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Infrastructuring alternative markets: Enabling local food exchange through patchworking

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ABSTRACT

The aim of this paper is to advance our understanding of the complex material arrangements involved in the formation of AFNs by applying the concept of market infrastructure and turning our attention to the process of infrastructuring. Based on an ethnographic study of *REKO rings*, a network of local food markets, we show how disparate elements, e.g. digital interfaces, parking locations, and Swish (an electronic payment system), are *interconnected* and *configured* to form the REKO ring market infrastructure patchwork – an infrastructure made by linking together previously unrelated elements and re-purposing them. We then demonstrate how this patchwork infrastructure enables the *formation of market actors*, *coordination of the market actors' activities*, and the *qualification and valuation* of foods, thereby making the exchange of alternative food possible. Our analysis of infrastructure patchworking illustrates a different type of infrastructure-making resulting in a temporary and fragile infrastructure which, despite its instability, enables exchange. Drawing on this analysis we argue that the potential of AFNs to take form and impact contemporary modes of food provisioning cannot be understood without exploring the process of infrastructuring.

1. Introduction

Alternative food networks (AFNs) – e.g., meat, fish or veg boxes, producer cooperatives, farmers markets, community supported agriculture, urban gardening networks and other local food systems – have attracted considerable research attention. AFNs are characterized by shorter distance between producers and consumers (often cutting out the middleman), small scale farming and production, focus on local food, and an emphasis on sustainable or organic food products. While their alternativeness and sustainability has come into question in later years, these networks emerged as and are still often positioned as a reaction to large-scale industrial agri-business and as a solution to the problems of marginalized rural regions (Renting et al., 2003).

The body of research that has emerged around AFNs has focused on two interrelated questions: how are AFNs formed and what are the environmental, economic, and social consequences of AFNs? While the research addressing this phenomenon is interdisciplinary, diverse, and draws on multiple theoretical perspectives, there is a clear tendency to emphasise the social dynamics and embeddedness of AFNs. Research into the formation of AFNs emphasise that issues such as building strong producer-consumer relationships (Alberio and Moralli, 2021; Oñederra-Aramendi et al., 2018) social proximity (Dubois, 2018), and social imaginaries and cultural embeddedness (Goszczyński and Wróblewski, 2020; Papacharalampous, 2021) are central for the making and stabilizing of these markets. Similarly, research addressing the motives of actors involved in AFNs stress the forging of new producer and consumer identities, community building (Press and Arnould, 2014; Thompson & Coskuner-Balli, 2007a) and the production of enchanting experiences (Thompson & Coskuner-Balli, 2007b) as crucial driving forces. Finally, also, when discussing the consequences of AFNs, the social organisation of the networks is typically at the centre of the analysis. In these and other studies, AFNs are shown to be thoroughly social entities, produced by and productive of a specific set of social relationships, identities, and local communities.

Although this research has produced key insights into AFNs, their workings and consequences, it has tended to neglect or downplay the role of materiality in AFNs. To be clear, the material dimension of AFNs is not denied, and several studies explore the broader economic, political and spatial processes underlying the formation of AFNs (see, e.g., Bui et al., 2016; Goszczyński and Wróblewski, 2020; Jarosz, 2008). However, while acknowledged, materiality is often pushed to the background in an effort to explore the social dimension and even when

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included in the study and the analytical framework, material devices their active or generative role in the formation AFNs is seldom explored.

This has not gone unnoticed and in an effort to address this paucity scholars have, drawing on the theoretical resources of science and technology studies, actor-network theory and the sociology of market agencements, set out to explore the active role that materialities and market devices have in the formation and shaping of alternative food networks (e.g., Le Velly and Dufeu, 2016; Phillips, 2016). In particular, the concept of market device, defined as "the material and discursive assemblages that intervene in the construction of markets" (Muniesa et al., 2007, p. 2), has been central in this effort. These studies show that the workings of AFNs cannot be understood without taking into account a host of material devices, such as trucks, refrigerator warehouses, computer systems, charters and, plastic packaging (Le Velly and Dufeu, 2016; Phillips, 2016). These material devices not only enable the formation of AFNs but also shape their organisation, by for example qualifying both products and consumers (Phillips, 2016). Market devices, these studies suggest, are both implicated in the practical arrangement of AFNs and key to the establishment of consumer-producer relationships, the forging of identities, and the building of local communities.

In this paper, we set out to push this intellectual project further by exploring the *infrastructuring* of alternative food markets. In what follows, we move beyond the analysis of market devices, and shift instead attention to the making of the complex market infrastructures needed for the formation, scaling, and stabilization of AFNs. By market infrastructure we mean a materially heterogeneous arrangement that both supports and structures the consummation of market exchanges (Kjellberg et al. 2019). The market infrastructure is thus the underlying structure making exchange possible.

The benefits of talking about market infrastructures rather than market devices lie in infrastructures allowing us to analyse more complex arrangements, often developed over longer periods of time and consisting of various interconnected market devices (Kjellberg et al., 2019). The concept also make it possible for us to make visible, and move front and centre, what is often invisible and in the background, while also allowing us to explore the agency and politics of these often vast but invisible market arrangements (Mellet and Beauvisage, 2019).

However, to date, studies of market infrastructures have tended to favour the study of large and already well-established infrastructures, e.g. barcode scanning technology (Kjellberg et al., 2019), advertisement http cookies (Mellet and Beauvisage, 2019), or price quotation and crop statistic infrastructures (Pinzur, 2021). Methodologically, the retrospective analysis of infrastructure-making (often drawing on printed material) (Kjellberg et al., 2019; Pinzur, 2021) or purely conceptual papers have been the favoured approaches (Araujo and Mason, 2021; Chakrabarti et al., 2016).

While this is an understandable focus for an emerging field of study, we will explore and conceptualize a different type of market infrastructure and infrastructure-making. AFNs are typically not large, established, and populated by incumbents with access to vast financial resources and technological knowledge. Instead, AFNs are, not unlike other types of alternative markets (see, e.g., Bublitz et al., 2019; Cholez and Trompette, 2020; DeBerry-Spence, 2010; Fernandes et al., 2019; Lindeman, 2012), for the most part small, less established, more informally organised, and with limited access to important financial and technological resources. How are the market infrastructures supporting exchange on these alternative markets made? Are these alternative market infrastructures different and if so, how?

