results for their customer journey designs, such that these facilitate the economic exchange of energy retrofit products. Each customer journey design deploys a different mediator of trust. Analysing these market devices, in which trust is central (Karpik 2010), offers a unique opportunity to re-establish material relationships between trust and markets. I do so by showing how the multiplicity of connections that form through socio-technical agencements – and function as a market – are tentative, contested, and unpredictable and in a constant process of becoming. Socio-technical agencements are continuously tailored towards organising relationships of trust between homeowners and supply-chain actants, so that the former purchase energy retrofit products from the latter. As such, I expose the precarious and arduous work involved in maintaining a market for singular goods. Finally, I propose advancing Çalışkan and Callon’s (2010) research agenda to include the study of care and the telling of care-infused market tales in a call to sensitisise us, market scholars, to processes of maintenance that are integral to market-driven innovation as part of energy transitions.

**Under maintenance: energy transitions, economic value, and market devices**

Realising energy transitions by means of market-driven innovation is a popular trend in Europe and beyond. As Grandclément and Nadaï (2018, p. 102) argue:

> In official policy circles, conducting the energy transition through markets is associated to numerous benefits. It is held that free markets and fair competition will provide economic actors with a ‘level playing field,’ opening up new possibilities for individuals to act and for companies, products and services to develop.

Energy-related products, however, are notoriously difficult to marketise. Richter (2013) reveals how incumbent utilities in the German electric power sector struggle to create and commercialise value from renewable energy technologies for their customers. Plesesen (2016) shows how establishing the worth of wind power becomes a highly politicised issue in France, while Webb and Hawkey (2017) demonstrate how creating markets for low carbon heat infrastructure in British cities fails because relevant actors tend to focus solely on monetary costs and benefits. These studies point to ‘the limits of plasticity in energy market experiments’ (Webb and Hawkey 2017, p. 18) due to the singularity of energy-related products, which makes valuing them extremely difficult.

Concerning efforts to establish economic exchange and, more specifically, efforts by homeowners and supply-chain actants to establish the value of various energy retrofit products, Callon’s (1998b)
work on ‘framing’ and ‘overflowing’ is especially insightful. In economic theory, framing – understood as the process of establishing boundaries within which interactions can occur more or less independently of their context – is considered the norm. Overflows are accidental leaks to be contained. Callon (1998b, p. 252) proposes a reverse economic ontology, namely that ‘overflows are the rule and framing is a fragile, artificial result based upon substantial investments.’ The key to the process of framing is to make the interests of various actants calculable – valuable – by expressing, negotiating, and hierarchising these interests (see also Callon and Muniesa 2005). When done successfully, this allows for economic exchange; however, overflows always (re)emerge and work against any desired stabilisation. Therefore, the work of containment is continuous and this insight is especially relevant to understanding the regular functioning of markets for energy-related products.

This STS-inspired pragmatic turn in economic sociology has offered market scholars conceptual tools to pay attention to markets as performative effects of distributed action, conducted via assorted socio-technical agencements (Çalişkan and Callon 2009, 2010). More specifically, Muniesa et al. (2007) introduce the notion of ‘market devices’ as ‘a simple way of referring to the material assemblages that intervene in the construction of markets.’ These devices have an ‘almost unnoticed capacity to summon economic objects and persons into being’ (McFall 2009, p. 268). An elaborate set of studies emerged from this pragmatic turn and operationalised trading protocols (Muniesa et al. 2007), hedge funds (Hardie and MacKenzie 2007), and pricing (Çalişkan 2007, MacKenzie 2009) as market devices in order to unpack the construction of economic value and, simultaneously, the making of markets. In an attempt to emphasise the potential of trust to explain possible coordination between actors when uncertainty about the qualities of products is high, Karpik (2010) infuses these studies into processes of valuation and economic exchange using judgment devices as a tool. Recently, Kirkegaard (2019) advanced these STS-inspired studies of market functioning for understanding energy transitions through a study of Chinese wind power marketisation. She reveals the ongoing negotiations among actants varying from wind turbine control systems, intellectual property rights, and software algorithms, to the Chinese state and, perhaps unexpectedly, coal lobbyists in qualifying wind power as ‘sustainable’ (see also Kirkegaard and Çalişkan 2019). Carefully tracing these negotiations leads Kirkegaard and Çalişkan (2019, p. 155) to argue that market framing for energy-related products comes about ‘through embracing overflowing.’

