Journal of Rural Studies 43 (2016) 40–48

Contents lists available at ScienceDirect

Journal of Rural Studies

journal homepage: www.elsevier.com/locate/jrurstud

Imagining and doing agro-food futures otherwise: Exploring the Pig City experiment in the foodscape of Denmark

Dan Kristian Kristensen*, Chris Kjeldsen

Department of Agroecology, Aarhus University, P.O. Box 50, 8830, Tjele, Denmark

ARTICLE INFO

Article history:
Received 7 May 2015
Received in revised form
28 October 2015
Accepted 8 November 2015
Available online xxx

Keywords:
Agro-food
Futures
Science and technology studies
Actor-network theory

ABSTRACT

In this paper we investigate Pig City; a project that proposes to combine pig-, tomato- and energy production. We argue that Pig City was an experiment challenging the established trajectory of the Danish pig production industry. Utilizing sensibilities from science and technology studies and actor-network theory we follow Pig City and the heterogeneous world making practices that took place in the context of this project. Through our narrative of the Pig City experiment we draw attention to the ways in which different visions of the future of agro-food are inscribed materially and discursively. We discuss recent agro-food scholarship in terms of opening up space for thinking and acting otherwise with regards to agro-food futures. Finally, we reflect on the political implications of this understanding.

1. Introduction

Denmark is an intensely farmed country; agriculture occupies between 60% and 70% of the Danish territory (Kærgaard and Dalgaard, 2014; Levin and Normander, 2008). Numerous factors have contributed to the prevalence of farming. Among these factors, the topography of Denmark, which is mostly flat, lends itself to large scale agriculture. Other factors include the historical development of Danish agriculture since the European agricultural crisis of the 1870s, where the strategic response on behalf of Danish agriculture was intensification and export (Henriksen et al., 2012; Ingemann, 2002). Pig production was a major part of this development, and Denmark became a world leading exporter of pork meat products. Given this history, it is hardly surprising that the Danish foodscape has materially, institutionally and ideologically (Johnston et al., 2009) been characterized by a structural development which has predominantly resulted in the increased size of farm operations and their continued intensification and specialization.

Such factors as decreasing financial viability and environmental concerns, combined with shifting societal expectations related to animal welfare and public health, all have contributed in various ways to the increasing pressure on pig production (Juska, 2010). The issue has even appeared as a theme in the popular TV series "Borgen" (Khatchatourian, 2015). The response from the sector has largely been to call for greater efficiency and increased productivity (Nielsen, 2013; VSP, 2013) and to argue with the political system for a reduction in the constraints placed on the industry. The future of Danish agriculture, particularly pig production, has thus tended to be considered primarily based on a '*productivist imperative*' (Levidow, 2015, p. 77) that seeks the continuation and deepening of the current trajectory to serve global markets.

Nonetheless, there have been several efforts and attempts to address some of the public concerns regarding the long-term sustainability of Danish agriculture in other ways than through continued stress on productivity gains. Recent years have seen several different scenario studies (Bøggild et al., 2012; NLK, 2013), which have sought to discuss different pathways for agricultural development. The campaign titled "Den nye fortælling" – translated roughly as "The new narrative" – initiated by the Danish Farmers Association in 2010 seek to address some of the concerns expressed in the public debate (lf.dk, 2010a). One of the important elements in the campaign is the formulation of different development pathways which Danish agriculture might follow in the near future (lf.dk, 2010b). This exercise can be interpreted as an indication of a perceived need on behalf of the agricultural sector to consider multiple futures for the agro-food system in Denmark. However, while there may be recognition of and willingness to consider (multiple) agro-food futures in the abstract through

* Corresponding author.
E-mail addresses: DanK.Kristensen@agrsci.dk (D.K. Kristensen), Chris.Kjeldsen@agrsci.dk (C. Kjeldsen).

http://dx.doi.org/10.1016/j.jrurstud.2015.11.011
0743-0167/

scenario exercises and future visions, the real challenge lies in the actual construction of such futures.

In this paper, we have explored the case of Pig City, a technological development project that combined tomato production and pig production in what was envisioned to be a zero emission facility. In Pig City, the aim was to provide environmental benefits, high animal welfare, good working conditions, and financial viability. Pig City claimed to strike a better balance between these goals than the established pig production industry is able to achieve. As a particular novelty, the Pig City facility proposed to integrate all functions, including slaughter/processing and energy/environmental processing, into one single unit without the need for land associated directly with the pig production.

At the time of writing, Pig City has not been built in full scale; thus, it is not in full operation to date. It follows that it is not possible to analyze the degree to which Pig City delivers on its claims of, for example, improved environmental performance, animal welfare and better job opportunities.

However, we find that the Pig City project provided us with an opportunity to investigate the heterogeneous world making practices that are involved in the construction of new agro-food futures. Pig City represents a different agro-food imaginary and a novel socio-technical arrangement; the aspirations of Pig City combine to challenge the established trajectory of Danish pig production in a number of ways, such as, decentralization, social economic considerations and environmental impact. We investigated Pig City as an experiment to create a different future within Danish agriculture following both the discursive construction of Pig City as an agro-food imaginary and political agenda, and the construction of prototypes and small scale facilities that have been created to date.