Our primary aim in this paper is thus to advance our understanding of the complex material arrangements involved in the formation, scaling and stabilization of AFNs by applying the concept of market infrastructure and turning our attention to the socio-material process of infrastructuring. In doing so, we follow and also extend previous work done on market infrastructure, examining these as materially-heterogenous arrangements that support market exchange (Kjellberg et al., 2019). As we explore this market infrastructure making in the context of AFNs, we accentuate the material, relational, and emergent character of market infrastructures, in addition to investigating their performativity.

Empirically, we draw on a collaborative ethnographic market study of the organizing of *REKO rings* in Sweden – REKO rings are a network of local food markets enabled via Facebook groups and intended to interconnect local food producers and consumers. As is typical in AFNs, the REKO ring movement is an effort to establish a different mode of exchange, i.e. one that cuts out the middle-man enables small scale producers and consumers to interact directly, using social media to coordinate the sale and pick-up of goods. Our fieldwork consists of interviews with producers, consumers, group administrators, and professionals, as well as observations of temporary market places and digital observations of interactions via the Facebook groups.

In what follows, we describe and analyse the interconnecting and configuring of the market infrastructure of REKO rings. Our results show that, because of the short time period, and because none of the actors involved in the REKO rings have the means of developing a comprehensive and, for this kind of market, specific infrastructure, the act of putting together a market infrastructure for this alternative mode of food exchange is an act of doing *infrastructure patchwork*. Patchwork – in the traditional sense – entails making one larger cloth consisting of smaller pieces of differently patterned cloth, often repurposed, by means of sewing these together. Similarly, we use the term patchworking to refer the work of appropriating elements from other markets – often infrastructures or larger systems serving other purposes – and stitching these together to form a heterogeneous, somewhat mismatched, but operational alternative food market infrastructure. The concept of patchworking is thus intended to capture a different form of infrastructure-making, i.e., one characterized by the linking together of previously unrelated elements and the re-purposing of them, temporarily forming an often-fragile infrastructure which, despite its instability, enables exchange.

2. Market infrastructures and their making

In the social sciences, the concept of infrastructure has been used, for example, in the fields of Science and Technology Studies (STS), informatics, organisation and management, consumption studies, and, more recently, market studies. Originally used to denote permanent military installations, it is now increasingly being used in relation to transport (e.g., train tracks or roads) and other public services (sewers, waste or water), but also now increasingly in relation to ICT (mobile phones, digital platforms, organizational information systems) and economic activity (financial devices, indexes and standards). As these examples suggest, the term infrastructure is often evoked in order to denote the large structures and systems required for an activity.

More specifically, the concept of *market infrastructure* has been used and discussed in a number of recent publications. Kjellberg et al. (2019), for example, examine the emergence of barcodes as digital market infrastructure, showing how this infrastructure has developed over time as a result of the work of multiple actors, involving both political and commercial processes. In a similar vein, Mellet and Beauvisage (2019) explore the development of cookies - i.e. http cookies, small files containing information stored in web browsers that enable the identification and tracking of Internet users in terms of being market infrastructure. These scholars show how cookies have become central to the digital advertising market through their ability to transform online activities into data assets enabling knowledge production, capitalization and coordination. Related, Araujo and Mason (2021) use the selling and buying of professional market research services as an example to discuss how a knowledge-based infrastructure is made by emerging forms of novel expertise that later "sediments" into market practices impacting or governing no one but multiple markets. In sum, these studies show, among other things, that market infrastructures are made in practice and

are relational, emergent, and performative. Their making is the result of complex technical, political and commercial processes and often involves multiple actors and, at times, multiple markets. Therefore, understanding how market infrastructures are made and work towards supporting and structuring market exchange often entails tracing the doings and sayings of multiple actors over time and space.

As made clear in the introduction, a market infrastructure is here defined as a materially heterogeneous arrangement that both supports and structures the consummation of market exchanges (Kjellberg et al. 2019). Elaborating on this definition, and drawing on previous work done on infrastructures, we are able to specify a number of the characteristics of market infrastructures.

First, market infrastructures are *heterogeneous arrangements*. Whether we are talking about something more obviously material, e.g. railways or supermarkets, or if we turn our attention to seemingly "virtual" entities, e.g. cookies, algorithms or apps, a market infrastructure is a material entity (Mellet and Beauvisage, 2019). An infrastructure is always composed of numerous material elements, interlinked, in one way or another, to form an arrangement (Chakrabarti et al., 2016).

The heterogeneous arrangements that make up market infrastructures are also *spatially and temporally dispersed.* Infrastructures are typically "big, layered, and complex" and exist at multiple sites simultaneously (Star, 1999, p. 382). They are enduring entities that reach across time and space. Many infrastructures have been around for a long time, e.g., railways, which were established in the 19th century, while others have only recently emerged and become widespread, e.g., scanning systems and computer software, which have only been around for a few decades (Kjellberg et al., 2019; Mellet and Beauvisage, 2019; Plantin et al., 2016).

Looking more at their composition, market infrastructures are typically also *modular* and *interdependent* (Kjellberg et al., 2019). They are modular in the sense that they often consist of multiple "systems" or devices, each with its own characteristics and purposes (Chakrabarti et al., 2016), which can be added to or removed from the infrastructure assemblage. Market infrastructures are also *interdependent* in the sense that these components are interconnected, with their functions being determined relationally rather than through their inherent features (Kjellberg et al., 2019).