My research draws upon Çalişkan and Callon’s programme and the body of literature outlined above to conceptualise the customer journey as a socio-technical agencement through which a wide variety of actants participate in calculating the qualities – sustainability, comfort, cost-efficiency – of singular goods intended for economic exchange. They do so by creating relationships of trust between homeowners and supply-chain actants. The following empirical sections examine this calculative force and reveal the difficulties of sustaining both it, as well as the interests of the supply-chain actants involved. This is due to the incumbent networks, contractors and organisations which constantly escape the interactional, innovative frames of the customer journey designed by newly-established spin-outs and start-ups.

**Three cases of market maintenance for energy retrofit products**

This article is the result of an organisational ethnography of a governmental attempt to experiment with ‘a market approach to large-scale energy saving in the housing sector’ (Rijkdienst voor Ondernemend Nederland 2014, p. 4). The frequent use of the terms ‘market approach’ and ‘market’ in Dutch policy documentation with regard to energy transitions helped me trace customer journeys as key market devices in which a particular type of relationship – trust – was imperative. I, therefore, considered these customer journeys to have the ‘criteria of sameness’ (Frankel 2018, p. 472), but ultimately my interest has been in how variants of a market for energy retrofit products emerge and (do not) maintain framing and calculative practices.

Over the course of 24 months (January 2016 – January 2018), I followed the marketisation of customer journeys designed by two spin-outs and one start-up. Each customer journey design took the
form of a decision-making process including seven ‘touch points’ – sensitising homeowners, providing customised advice, offering quotes, installing retrofit products, evaluating the installation, and providing aftercare. During this process homeowners engaged with service representatives and/or other supply-chain actants (e.g. municipalities, installation firms, insulation companies). Case study selection was based on an evaluation report of the Blok voor Blok (‘Housing Block to Housing Block’) programme (Rijksdienst voor Ondernemend Nederland 2014). The programme was a showcase of the Dutch Energy Agreement for Sustainable Growth (2013) and included 14 local pilot projects, in which municipalities, utilities, and energy network companies teamed up to harness market-driven innovations for energy saving in the residential sector. The programme ended in 2014, but the start-ups and spin-outs that qualified in Dutch policy discourse as ‘innovative’ (Rijksdienst voor Ondernemend Nederland 2014) continued with the aim of developing business cases for the economic exchange of energy retrofit products using customer journeys.

I compared customer journey designs in terms of their use of data and customer management systems, their marketing strategies, their collaborations with relevant supply-chain stakeholders, their revenue models, and their ambitions. The start-up and spin-outs were stakeholders in the research project. During two in-depth sessions with senior service representatives, detailed information on possibilities and barriers in developing their services was shared. Furthermore, during an in-depth closing session with these service representatives and other supply-chain stakeholders (the largest Dutch insulation company, local installation firms, high officials from the Ministry of Economic Affairs and environmental NGOs), research findings were discussed and verified. More specifically, fieldwork included: three in-depth workshops with service representatives (mentioned above); 13 interviews with service representatives involved in the design and delivery of customer journeys; 46 participatory observations of activities that were part of customer journeys debuted in various Netherlands locations (e.g. informational neighbourhood gatherings, inspections and audits undertaken by energy experts, staff meetings); and a document study of various (confidential) internal reports, product development presentations, marketing materials, and websites of the start-up and spin-outs.

In the following sections, I unpack the design and maintenance of three customer journeys, each developed by a different start-up or spin-out. Each case presents a particular mode of (not) marketising customer journeys and encountering difficulties with (1) maintaining authenticity, (2) maintaining autonomy, and (3) maintaining accuracy, while aligning the interests, skills, and operational methods of supply-chain actants, such as local volunteer groups, installation firms, insulation companies, trade associations, and municipalities.