In relation to the agro-food studies literature, the degree of alternativeness of Pig City might be questioned on the basis that it is not challenging fundamental structures of the food system in the same way that for example, organic production and local/community food projects have been doing. It is also not an alternative in relation to the hegemonic role of the free market and neoliberal philosophy. In these respects, Pig City does not represent a radical break with the underlying capitalist logic of Danish agriculture and it is obviously a project that is industrial in terms of its scale, organization and capital needs. But, with these reservations and qualifications, we maintain that Pig City is a useful case for elucidating the intricacies and dynamics involved in the creation of agro-food futures. Moreover, the binary opposition of, for example, conventional versus alternative, which has been a notable feature in agro-food studies, is increasingly questioned and the fluidity of such terms as "alternative" and "local" have been recognized (O'Neill, 2014). As Morgan et al. (2006, p. 2) argue, '*the borders between these systems is becoming more and more porous*'. Similarly, Tregear (2011, p. 424) emphasizes that '*food systems rarely operate exclusively within these artificially circumscribed boundaries, they dip into, or borrow from, diverse logics over time*'. Instead, Stock and Carolan (2012) have called for more careful attention to the underlying assumptions – in their terms, quantitative and qualitative views – of differing approaches to food while stressing the need to avoid essentializing them. Instead, '*greater reflexivity all around, by quality and quantity proponents alike*' is encouraged (Stock and Carolan, 2012, p. 122). These researchers have used the case of vertical farming to suggest paying attention to situations '*that pragmatically combine the qualitative and the quantitative*' (Stock and Carolan, 2012, p. 123). Moreover, such projects '*offer a philosophical topic to bridge the qualitative and the quantitative assumptions embedded in these contrasting utopian visions of food production*' and it is suggested that '*the projects related to their establishment, operation and integrations into place, provide room to discuss not just food, but what societies can, and should look like*' (Stock and Carolan, 2012, p. 123).

Our concern in this paper is to add to this line of thinking, and we argue that science and technology studies (STS) and actor-network theory (ANT) provide sensibilities (Law, 2009; Mol, 2010) for telling cases and attuning to the world, see also Latour (2005) for an introduction to ANT. These sensitivities yield relevant insights into the messiness, complex entanglements and the world making practices that are involved in constructing and enacting new agro-food futures. We suggest that advancing this understanding is a timely contribution to recent work within agro-food studies, which seeks to develop the field through notions of enactive scholarship, performativity and assemblage thinking; see the special issue of the New Zealand Geographer (Rosin and Lewis, 2013) and Carolan (2013) for key examples and discussions. See also Roep and Wiskerke (2012) for related case studies and a discussion on shaping new food futures as situated and engaged researchers.

The paper is organized as follows. First, we situate STS and ANT in relation to the agro-food literature, and we outline how adopting insights and sensibilities from STS and ANT has shaped our understanding of the construction of agro-food futures. We explain the STS inspired research strategy of following technological development projects and discuss our methodological approach in adopting this strategy. Next, we place Pig City in relation to the setting it emerged from. This leads into our narrative of Pig City as an experiment to create a new future in Danish agriculture. In the final section, we turn to the political importance of Pig City as a novel agro-food future in terms of what Michael Carolan refers to as '*making the un-thought thinkable and the un-doable routine*' (Carolan, 2013).

2. Sensibilities and methodological considerations

In agro-food research, STS and, particularly, ANT are influential approaches that have challenged previous understandings and frameworks in terms of bringing attention to hybridity (Goodman, 1999), the relational materiality of nature (Goodman, 2001), and paying attention to the role of heterogeneous associations (Murdoch, 1997) in complex networks (Murdoch, 2000). Going beyond and navigating dualisms and fixed categories (Murdoch, 1998) – for example, by viewing consumption and production as co-constitutive processes (Goodman and DuPuis, 2002) – are also an important contribution from this line of thinking.

Drawing on STS and ANT, we understand the construction of novel agro-food futures as the alignment of a wide range of interests and materials into a coherent whole that is able to hold together under stress and withstand the pressure occurring from opposing forces. This approach provides us a means to grasp the ways in which certain agro-food development trajectories are embedded in particularly durable forms and '*the practical means that allow some collectives to dominate others*' (Latour, 1993, pp. 107–108). In turn, this approach helps in discussing how things could be otherwise (Bijker and Law, 1992, p. 3).

By placing a technological development project at the center of our attention, we are utilizing a research strategy that has been effectively employed in science and technology studies to yield both theoretical and empirical insights. Michel Callon has studied the case of the electric car in France (Callon, 1986, 1987), and Donald Mackinzey has investigated the making of a missile guidance system in this fashion (Mackinzey, 1987). John Law has worked along similar lines in his study about the development of a military aircraft (Law, 2002), see also Latour (1996) for a study on the development of a passenger train. Following Callon, this research strategy allowed us '*[a]nother way of learning about society*' and '*[t]his method is particularly effective in cases in which, because they are working on radical innovations, engineers are forced to*