Finally, market infrastructures are also characterized by their *performative character*. The "work" that a market infrastructure does is diverse in its character but similar in its aim. It involves the formation and enrolment of new actors, a key task not only on the part of market infrastructures but also on the part of infrastructures in general (Star and Ruhleder, 1996), as well as the coordination of these market actors (Mellet and Beauvisage, 2019). Moreover, market infrastructures enable the valuation of goods; "market infrastructures are capitalization, and by extension, valuation infrastructures" (Mellet and Beauvisage, 2019). Market infrastructures, thus, commonly play a key role in enabling valuation and qualification. The work performed by market infrastructures, we argue, is not necessarily "silent" nor in the "background", as other infrastructures studies put forward (Star, 1999). In making possible the exchange of markets, market infrastructures can become visible and even "noisy", drawing attention to themselves, not only as political projects (Larkin, 2013) or when malfunctioning (Star, 1999), but as part of their work of engaging actors and coordinating action. They are also visible because they are infrastructures that are continuously unravelling and need to be constantly remade (see also, Amin, 2014).

How, then, are market infrastructures made? This is a question crucial to our analysis. Previous work suggests that market infrastructures are made by the forging together of multiple market devices into a larger, more complex infrastructure. These market devices "are made to interoperate by means of standards, socket layers, social practices, norms, and individual behaviours that smooth out the connections among them" (Chakrabarti et al., 2016, p. 3). The process is continuous as this arrangement requires maintenance work to function (Kjellberg et al., 2019) but also continuous innovation to adapt to changes within or outside the market that they enable (Geiger and Kjellberg, 2021).

The performative approach accentuates the processual and relational aspect of infrastructures. What will become an infrastructure is not a given from the outset, but a result of unfolding practices. An infrastructure is always an infrastructure in relation to a set of practices (Star, 1999). In line with this, if practices change, an infrastructure can change, or become undone, as links are broken and its infrastructural qualities dissolve. Elements change and new elements are introduced; when this happens, a ripple effect can also be set in motion that leads to the reorganisation of the market infrastructure (Pinzur, 2021).

The making of market infrastructures, like other efforts in market-making, is also fraught with failure. It is not uncommon for efforts to build infrastructures to fail, or to face major challenges (Star and Ruhleder, 1996). From the now-famous Aramis case (Latour, 1996) to a failed communication and collaboration infrastructure for scientists (Star and Ruhleder, 1996). The same can be said about market infrastructures, e.g. the emerging, and not always successful, sharing markets (Chimenti, 2020), or the challenges faced by emerging environmental market infrastructures trying to make drought insurable (Aguiton, 2021). Because market infrastructures require continuous adaption, and also commonly involve multiple components drawn from various sources and multiple practices, failure is common (Geiger and Kjellberg, 2021).

In what follows, we draw on the understanding of market infrastructures outlined above in order to explore what is, we would argue, a particular form of market infrastructure making: patchworking. Examining the Swedish REKO markets, a type of AFN, we pay particular attention to the adaptation work that goes into the forging of the various elements composing a patchwork market infrastructure. We build, furthermore, on the notion that infrastructures are made using practices and we explore two types of market infrastructure-making actions in more detail – i.e., interlinking and configuring – in addition to analysing how the resulting market infrastructure enables market exchange by supporting the configuration and coordination of market actors and the qualification and valuation of products.

3. A market ethnography of REKO rings

REKO rings use a direct distribution model that offers consumers the opportunity to order food directly from producers, effectively cutting out the middleman. REKO rings are framed as local food markets and the relationship between consumers and small-scale producers is highlighted, as is the Swedish, local, healthy and sustainable quality of the produce on sale. Producers and consumers meet on local Facebook groups, where the products are marketed and orders are placed. Producers and consumers then meet physically at an organised pick-up site, typically a car park.

To understand the organisation of REKO rings we conducted an ethnographic study (Crang and Cook, 2007; Hammersley and Atkinson, 2007). Our study combines interviews with producers, group administrators, and consumers with observations of both the Facebook groups and the pick-up events. Our fieldwork was conducted in the south of Sweden (including both smaller towns and larger cities) between November 2019 and June 2020. The study was a collaborative ethnography involving a research team of four,[1] who designed the study and collected the empirical material.

In total, 35 ethnographic interviews were conducted with the aim of exploring the market practices of food producers (9), group administrators (10), and consumers (16). In the ethnographic tradition, the interviews were qualitative, contextual, informal, semi-structured, and

[1] In addition to the authors, Jonas Bååth and Emma Samsioe were also involved in the collection of material.

focused on understanding both the practices and meanings of the various actors (Spradley, 1979).

Producers and administrators were recruited through the REKO ring Facebook groups by e-mail, phone or message, and by means of referrals. Households were recruited mainly by means of referrals, from the producers, administrators and consumers we interviewed. A few informants were also recruited while we were conducting observations at the REKO ring pick-up sites.

While the backgrounds of the informants varied somewhat, the producers, administrators and consumers were typically middle class, well-educated, and fairly well-off (with a few exceptions) Swedes. While there is a gender balance among the producers we interviewed, both the consumers and the administrators in particular were mostly female, reflecting the female dominance among REKO administrators and consumers in general.

Most of the interviews lasted between 45 and 90 min, being conducted at the homes or workplaces of the participants and covering a number of topics related to the participants' roles on the REKO marketplace (i.e., producers, administrators or consumers). The interviews were led by a few "grand tour" questions and complemented whenever necessary by a set of follow-up questions. The interviews were audio and video recorded and transcribed in full.

The consumer interviews were complemented by on-site observations – kitchen observations – and what we refer to as "digital walkthroughs" (Fuentes and Sörum, 2019). During the interview, the interviewer would also ask for a "kitchen tour" (for similar methodological approaches, see Evans, 2012; Hebrok and Heidenstrøm, 2019). The participants were also asked to demonstrate how they used the Facebook group to place their orders or to keep themselves informed (see also, Fuentes and Samsioe, 2020).

To understand in more detail how REKO exchanges were coordinated online, we conducted 26 online observations of six public Facebook REKO groups pertaining to the south of Sweden. These REKO groups usually feature two types of posts: i.e., from producers advertising their products and from consumers making orders or inquiring about products. Documented using screenshots, these observations generated around 3,000, including hundreds of producer posts and thousands of consumer posts (mainly placing orders).