**Customer journey 1: maintaining authenticity**

Customer journey 1 was developed by a spin-out initiated by one of the largest utilities in the Netherlands. The motto of its business case proposal, ‘sustainable close’ (Enexis 2012), was effected by positioning environmental awareness, community responsibility, and collective empowerment as key to persuading homeowners to purchase energy retrofit products. To that end, the spin-out developed a template for grassroots organising, subsequently debuting it in more than 300 neighbourhoods (the grid area serviced by the utility) over a pilot period of seven years. The format included a ‘starter kit’ that was distributed among targeted neighbourhoods. The starter kit contained a digital neighbourhood platform and marketing collateral (leaflets, energy saving calendars, posters), which local voluntary groups – branded as ‘neighbourhood teams’ – could distribute in their neighbourhoods (see Figure 1). Furthermore, a ‘neighbourhood guide’ stipulated the formation of a ‘tight-knit and versatile’ neighbourhood team ‘with the right mix of qualities’:

> We have learned from other neighbourhoods that chance of success improves if a neighbourhood team represents, at least, three very specific qualities: technical expertise …, entrepreneurship, [and] connecting skills. (Enexis 2016, pp. 9–10)
The neighbourhood guide provided instructions for planning a neighbourhood campaign, which should ‘take into account the time to process the promotional material offered’ by the spin-out. The guide also provided detailed tips and templates for engaging with neighbours, for instance, via door-to-door canvassing, use of social media, or organising informational gatherings.

There were about 15 professional ‘neighbourhood supervisors’ distributed throughout the Netherlands, each with approximately a dozen neighbourhoods in her or his work portfolio. They were tasked to coordinate with existing voluntary groups or initiate new groups, assist them in setting up a collective energy retrofit campaign and collective bid, monitor the results, and ensure that tools from the starter kit and neighbourhood guide were used. This grassroots way of organising was deemed cost-efficient: customised advice to homeowners, a quest for suitable quotes, and an audit of installed retrofit products could be outsourced to local volunteers and local contractors, commissioned by these volunteers. Simultaneously, it ensured ongoing environmental awareness among neighbours due to the powerful format of interpersonal communication. In the words of a spin-out representative:

We see that neighbourhood teams have a magnetic effect, also on people we ourselves initially fail to reach.

Figure 1. Template for a neighbourhood website as part of the design of customer journey 1. The title text translates from Dutch to English as follows. ‘Your personal Buurkracht-page.’ The text on the left of the flyer explains what the webpage consists of, namely a ‘Neighbourhood map’ section and a ‘Latest news’ section. The text on the right indicates a ‘Talk to your neighbours’ section.
Throughout the pilot period, the spin-out adjusted the design of the tools it deployed to engineer relationship-building from a distance. As the number of neighbourhoods continued to grow and the number of office staff remained small, working effectively at a distance became imperative for realising a cost-effective value proposition for homeowners. However, it also became increasingly more difficult to align the interests and operations of voluntary groups and office staff. A neighbourhood supervisor illustrated this by pointing out the growing difficulties in organising a well-structured, transparent neighbourhood campaign:

The number of neighbourhoods is constantly growing, but our office is not. This increases pressure on our work. We cannot fix their [local volunteers’] sloppy and vague planning anymore by doing rush jobs for them. It requires a change: neighbourhood teams now have to attentively plan and communicate their ideas and activities to us.

Put differently, the standard grassroots mould tightened, while local volunteers struggled to develop interpersonal methods to enthuse neighbours, offer advice, and select contractors.

At the heart of the process lay concerns about authenticity among the volunteers. This became evident during the annual ‘neighbourhood day’ organised by the spin-out to laud volunteers for their efforts and offer workshops by experts in the fields of social sciences, business administration, and communication research in order ‘to increase your potential.’ Topics included: ‘How to identify social success factors in your neighbourhood,’ ‘Taking corporate action in the energy retrofit market,’ and ‘From idea to concrete success!’ At the ‘How to convince your neighbours?’ workshop, a marketing specialist, introduced as a ‘marketing guru,’ taught volunteers the benefits of the ‘AIDA model.’ The AIDA model is a hierarchical model used in marketing to explain how an advertisement or message engages and involves consumers in brand choice. In essence, the AIDA model proposes that advertising messages need to accomplish a number of set tasks in order to move the consumer through a series of cognitive and affective stages culminating in a purchase (Vakratsas and Ambler 1999) (see Figure 2). Through role playing, the AIDA model was demonstrated to volunteers so that they would become ‘more effective’ in their outreach to neighbours. However, rather quickly a discussion ensued among the volunteers about who the messenger of their message actually was. A volunteer interrupted the marketing guru with the question, ‘I often ask myself: do I target people personally, or rather as a representative of [the spin-out] or [the utility]?.’ His peers nodded in agreement and another volunteer summed up the issue at stake by questioning the use of marketing tools.

Figure 2. AIDA-model. source: http://wikipedia.org/wiki/AIDA_(marketing).
‘How do we remain authentic while their [spin-out] logo is on everything?’ Although further integration of marketing tools into the customer journey design could make the service economically viable, this was not deemed congruent with the intricacies of interpersonal communication valued by local volunteers. The lack of ownership and authenticity some local volunteers experienced affected the relationships of trust built among neighbours, which were essential to sustaining the customer journey.

Maintaining relationships of trust rested on these neighbourhood teams. This was underscored at a spin-out meeting a couple of months later, during which neighbourhood supervisors shared their ongoing concerns over neighbourhood teams that complained local activities were being ‘overshadowed’ by the many do’s and don’ts the spin-out enforced. One neighbourhood supervisor counter-argued, ‘We need to keep our eyes on the human scale.’ However, keeping an eye on the human scale implied strenuous, cost-intensive maintenance work attuned to the local intricacies of neighbourly interactions, which, with the utility’s funding scheduled to end in the near future, was financially not an option. The issue remained unresolved when I left the fieldwork site.

**Customer journey 2: maintaining autonomy**

Customer journey 2 was initiated by a spin-out funded by the largest energy network company in the Netherlands. It piloted in over 40 neighbourhoods and villages over a course of five years. Offering ‘independent expertise at a fair price’ (Hoom 2015) was key to its business case proposal. To that end, the spin-out selected and assembled various types of professional expertise. ‘Energy saving advice’ and ‘a technical inspection’ of the dwelling were offered to homeowners and undertaken by a team of in-house-trained ‘energy advisers’ and ‘technical experts.’ Furthermore, an elaborate tendering procedure was established in every targeted locality to preselect three local installation firms or insulation companies willing to adhere to the quality requirements, operating methods, and products favoured by the spin-out. The spin-out requested that these contractors prepared quotes on the basis of information in-house experts generated on the dwelling. The quotes were then offered to homeowners targeted by the spin-out at informational gatherings. This service created the ‘illusion’ of choice within a safe environment, as an in-house expert explained, and was considered a unique value proposition:

I think our strength lies in the fact that we offer [quotes by] three contractors who … compete with each other. We imply openness in the market, but that freedom of choice is also an illusion of course.

When a homeowner chose a particular quote, the contractor who generated it would take over the prospect, and install the chosen energy retrofit product(s). However, a final ‘neutral audit’ of the installed product would be performed by an in-house technical expert. Offering these various types of expertise was highly cost-intensive, but, as the director of the spin-out explained, nevertheless important to organise and offer, since:

Two obstacles prevent homeowners from retrofitting their home for energy efficiency. First of all, energy saving is a too complicated issue for them. Second, a lack of trust in the quality of energy retrofit products and their implementation is high, due to the bad reputation of the insulation and installation sector.

In this customer journey, professional expertise was strongly integrated through directly employing and training in-house energy experts, vetting and prescribing the skills of independent craftsmen and installers, and overseeing their workmanship. However, a reluctance among these contractors to trust the technical capacity of in-house experts and a refusal or inability among them to conform to quality requirements set by the spin-out gradually became an issue, as the spin-out tried to specify and sustain these requirements in attempts to safeguard the quality of the service it offered to homeowners.

A key concern revolved around professional autonomy: in-house trained energy experts worked according to technical procedures and checklists developed in house (see Figure 3), but these procedures were not made transparent to the preselected, vetted contractors. Moreover, the craftsmen
and installers from the vetted companies refused to conform their technical and non-technical capacities to those set up by the spin-out. A senior energy expert responsible for tendering procurements at the spin-out clarified that some contractors did not have the expertise to work with all types of energy retrofit equipment or renewable energy technologies because they are small, local firms.

Others simply refused to work with pre-selected products. Among these are large, national companies with unique company-specific insulation equipment or contractors who, on the basis of their professional expertise, deemed the quality of some products questionable:

It turns out that organising prospects for local insulation contractors doesn’t really work out. And don’t even get me started about the installation firms . . .