We also conducted 15 observations of five pick-up sites located in the south of Sweden in order to understand, in more detail, how the exchange of goods took place, and what was involved. These participant observations were carried out by two researchers and were around 30–60 min long. The researchers typically introduced themselves to the group administrators on-site, explaining their reasons for being there and continuing by blending in with the consumers, walking around the car parks observing pick-ups of pre-ordered food, and eavesdropping on conversations either between producers and consumers or between consumers. We also carefully observed the layout of the pick-up site, how the goods were marketed, and the actions of the group administrators on-site. These observations were documented in fieldnotes made both at the time and afterwards, and then edited for clarity the following day. We also took photos of the sites (avoiding faces or other identifiable markers unless permission had been granted); at times, we also made sketches of the pick-up sites.

Finally, to contextualise our understanding of the REKO markets, we collected media material, marketing material, and industry reports and we also interviewed an employee of *Hushållningssällskapet*, henceforth referred to as the HS organisation.[2]

The authors of the paper jointly conducted the analysis using the constant comparative method (Charmaz, 2006), carefully reading through the interview transcripts, fieldnotes, photos, and screen shots that make up the dataset, using NVIVO to facilitate coding. Our analysis was guided by the following questions: How and by means of which practices is the market infrastructure of the REKO markets made and maintained? How does this infrastructure support the REKO markets? We present, in the following section, the findings from this analysis, illustrating the categories using interview extracts, ethnographic accounts, fieldnotes and marketing material.

4. Patchworking alternative food markets

The REKO markets are, like many other AFNs, characterized as local food markets, consisting of small-scale farmers/food producers selling directly to consumers with the ambition to promote sustainable food while also enabling farmers to make a profit (see, e.g., Jarosz, 2008; Papacharalampous, 2021). Beyond the rather vague project to promote sustainability, local food and small-scale producers, REKO rings are not particularly ideological or political. They offer an alternative to mainstream large scale food retailing but unlike many other AFNs, the actors involved are seldom explicitly critical towards "Big-Agro". Taking this pragmatic approach, the REKO rings have been remarkably successful, growing to approximately 220 REKO rings, with a total of 800,000 members (www.hushallningssallskapet.se) in operation in Sweden. This is also accomplished in spite their lack of central organisation, limited financial resources, and no governmental support to speak of. We will in our analysis of infrastructuring offer a partial explanation as to how this is possible and also discuss the opportunities and limitations that comes with this specific type of AFN. We show how the patchwork infrastructure making exchange possible on REKO markets is made and what it in turns performs.

4.1. Making the patchwork infrastructure

Like other infrastructures, this market infrastructure is made in and through practices. The practices performed by the actors involved in the market – producers, group administrators, and consumers – lead to the interlinking of the components constituting this patchwork infrastructure. In what follows, we discuss two distinct types of market infrastructuring practices: interconnecting and configuring practices.

4.1.1. Interconnecting the patchwork infrastructure

By interconnecting practices, we refer to the practices performed in order to arrange and interlink the various components needed to assemble a functional infrastructure. In the case of the REKO markets, one of the more central interconnecting practices is the setting up of the Facebook groups needed to bring local food producers and consumers together. After reaching out to other food producers to ensure there is enough interest, the producers or consumers interested in starting up a local REKO ring set up the Facebook group. This involves naming the group, choosing a background image, assigning the role(s) of group administrator, writing the instructions and rules for the group, and inviting and recruiting group members. While there is no central coordination of the REKO markets, the HS organisation, in an effort to support the establishment of REKO markets, has compiled instructions for setting up these markets, suggesting rules for the Facebook groups and a graphic profile to use.

Most group initiators either have prior experience of other REKO rings or know someone that has and can consult these regarding the setting up of groups. Small-scale producers are part of a more or less tightly-knit community, something that the REKO movement draws on and also reinforces. Administrators also look at established groups and imitate their approaches, choosing similar images and copying the instructions and rules of these groups. As a result, the majority of the Facebook groups use the same logo (developed by the HS organisation), similar or identical instructions, and similar images.

[2] Hushållningssällskapet is an organisation gathering fifteen regional and independent Rural Economy and Agricultural Societies in Sweden. The Swedish Board of Agriculture has assigned Hushållningssällskapet the task of spreading knowledge regarding REKO rings and promoting their establishment throughout Sweden. (www.hushallningssallskapet.se, 2021-07-08).

Another example of interconnecting is the setting up of the pick-up site. The pick-up sites are almost always parking places. Administrators scout locations, looking for sites that are well-known, accessible, and large enough to accommodate producers, their goods and display tables. These sites are often located close to train and bus stations, office complexes, town squares or traditional supermarkets. The idea is to set up the pick-up sites in the proximity of consumer mobility junctions:

> The commuter car park down by the lake. It's, the church down here at one end of the village. There's a commuter car park beside it and it's really good. Because it's right by the walkway, over 55 residents and a lovely lake and so on. So, it's a really good location. … it's really easy to park and people come by train anyway. If they're going to do it on the way home, it's kinda close at hand. (Elisabeth, Administrator)

The lighting is also crucial for the selection of the pick-up site. Well-lit parking sites are preferred, but often difficult to find. This is particularly important during the winter and autumn, when the days are shorter in Sweden.

> … when I started the group, I thought this village would be perfect for that reason as we have a very nice marketplace that's used once a year for the village market. Everyone knows that, regardless of where in Scania you come from. Last winter, we had a street lamp there that lit things up … (Charlotte, Administrator)

Here we see the importance of finding both a well-lit and well-known location as this makes it easier to market the REKO rings.

Arranging the pick-up location follows a routinized and taken-for-granted procedure. Typically, administrators get to the car park early, set up flags with the REKO ring logo on, put up signs to guide consumers, and put on a REKO vest to identify themselves as administrators. These artefacts are crucial in reworking the car park into an exchange site.

> We usually leave home at about 5.40 pm, as it just takes about 5–7 minutes to drive there, and then we put the flag up and meet up with all the others. We usually place ourselves in a square with our car boots facing inwards. There's a cresset or you have lamps. We stand there until people turn up. And they can park at the other end of the car park. Then they come down to us and then they collect … / And then the people go away again and at 6.30, you take down the flag and shut up shop and drive away. (Elisabeth, Administrator)

Importantly, interconnecting the market infrastructure of REKO rings also involves circulating representations of the REKO markets. That is, as has been acknowledged in market studies, representations of markets play a key role in the making of markets (Kjellberg and Helgesson, 2007; Ruiz, 2013). A case in point is the PR and marketing activities performed by the administrators, involving the handing out of flyers, the putting up of posters, attending food-related events, and talking to the media. Given their limited marketing budget, media contacts are a low-cost but effective way of increasing awareness of REKO rings and growing the customer base.