The issue generated ongoing discussions about the quality of products among in-house energy advisers and energy experts as well, demonstrating how difficult it is to align professional expertise and work methods. As an in-house energy expert explained:

We have a lot of internal discussion about which installation and insulation products to work with. [Our senior energy expert] is a fan of Tonzon foil [insulation product] because it is environmentally friendly and so aligns with our sustainability values and it has high heat resistance. But theory is different from practice . . .
house is different and requires a different product …. The latest development is that we [in-house energy experts] are asked not to give any advice on products during our inspections. So, for instance, regarding floor insulation I am only supposed to say to a homeowner, ‘Well, this is the number of square meters and you might receive three different quotes with three different products. We let the providers decide which product they want to offer.’ I objected. I mean, I will not embarrass myself and I refuse to do that. Then I will quit my job. I would look like an idiot. What should homeowners do with that? What’s the idea behind it? Just because they [spin-out] cannot find three contractors who are willing to work with Tonzon foil or another insulation product? The internal criticism is that we should have checked, before we started this whole endeavor, what relevant industry parties, especially nationwide companies, offer in terms of products. They hardly work with Tonzon. Why not? Because it is a shitty product, not so much in terms of heat resistance value, but in terms of installing it correctly, working with it as an installer or a craftsman.

Ever increasing difficulties in aligning professional expertise offset relationships of trust between homeowners and in-house energy experts, which had been so carefully crafted by the latter. Homeowners started to complain about inadequate quotes, about too lengthy scheduling of installation, and about independent contractors, who, on the day of installation, refused to install photovoltaic panels because in-house experts had provided incomplete information. An in-house energy adviser pointed out that focus on the customer became lost in the process:

We initiate a long-term relationship with those companies and we want their professionals to represent us and our customer values. But it is clear that the [supply] chain still has a long way to go in the area of customer focus.

For over a year, the spin-out tried to adapt to the interests of local contractors and installation firms, by broadening the scope of pre-selected products and preventing their in-house experts from giving advice regarding insulation and installation products. These changes affected the spin-out’s unique ability to guarantee independent expertise to homeowners. Eventually, this affected the prospects taken over by installation firms or insulation companies, as homeowners started to refuse installation after the process has begun – and thus did not actually make a purchase. As a result, the spin-out lost the service fee charged to homeowners at the point of sales. This fee, essential to sustaining the unique value proposition that enabled continuous economic exchange, was indispensable because financial support from the energy network company was scheduled to terminate. After five years of continual modification of its customer journey design, the spin-out was eventually dissolved by the energy network company.

**Customer journey 3: maintaining accuracy**

Customer journey 3 was implemented in 45 cities and villages over four regions in the Netherlands by a start-up whose vital sources of income were local and provincial governmental procurements. Essential to its business proposition was the design of a service that would ‘run as automatically as possible’ so as to offer ‘local and cost-effective solutions,’ ‘triggering homeowners’ to purchase energy retrofit products (confidential report). To that end, a customer-friendly digital information platform with e-tools, lists of local certified companies and firms, and an automatic-reply system was developed (see Figure 4).

E-tools such as a Sun Atlas (developed by an environmental knowledge institute, which provided an accurate indication of the suitability of roof surfaces for solar energy generation) were integrated into the design of the digital platform. Moreover, the start-up developed its own e-tools, such as energy performance checks of dwellings, by using and linking publicly available digital data sets (Land Registry Office data, municipal personal records databases, statistical data on neighbourhood composition and dwellings). A product developer clarified that these datasets helped to provide accurate recommendations without having to engage in costly technical inspections:

The idea is that, on the basis of this data and the information provided by the homeowner via the digital platform, our knowledge of the dwelling is such that we don’t need to do a technical inspection to provide advice … Our hope is that the more accurate the tool, the more accurate the advice we can give at a distance and the more homeowners will be inclined to trust us.
Another start-up representative attested to the reliability of certified (data) tools, such as energy certiﬁcates and quality marks, but argued that consumers did not ﬁnd these relevant, due to their ubiquity in energy retroﬁt markets. He gave as an example the list of preselected ‘trustworthy’ installation ﬁrms and insulation companies, all legally certiﬁed by accredited trade organisations, offered on the start-up’s digital platform:

Due to the process of accreditation, quality marks and certiﬁcates are highly reliable in themselves. Yet, they now abound throughout the [supply] chain, which means that it is unclear to customers what they actually stand for and what their value is. If a certiﬁed contractor works with PUR foam, an insulation product which has a very bad reputation nowadays, is that contractor still to be trusted?
In an attempt to make certified tools more valuable to homeowners, the start-up added a newly developed performance review system – ‘comparable to Booking.com’ – of local installation firms and insulation companies to their customer journey design. The start-up invited homeowners who used the services of any of the preselected providers to review their services using newly designed evaluation criteria targeting customer satisfaction. The review system was subsequently used to rank providers on the digital platform on the basis of ‘subjective customer experience’:

We continue working only with certified companies. But which of these companies appears first on our digital platform is dependent on the quality of services they have provided to previous customers. Those customers can now rate their services through our rating system … . It ensures that we do not have to make a choice. Instead, the quality of their services is principal.

Due to its transparency, the review system ensured accredited trade organisations the opportunity to monitor the quality of services offered by local installation firms and insulation companies. However, as this review system was outsourced to consumers and placed their experience at the fore, it interfered with the officially developed and trade-warranted certifications of both contractors and products. This made the accuracy of these tools susceptible to non-certified variables. As this system substituted objective accreditation of energy retrofit products and services with subjective customer experiences, accreditation bodies and trade associations expressed disapproval of it. Moreover, local contractors were displeased with being at the mercy of consumers’ subjective reviews. The start-up thus encountered difficulty in aligning their interests with other stakeholders in the supply chain. These frail relations influenced their chances of continuing to win municipal and regional procurements and to secure continued funding. Alternatively, not including a customer review system in the customer journey design would raise the question as to what the unique value of this service was to homeowners. The start-up continued to make adjustments, for instance, by changing the questionnaire that underlay the review system, but it had yet to come up with a suitable solution towards the end of my fieldwork period.

Discussion: towards care-infused market tales of singular public goods

Political-economic commitments to market-driven innovation as part of energy transitions pose important questions about the maintenance of markets after the novelty of innovation wears off and economic exchange as part of government and seed funding ceases to exist. In this article, I have shown the difficulties of stabilising specific socio-technical agencements (Çalişkan and Callon 2010) – ‘customer journeys’ – initiated by two spin-outs and one start-up designed to catalyse the sale of energy retrofit products, which I identified as singular goods (Karpik 2010). I presented three customer journey designs, each developed by a different spin-out or start-up and each differently attempting to craft relationships of trust between homeowners, in their role as consumers, and suppliers of energy retrofit products (see also De Wilde 2019).

Customer journey 1 deployed ‘social capital’ (Portes 1998) as a mediator of trust. Evaluative judgments by homeowners’ neighbourhood networks were mobilised to mitigate any uncertainty during the decision-making process; yet, this required ongoing mutual accommodation by both these networks and the spin-out to retain the ‘authenticity’ of local relations. Customer journey 2 employed professional expertise to establish relationships of trust. As middlemen between potential retrofits and homeowners, professionals perform substantial (in)visible ‘articulation work’ (Pallesen and Jacobsen 2018, see also Wade et al. 2016); but the coordination, integration, and plurality of tasks this entailed did not fit well with the division of expert labour mobilised in customer journey 2. The contextual expertise of professionals (cf. Wynne 1991) – qualified as ‘autonomous’ and, thus, valuable – proved difficult to manage. Finally, customer journey 3 engaged tools such as energy certificates, quality labels for certified contractors, and review systems to imbue trust. In so doing, it depended heavily on certification tools’ perceived objectivity and ‘accuracy,’ due to their compliance with scientific rules and calculations (cf. Bowker and Star 2000). However, the start-up struggled to
preserve relations with trade associations and local contractors when it started to tinker with those tools.

While each spin-out and start-up relied on a different mediator of trust to establish and maintain trust relationships between homeowners and supply-chain actants, they all calibrated these mediators in their customer journey design towards developing a cost-efficient service. Modifying relationships of trust altered established interests, skills, and the operational methods of local installation firms, insulation companies, trade associations, municipalities, and local voluntary groups. It also implied a change in market hierarchies among these supply-chain actants. An alignment – stabilisation – of interests would be necessary for the customer journey design to obtain economic value, but this required continuous monitoring, coordinating, and adjusting of the connections between supply-chain actants and the market socio-technical agencement these entrepreneurial organisations simultaneously helped establish.