> … I know that when starting up this REKO ring, we're also doing the marketing. We've applied for a grant for flyers and posters and flags. As the flags, or pennants, were finished. …. My co-administrator has done most of the work there. And she's involved the local rag and Village Life and she was on the radio the other day too … /Right now, the ring in the village is still in its start-up phase. So, there we'll, there we'll be working a lot on marketing now (Lisa, Administrator)

All the activities described by Lisa are examples of the circulation of market representations. Flyers, posters, newspapers articles, radio spots, event presentations and the descriptions and imagery found on REKO producers' websites all serve to (re)produce and circulate representations of REKO markets. This work is important as it circulates images, descriptions, and instructions that become important in the forging of the patchwork market infrastructure. Through these representations, both producers and consumers understand the components of the REKO markets, and how these fit together. They serve, in a way, as assembly manuals, instructing the actors in how the REKO market should be put together.

4.1.2. *Configuring the patchwork infrastructure*

Interconnecting is not enough to assemble a working market infrastructure; the various elements that make up the market infrastructure have to be configured. Configuring practices are practices that remake or adapt existing components (sometimes infrastructures in their own right) in order to fit the patchwork infrastructure and align with its purposes. While this type of market practice is a part of every instance of market infrastructure-making, we contend that it is of particular importance in a patchwork market infrastructure.

For example, the REKO ring Facebook groups not only have to be set up, they also have to be configured to serve the purposes of the REKO ring. This includes going against the script of the social media platform by establishing, for example, routines for erasing all posts following a pick-up. This routine, communicated to the participants, counteracts the socio-technical script of Facebook, which aims to create an archive of posts and comments that members can scroll through. In many other groups, this function is crucial for community-making, allowing new members to scroll through content to learn about the group and its rules and its types of content, or for long-term members as an extended memory that can be revisited. In the context of the REKO ring, however, this function is thought of as creating clutter, making it more difficult for consumers to place orders (as they could accidently place orders on old posts pertaining to previous drop-offs). Because of this, the group's history is wiped clean after each pick-up event, usually just a few hours after the event has been completed.

Similarly, REKO markets rely on a specialized payment and exchange routine. Because the sale of food is strictly regulated in Sweden (and in many other EU countries), sellers are not allowed to sell their products in car parks. To get around this, foodstuffs have to be pre-ordered. This rule is strictly enforced by administrators and complied with by producers. Producers cannot sell food at pick-up sites, they can only deliver food and foodstuffs previously ordered.

> REKO is based on getting around the matter of having to have market permits and so on. It's a matter, of course, of the deal being struck in advance. So I can't take any extra packets along with me hoping that someone wants them once I'm at the delivery site. Instead, I have to, and that applies to everyone who delivers. … Just deliver what was ordered in advance. But in that formulation in the legislation, nothing is said about the deal having to be paid for in advance. Instead, it's that the deal has to be made in advance. It's really a case of distance selling so the deal has been struck in advance. (Susanne, Administrator)

To comply with this regulation, all orders are placed via the Facebook group using the comment function. The order is confirmed by the seller via the same comment function, typically also confirming it by liking the comment. The goods are either paid for in advance via Swish – a digital payment service that is common in Sweden (and used by more than 90% of the population), or on delivery using Swish or cash. This (re)configuration of the Facebook groups effectively makes them ordering sites.

The pick-up sites also require configuration. As these car parks are appropriated and made part of the REKO ring market infrastructure, they cease to be car parks and become REKO ring exchange sites, at least for the duration of the pick-up event. Not unlike the organisation of pop-up stores, these become temporary retailscapes (Spitzkat and Fuentes, 2019), organised in order to be operational for an hour or so before going back to being car parks. Their temporary organisation is carefully planned; maps are drawn up by administrators and communicated to producers, with display tables, signs, and even flags temporarily being set up. All these artefacts configure the car park so it can be used for

exchange. This, of course, interferes with the conventional function of the car park for the duration of the pick-up event. It was a common sight to see people who were not there for the REKO ring event trying to park and being visibly irritated by the commotion and the shortage of space. Conversely, conventional use of the car park at times created difficulties for the REKO exchange site; if the car park was full of cars, that made it difficult for the vendors to organise themselves.

> There are many producers delivering today - about 30. They're taking up a large portion of the car park, but despite that, things often get crowded. Many consumers drive into the car park. It's crowded. A large lorry, not connected with the REKO ring, has parked up in the middle of the car park. This makes things more crowded than usual and it's more difficult to get around and to gain an overview. The delivery site is split into two parts (Fieldnotes, observation, Höör 13 May 2020)

Here, we see that the configuration of the components of the patchwork market infrastructure are not always fully successful. Despite the efforts of administrators and producers, car parks are not always ideal pick-up sites as these can be both crowded and difficult to navigate, as in the example above.

In all these examples, the components that make up the REKO market patchwork infrastructure – Facebook, Swish, car parks – are not just interconnected, but also configured to work properly as part of the infrastructure. The combination, or as phrased by Geiger and Kjellberg (2021), recombination of "previously existing elements drawn from a variety of sources" is crucial for the making of this new market (p. 446).

4.2. The patchwork infrastructure at work

In this section, we explore how the patchwork market infrastructure of REKO rings enables market exchange. Specifically, we discuss how it works in enabling the formation of market actors, the coordination of these actors, and the qualification and valuation of goods.

4.2.1. Enabling the formation of REKO actors

The making of the patchwork market infrastructure of REKO rings is closely linked to the formation of market actors. It is, for example, through the setting up of REKO Facebook groups that both local REKO producers and consumers are formed as actors. In the setting up of the Facebook groups, the actors are assigned different identities and roles. Producers post while consumers read, comment on, and like these posts. Administrators serve as organisers, enforcing the rules of the REKO groups and carrying out maintenance.