Revealing these negotiations illustrates that trust, indeed, is not a social relationship (cf. Karpik 2010); it is a relationship of many socio-technical sorts (cf. Callon 1998a, 1998b). Therefore, trust should not be used as something to black box the maintenance of market agencements, but rather empirically studied as part of them (Çalişkan and Callon 2010). Studying the regular functioning of three customer journeys demonstrates how difficult it actually is to calibrate the judgment devices that, in alternative constellations, constitute them. When it comes to energy retrofit products, it is not only consumers who have difficulties navigating an opaque market. For spin-outs and start-ups, the proverbial new kids in town, the process of marketisation is likewise a cumbersome path, but they are eager to embrace any overflows (cf. Kirkegaard and Çalişkan 2019, p. 155) in an effort to learn, adapt their services, and learn again. To a certain extent.

This also implies that current markets in the Netherlands do not lack actors willing to take responsibility for investing in a long-term public good (cf. Pallesen 2016, Webb and Hawkey 2017), as the abundance of market-driven innovations as part of Dutch energy transition exemplifies (Rijksoverheid 2011, SER 2013, Rijksoverheid 2019). However, market variants for energy retrofit products lack any actors able to uphold responsibility for sustained investment to decrease residential energy consumption. Energy policies are dependent on shifting political agendas. Utilities and energy network companies, as semi-private actors, are encumbered by law and regulatory frameworks in following up on their leading role in innovation. Voluntary groups lack the stamina to endure, local energy co-ops lack a collective voice, the installation and insulation sector pursues its own short-term business interests, and intermediary spin-outs and start-ups struggle to develop economically valuable services, due to the reasons outlined above. Hence, market-driven innovations come and go, but hardly endure.

This insight might perhaps not come as a surprise, considering Akrich et al.’s (2002, p. 195) visionary warning that ‘innovation by definition is created by instability, by unpredictability which no method, however refined, will manage to master entirely.’ However, in this article I have moved beyond the moment of ‘interessement’ – the point of articulation between an object and the loosely organised interests that emerge from it – in order to look into the ongoing state of fluctuation and change that innovation involves. Put differently, I examine the process of maintenance. By doing so, I hope to deepen Akrich et al.’s (2002, p. 190) valuable insight that in order to be innovative, an organisation ‘must favour interaction, permanent comings and goings, all types of negotiation which allow for rapid adaptation.’ Innovation that realises economic exchange for energy retrofit products relies on sustaining carefully crafted networks of supply-chain actants and homeowners. Those networks – and the customer journeys operationalised in this article as socio-technical agencements that establish such networks – need to be continuously nourished in order to flourish.

This observation points to a need for further conceptual development in the new economic sociology of markets, most notably in relation to sustaining the workings of socio-technical agencements for singular public goods, which function by the grace of maintaining trust relationships where overflows (Callon 1998b) are ubiquitous. The issue of maintenance offers an exceptional field for
advancing our understanding of whether and how market-driven innovation can meet societal objectives for climate change mitigation. Callon (2009) argues that markets are not well-equipped for the production of public goods (see also Frankel et al. 2019):

No one, not even the best specialists, can be entirely sure in advance of the organisational forms and material agencements needed to establish a market’s functioning. Concrete markets can be described and analysed in vivo only, which implies the establishment of devices for measuring, monitoring and watching them, to constantly keep an eye on the problems they pose and the way in which they react to certain interventions or adjustments. It is because a market is deployed in an uncertain world that it imposes this mixture of agnosticism and experimentation, of trials and errors, observation and evaluation of the effects produced, so typical of a precautionary approach. (Callon 2009, p. 536, italics in original)

These ‘trials and errors’ are the ongoing work continuous economic exchange entails. In line with Callon’s inspiring call to ‘civilise markets’ – in that they continuously partake in the articulation of the problems they encounter, as well as their solutions – I propose that we, market scholars, begin by empirically unpacking the black box that has come to be known as the maintenance of trust relationships. It is precisely at this point that the analytical lens of care can help us to trace all the shared and local work (Mol 2008, Mol et al. 2010, Denis and Pontille 2015) – or ‘framing’ (Callon 1998b) – required to stabilise arrangements, and explain why stabilisation so often does not occur. We can demonstrate how difficult it is to design products, technologies, or services that do not change shape, use, or value when moving through the supply-chain on their way to consumers. This is especially due to the fact that coordination among actants is not easily developed and, even if developed, requires ongoing modification. Rather than aim for stability we might better recognise the fragile order of things (Graham and Thrift 2007), and thus a need for continuous care.