Similarly, organizing and visiting pick-up sites also means assuming certain market actor identities and roles. Producers have a set of tasks and rules guiding their actions; set up your display table, don't sell your products on-site, clean up afterwards etc. Administrators wear vests that identify them as administrators and they work partly as coordinators and partly as hosts, for both producers and consumers. Consumers quickly learn how to act like "proper" REKO ring consumers who know how to order, value, and collect REKO products in the correct way. This involves; learning how to navigate these temporary markets, often needing to bring your own bags to carry your items with you, how to identify yourself to the producers (order number), and paying for the products on the spot (if they were not paid for when ordered online).

> The consumers take pieces of paper with them and browse on their phones, trying to figure out who they've ordered from. One consumer approaches a producer to take delivery, and of course it was the right producer, but it's not her name she has to give, it's her order number. Then things get messy again, she can't find it. She hasn't made a note of that number. She has to give her name and then the producer has to hunt through the bags. He finds it after a while and says "well it was number 142". (Fieldnotes, observation, Malmö, 21 May 2020)

As we can see in the quote above, not all consumers visiting the REKO pick-ups are fully formed, many are in the process of shaping themselves as, and being shaped into, REKO consumers.

To acquire the background knowledge, know-how, and motivational knowledge needed to be REKO producers and REKO consumers, actors read the information on the Facebook groups and observe the behaviour of others there and at pick-up events. That is to say, they use the infrastructure to develop as market actors. The patchwork infrastructure works as an agencing device (Fuentes and Sörum, 2019), enabling consumers to develop as market actors who are capable of performing certain actions – posting, ordering, picking-up and so on. Consequently, while the processes of becoming a REKO actor and forming the REKO market infrastructure are not one and the same, they are intertwined. The patchwork infrastructure of REKO rings enables the formation of specific REKO market actors – i.e., producers, administrators, and consumers – with their agency as actors in turn shaping and stabilizing the infrastructure.

4.2.2. Enabling the coordination of REKO actors

The coordination of market actors is central to the organisation of market exchange and thus also a key task for the patchwork market infrastructure. In order for both valuation and exchange to be possible, REKO producers and consumers have to be at certain places at certain times to perform a pre-scripted set of actions.

Importantly, REKO producers and consumers have to follow the schedules of the REKO markets, meaning that products for sale have to be posted in the group two weeks before the pick-up event and then consumers have to place their orders during that two-week period.

> … well it starts off with admin posting a new image of the delivery occasion in the Facebook group. Then all the producers have to go in and remove their old ads. Then they have to go in and post their new ads. And then, of course, everyone has a final date depending on when you have to pack by or when you have to bake by … (Lena, Administrator)

As this illustrates, the temporal order of REKO markets coordinates the actions of both the consumers and the producers. Facebook plays a key role in accomplishing this coordination. Not only does it allow administrators and producers to post both their offers and their reminders of the upcoming pick-up date, the function of the platforms also works towards keeping this information current on consumers' newsfeeds. Changes to the REKO groups – such as the adding of posts – show up on the REKO ring members' newsfeeds, reminding them that the pick-up date is approaching and that it is time to place an order:

> Facebook provides you with constant marketing because others start ordering and people see that and then they think: "Yes, that's right, I should order too". And it turned up in a stream. And "now that producer has posted this". (Anne, Administrator)

The rhythm of this market is both communicated and upheld via the Facebook group site. It is a highly visible, continuously present and active component of the REKO market infrastructure. Due to Facebook also being used already by consumers and producers alike, the REKO ring is able to become entrenched in their everyday lives. Facebook offers, here, a channel right into the everyday lives of consumers.

Moreover, the REKO market actors also have to be coordinated at the pick-up sites. As mentioned above, administrators tell both the producers and the consumers where to park their cars and then help the consumers to find the producers they are looking for. Signs, flags, and sometimes also maps outlining how the producers are organised at the pick-up sites assist in the coordination of the pick-up events. Here, just as with the Facebook group ordering procedure, certain actions have to be carried during a specific timeframe and in a specific sequence; a specific market temporality has to be established.

4.2.3. Enabling the qualification and valuation of REKO goods

Key to the functioning of any market is the qualification and valuation of goods. As research in market studies often reminds us, goods do not come with any inherent properties, rather their qualities are the result of active qualification processes (Dubuisson-Quellier, 2010). The work of qualification, typically done by marketing actors and/or devices, can involve making products both different from and similar to other products (Fuentes and Fuentes, 2017); this is a continuous process, products are qualified and re-qualified, with an uncertain outcome (Hawkins, 2011). This work of qualification can be seen as linked to, and also governed by, a valuation grammar (Ariztia, 2013), i.e. a scheme or multiple schemes that guide how goods are valued and compared. The patchwork infrastructure of REKO rings enables the work of qualifying and valuing goods in various ways.

First, the Facebook REKO group enables producers to market their products - a diverse range of goods that includes steaks, sausages, honey, pastries, and vegetables of all types – using images and texts. In these posts, the REKO rings' goods, in line with the now typical register of local foods and farmers' markets, qualifying as "local foods" that are sustainable, organic, authentic, and artistically-produced with great care. Here, Facebook lends its functions to the marketing of REKO products, allowing producers who typically have little or no marketing training or experience to digitally market their products, During the process, this social media platform shapes their marketing work. Because the platform allows posts which include lengthy texts, multiple images, and hyperlinks, these marketing posts often contain all of these elements, giving them an amateurish style, which only seems to add to their "local producer" and "farmers' market" quality. Here, consumers can also take part in the qualification and valuation process, both valuing the REKO products and re-qualifying them by, for example, commenting on posts. It is not uncommon for consumers to give producers positive (and on rare occasions negative) feedback in their comments, while also recommending the producers' goods to other consumers:

- Once it was the case that I took pictures. It was when I had such really lovely, lots of different pumpkins. And posted carrots. It was like a beautiful painting. Then I took a picture and just thanked the producer. And they let it stand.
- They let it stand?
- Yes. And several consumers also commented on it. You see, it was a bit of fun. Mmm. It was good fun. So it was a bit over and above, as you use it. (Christina, Consumer)

Likewise, the qualification and valuation of REKO goods is also enabled by the organisation of the temporary retailscape of the REKO markets. The retailscape is, in fact, partly assembled with this purpose in mind. In this case too, the amateurish character of the marketing work and devices - typically involving home-made painted signs made of wood or carboard boxes, rickety display tables or using a car boot as a display table, reusing grocery bags to package products - adds to qualifying the REKO goods as "local" and "authentic", as a category of food very different from professionally-marketed industrial foods.