In mobilising care to lay bare and point out neglected means of arranging relationships – for instance, trust – we can advance Çalışkan and Callon’s (2010) research agenda for the study of markets. This also implies a knowledge politics as ‘market ethnographies, like all social science texts, co-produce the worlds they ostensibly only describe’ (Roscoe and Loza 2019, p. 223, cf. Puig de la Bellacasa 2011). By sharing troubled market ethnographies, such as the one presented here, we can make explicit the collaborative and continuous attempts to attune the interests, expertise, and operations of supply-chain actants with regard to singular public goods. Also, we can make explicit the combination of adaptability and perseverance that motivates and mobilises actants into action and, perhaps, temporary alignment. These accounts of market maintenance, that I propose to call care-infused market tales can counteract the stiorification of energy transitions as innovation fairy tales (Papazu 2018) and take up Callon’s (2009) call to civilise markets in an era of climate change. This is an era in which the time to constantly innovate, to ‘set our sights higher’ in the words of the Dutch prime minister, no longer exists. We should, to paraphrase Haraway (2016), come down to earth, stay with and learn from the ongoing socio-technical market trouble.

Notes

2. A start-up is a company or project initiated by entrepreneurs that attempts to capitalise on developing a product or service for which they believe there is a demand, and subsequently to validate a scalable business model. A spin-out is a company or separate division that has developed from another parent company (e.g. energy network companies, grid operators). Thanks to Geoffrey Gregson for pointing this difference out to me.
3. Karpik (2010, p. 56) argues that ‘judgment devices are also always trust devices’ because their integrity and reliability is dependent upon relationships of trust.
4. The quotes and observations presented in the results section of this article were translated from Dutch to English by the author. In the process, the author attempted to retain colloquial speech as much as possible.
5. The Netherlands has been no exception to the European rule of liberalising and privatising the generation and retail sale of gas and electricity. This trend has been ongoing since the 1980s and culminated, in 2004, in a
formal division of semi-governmental utilities and grid operators into dozens of private energy providers and seven semi-governmental grid operators and utilities. However, transmission and distribution were and are still centralised and operated by grid operators and the utilities that ensure a reliable energy supply and provide energy-related services.

**Acknowledgments**

Many thanks to my informants who taught me about all the work involved in trying to commodify a service. I am grateful to the referees for their critical and careful comments which have helped a lot in rethinking the argument presented here, and to Philip Roscoe, editor of Journal of Cultural Economy, for his guidance through the review process. Also, a word of thanks to Francisca Grommé, Tjitske Holtrop and Svetlana Kharchenkova for engaging with some ideas presented here during our writing days, and special thanks to Thomas Franssen for directing me to Lucien Karpik’s work. This paper was presented at the sub-theme panel ‘Enlightening Consumption? The Arts of Attachment and Sentiment in Contemporary Market Organizing’ of the 35th EGOS Colloquium in Edinburgh (2019), and benefitted from the comments of its participants as well as its organisers Alexandre Mallard and Tsutomu Nakano. Mandy Dewilde (not related) and Helen Faller did the copy editing with utmost care which has improved the article significantly.

**Disclosure statement**

No potential conflict of interest was reported by the author(s).

**Funding**

This work was supported by the Netherlands Enterprise Agency (RVO) [grant number TESE115011].

**Notes on contributor**

Mandy de Wilde is a sociologist working as a postdoc at the Anthropology Department of the University of Amsterdam. Her work focuses on issues of maintenance in ecological transitions, especially as seen through the analytical lens of care.

**ORCID**

Mandy de Wilde [http://orcid.org/0000-0001-8695-6406](http://orcid.org/0000-0001-8695-6406)

**References**