The temporary retailscape of REKO rings also enables interactions between the producers and the consumers, crucial for qualifying and valuing REKO goods:

> But I still think that people, those buying locally like this directly from the producer, they buy an awful lot not least on the basis of direct contact and the feeling they get for the product. That they're prepared to pay. And if they think something's expensive, they can ask the producer why it costs more than the other one. And then I can say that, kinda thing, that my honey, it takes time to sort it into different kinds and it takes time to deal with when you don't heat it up. It costs money to be eco-labelled and all that. And then you have that dialogue and people often buy that and think, well, but we still want that honey even though it costs more. (Sara, Administrator)

As this extract illustrates, the temporary market site allows consumers to question the value of the product, but it also allows producers to explain and (re)qualify their products, putting an emphasis on certain qualities such as the time it takes to make, the artisanal skills required, and the ecological quality of the produce.

5. Discussion

Our analysis has shown that, as a result of a specific mode of infrastructuring referred here to as *patchworking*, elements such as digital interfaces, parking locations, and Swish (an electronic payment system) are *interlinked* and *configured* to form the REKO ring market infrastructure. The patchworked market infrastructure resulting from this ongoing process supports these temporary and loosely-organised alternative food markets by orchestrating the configuring and coordination of REKO market actors and the qualification and valuation of REKO food products.

This unconventional process of infrastructure making is necessary under the specific conditions of REKO markets. These markets only have a short history. Rather than having evolved over decades, like barcode scanners or cookie advertisement infrastructures (Kjellberg et al., 2019; Mellet and Beauvisage, 2019), REKO ring markets have only been a few years in the making. They are thus an example of a newly formed network of markets. Their formation is not as settled compared to many of the market infrastructures studied in the past, they have not had a chance to become invisible infrastructures silently supporting actions. In addition, there is no central organisation, e.g. a trade and exchange body (Pinzur, 2021), that can wield its power in order to set standards, bring together technologies, develop organizational procedures, and coordinate actors to guarantee the smooth operations of the market. Finally, REKO markets, as many other AFNs, also exist on the margins (Oñederra-Aramendi et al., 2018). They are organised informally and operate by taking advantage of a loophole in the regulations that allows them to trade in food without permits as long as they do not sell directly to consumers at pick-up sites. But perhaps even more importantly, their concept, as a small-scale, local alternative to large-scale industrial food production, suggests that they have to remain marginal to stay true to their mission. Because it is positioned on the margins and not fully interconnected with broader legal, regulatory, and financial infrastructures its ability to yield power is circumvented (Bui et al., 2016; Pinzur, 2021). All these characteristics make patchworking a necessity.

This unconventional process of infrastructure-making also produced a different type of market infrastructure, one that differs from the settled and often inflexible infrastructures described in previous literature (Star, 1999). The patchwork infrastructure is more a template than a system of fixed components. It is a makeshift infrastructure that can be assembled using commonly-found devices – car parks, Facebook, Swish – around a rather vague and therefore also flexible idea of "local food markets". Because of this characteristic, it displays a high degree of adaptability, enabling new REKO markets to mushroom around the country. The market infrastructure template can travel, making it possible to assemble local versions of the REKO market at multiple sites, with comparably less effort and funding. This allows the REKO markets to spread quickly; the template travels unhindered and the elements – both material and social – needed for its assembly are often already in place in the new location. What is needed then is local interconnecting and configuring, a form of socio-material (rather than purely social) embedding of these markets. This also means that this type of patchwork market is easily scalable. Multiple nodes can be put in place simultaneously. Developing a new "local" branch is not the responsibility of a key actor, nor does it require considerable resources. Compared to traditional infrastructures, patchwork infrastructures can be assembled with relatively less effort, using and interconnecting already-existing

infrastructures.

Conversely, this type of market infrastructure is a fragile construct as its elements are never fully-integrated and require continuous maintenance and configuration to enable exchange. This means that, while REKO markets can be set up in a short space of time, they can also disappear quickly. Without a centralized organisation behind them, or a fixed structure supporting them, these markets depend on a few key voluntary organisers. If these volunteers (mainly the administrators of the groups) are unable or unwilling to devote their time to assembling the infrastructure, then the REKO markets will fall apart. Furthermore, the patchwork infrastructure relies on existing devices and infrastructures that largely beyond the AFNs control. If these devices and infrastructures become unavailable or are radically redesigned, the patchwork infrastructure risks unravelling. These patchwork market infrastructures are also fragile because of their marginal position. The lack of supportive regulations means that they have to operate in a grey area. The risk of new regulations being developed, or that there are simply more rigid interpretations of existing ones, threatens the REKO markets. While, REKO markets, like other AFNs, develop a set of rules organised around the common project (Dufeu et al., 2020), the rules developed in this case have no or only a loose connection to institutionalized regulations or guidelines. This makes the rules formulated potentially more fragile as they are not anchored in broader societal infrastructures. Finally, the built-in "local", "small-scale" and de-centralized character of these markets means economies of scale are impossible. This makes this infrastructure fragile because of the lack of the financial resources typically needed to develop and establish new market infrastructures (Aguiton, 2021). Consequently, the same set of characteristics that make patchwork infrastructures successful, also delimit the role they can have in promoting AFNs. While patchworking offers a way to organise alternative markets under certain conditions, patchworked market infrastructure come with set of built-in limitations. The patchworked markets of REKO can, in their current configuration, spread but not stabilize, multiply but not scale-up to gain economies of scale, offer alternatives but not become the mainstream.

6. Conclusions

Our analysis contributes to the research on the formation of AFNs by bringing to the fore the role of market infrastructures. Acknowledging the active role of materiality but moving beyond the study of market devices, we show that infrastructuring, as a socio-material process, enables and shapes the formation of AFNs in various ways.

First, as we showed, the relationship between the market infrastructure and the market actors is co-constitutive. Producer and consumers are largely responsible for assembling the patchwork infrastructure and this infrastructure, in turn, shape them as AFN producers and consumers. However, it does not only enable and shape the construction of their identities or support their reflexive process, as previous AFN research has touched upon (Papacharalampous, 2021; Thompson & Coskuner-Balli, 2007a, 2007b), but changes also their capacity to act. AFN consumers are not to be found "out there" fully formed but rather the result of a processes of agencing; they develop and gain their capacity to act through their interactions with the market infrastructure. For example, in our case, the REKO market infrastructure allowed consumers to order food form small scale local producers, supported their valuation of the food, and, by extension, enrolled consumers in a mode of sustainable food consumption that supposedly contributed to both rural development, animal welfare and a more environmentally friendly food system. Likewise, the REKO market infrastructure extended the agency of the small-scale producers, allowing them to qualify their goods as sustainable and local thereby allowing them to take higher prices and increase sales of their products.

Second, while consumer-producer relationships are key (Alberio and Moralli, 2021; Oñederra-Aramendi et al., 2018), it becomes evident that these are both mediated by and organised around a range of interconnected devices – social media platforms being the most central intermediate in the case of REKO markets. So while face-to-face relations are important (Alberio and Moralli, 2021), the relationship between consumers and producers are enabled and shaped by the (digitalized) market infrastructure (on the importance of digital platforms for AFNs, see Bos and Owen, 2016). Relationship building is dependent on the existence of a market infrastructure that enables actors to communicate and interact at a distance.

Third, while our approach also acknowledges the importance of embedding AFNs, it becomes clear that this is not a purely social or cultural process. Embedding AFNs, our study suggest, also involves re-materializing the AFN in multiple locations. Thus, while we agree that AFNs are context-dependent (Goszczyński and Wróblewski, 2020) their development is not only impacted by the cultural context but also by the socio-material landscape in which they are developed. The embedding of an AFNs has to be done both in relation to social and material issues. For example, AFNs in Poland develop in relation to and are shaped by both the country's communist history and traditional family values and its unfavourable legal framework (the selling of processed food directly by farmers was legalized as late as 2016) (Goszczyński and Wróblewski, 2020). Similarly, AFNs in Italy are shaped both by the local idea of what counts as "good food" but also the digital platforms that make access to and engagement with this food possible (Gobbo et al., 2022). Focusing on the process of infrastructuring allows us to acknowledge this and illustrate the link between the social and material.

Fourth, the AFNs ability to bring about "food system change" is determined, at least partly, by the composition of its market infrastructure. It is only by examining the infrastructuring behind the organisation of AFN that we can understand under what conditions it can be scaled up (or rather multiply). And it is only by exploring the performativity of the AFNs' market infrastructure that we can say something about its effectiveness as an alternative to "capitalism" or "conventional" food markets. As is widely acknowledged, bringing about change, scaling up or going from niche to regime shifts, is not a purely social matter but a socio-material process (Bui et al., 2016; Geels et al., 2015). This becomes clear when studying the making of market infrastructures of AFNs. In a process of socio-material agencing, the REKO market infrastructure did not only offer different ways of thinking about or vision for food production and consumption, it also materialized and allowed actors a way to act upon these alternative food visions. Thus, what matters is not only the new vision of food (Bui et al., 2016) or social imaginaries (Goszczyński and Wróblewski, 2020) guiding this initiative, but also, and perhaps mainly, how it is socio-materially realized through a specific mode of infrastructuring. After all, the vision of REKO markets is hardly novel - local food, sustainably produced to support small scale farming is typical of all AFNs - nor is it a very distinct. Instead, it's the pragmatic and flexible mode by which these markets are accomplished and reproduced that sets it apart and could explain its recent success. Conversely, the limitations of this AFN model are not to be found solely in the vision of local sustainable food markets around which they are organised, but also built into the material constitution of the infrastructure supporting the REKO markets.

We show thus that the organisation of AFNs is not only dependent on the forging of identities, development of consumer-producer relationships, community building, and social imaginaries but also on the interlinking and configuring of a range of material elements/devices. Our approach and analysis suggest that neither the formation of AFNs nor their the environmental, economic, and social consequences can be fully understood without taking into account the making and makings of market infrastructures. Infrastructuring is a necessity for AFNs to exists and the resulting product – the market infrastructure – shapes its performance.

Finally, moving beyond the context of AFNs, our analysis also extends the work on market infrastructures by developing and empirically illustrating the concept of patchwork market infrastructure. In contrast to previous work, we do not examine powerful, well-established (and

therefore invisible), and centrally-organised infrastructures. Instead, this paper empirically traces and analyses a fragile in-the-making market infrastructure that supports a marginalized and contested market that has not settled. We show that market infrastructures can be assembled differently, and also that the assembled infrastructure can operate differently. The concept of the patchwork infrastructure can prove fruitful in understanding other alternatively-organised markets. This includes markets in developing countries where supporting infrastructure may be lacking and where more informal markets develop - such as for example the informal market for second-hand batteries in Madagascar (Cholez and Trompette, 2020) or informal waste trade in Tanzania and Brazil (Lindeman, 2012) - newly-formed and contested markets - such as sharing markets where regulations remain underdeveloped and the boundaries are contested (Chimenti, 2020) - or marginalized markets - such as the market making performed by micro-entrepreneurs in stigmatized Favelas in Brazil (Fernandes et al., 2019) and illegal markets, which are, by necessity, de-regulated and exist on the margins of society (Beckert and Wehinger, 2013). In all these examples, one can expect that the unconventional conditions for market making make patchworking a necessity. Understanding the patchworking of market infrastructures can thus be a part of a nascent body of work on market studies that moves beyond established markets and conventional market-making and takes an interest in understanding newly formed and alternatively-organised markets.

CRediT author statement

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