Journal of Rural Studies 42 (2015) 112–122

Contents lists available at ScienceDirect

Journal of Rural Studies

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

The agrifood system policy agenda and research domain

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ARTICLE INFO

Article history:
Received 23 July 2014
Received in revised form
17 September 2015
Accepted 2 October 2015
Available online 24 October 2015

Keywords:
Policy
Food system
Alternative agrifood movement
Research domain analysis

ABSTRACT

In the US, traditionally food policy has been considered a federal concern dealing with issues such as nutrition, anti-hunger, food safety, food labeling, international trade and food aid. In the 1970s, new concerns arose about the potentially deleterious consequences of the modern global food system. Social movement groups, often referred to as the Alternative Agrifood Movement, successfully championed these concerns into policy discussions, expanding the federal food policy frame to include the agrifood system agenda, while also creating new roles for local and state governments in food system governance. A body of agrifood system policy research emerged to address both the concerns and policies addressing modern global food system issues. The purpose of this paper is two-fold: first, to summarize the underpinnings of the agrifood system policy agenda, trace the emergence of initiatives in federal policy, and describe expressions in local policy; and, second, to describe the corresponding research domain, focusing on seminal works that inform or directly speak to policy development. Findings indicate that, as a whole, agrifood system policy research is interdisciplinary and draws from a core of knowledge. The most highly cited publications come from the fields of geography, sociology and rural sociology, environmental science and nutrition education, and follow a consistent trajectory of conceptualizing alternatives, providing friendly critique and proposing research agendas attentive to hybridity between conventional and alternative food systems. Research mostly informs framing and agenda-setting in the policy process and is aimed at all scales of governance, with a slight emphasis on local governance. Finally, we offer suggestions for further research, including evaluative research and comparative analysis with other domains of food policy research.

1. Getting to agrifood system policy research

Historically, food policy has been enacted at the federal level and encompassed production agriculture, human health and nutrition, and trade (Lang et al., 2009; Timmer et al., 1983), and the academic research focusing on food policy was conducted primarily by agricultural and development economists and nutritionists (Clay, 1989). In the 1970s, some new food system[1] related concerns began to emerge attentive to the potentially deleterious consequences of increased industrialization and globalization of the food system; greater concentration, consolidation and control in the middle of the food supply chain; increasing distance (physically and relationally) between consumers and producers; reduced farmer incomes; sustained food insecurity; obesity; increased social inequality; and environmental degradation (Lang et al., 2009). Pressure to address these concerns arose from food-related social movements with the aim to create food systems that work differently than the global food system (Constance et al., 2014). As these concerns gained attention, found champions, and made their way into policy debates (e.g., see Som Castellano, 2014), a corresponding vein of research emerged, which looked at these new social and environmental concerns and the policy responses. A wider variety of social science disciplines support this research, including rural sociology, geography, anthropology and urban planning (Lang et al., 2009; Wilde, 2013).

We label the policy agendas, and the associated research that grew out of these expanded concerns beginning in the 1970s, as 'agrifood systems' for two reasons. First, 'agrifood' is a term that has increasingly been used by scholars to reflect an association with the interests of the Alternative Agrifood Movement (AAM),

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[1] By food system we mean the inter-connected network of activities, resources, industries, public and private stakeholders, and policies that play a role in the production, processing, and distribution, consumption and waste disposal of food.

http://dx.doi.org/10.1016/j.jrurstud.2015.10.004
0743-0167/

which is described in greater detail in the next section (Allen, 2004; Constance et al., 2014; Friedland, 2008). Combining 'agri' and 'food' signals a focus on both production, or 'agri,' and consumption, or 'food,' and the components of the food supply chain in between (e.g., processing and distribution) and around (e.g., waste) production and consumption. Second, the word 'system' emphasizes the growing focus of policy on local, regional and community-based food systems. A systems-perspective, for example, recognizes that food markets, and the policies intended to influence these markets, are interconnected and function at all scales, local, regional, national and international. The agrifood system agenda[2] aims to create and support development that connects food producers to consumers through socially just, ecologically sound, economically viable relationships using a systems-perspective; this agenda also aims to push for solutions that are civic-oriented, often place-based, focusing on community development, healthy food access, farm viability (often of small and mid-size farms), and local and regional market and infrastructure development.

The agrifood system agenda has only recently emerged, and found footing, in the United States (US) policy arena. Further, a growing body of research attends to the issues and solutions raised by these agendas (Campbell et al., 2013). We aim to describe the emerging research domain[3] to document this area of policy research and to reveal the limitations and gaps that may exist in it. We employ research domain analysis, which is common for studying the whole of publishing in a research domain and for describing new fields of study, especially interdisciplinary ones (Börner et al., 2003; Janssen et al., 2006; Kajikawa et al., 2007).

Before describing our methods and reporting our analysis of agrifood system policy research, we first outline some of the history, interests and agendas of the AAM, which frames and guides the agrifood system policy agenda. We then illustrate coalition-building around, and the emergence of, the agrifood system agenda and in the policy process in the US. Section 2 serves to orient the reader to the interests, agendas and the history to which the agrifood system policy research focuses on. Then we describe the growing body of agrifood system policy research. Finally, we offer conclusions and opportunities for future research.

2. Emergence of agrifood system policy interests and agenda in the United States

2.1. Alternative agrifood movement and framing

The restructuring of the world food system post-World War II shifted power in the food supply chain towards an increasingly consolidated 'middle' of the supply chain (e.g., processors, distributors and retailers) (Clapp, 2012; Renting et al., 2003). So while it is argued that the global food system provides abundant and low-cost food, it is also argued it benefits large agri-businesses which strategically exploit their position in the supply chain at the expense of farmers and the public. Some of the consequences of this restructuring are the commodification of food, the marginalization of farmers (particularly small and mid-size farmers), the decline of the farmer portion of the 'food dollar,' an increase in distrust among consumers of their food supply, and an increase in environmental fragility, of the system itself (Clapp, 2012; Renting et al., 2003).[4] In response to these consequences, both scholars and activists began to identify and explore problems not adequately addressed by the conventional food system and policy environment, including the identification of paradigmatic differences in understanding food system goals and the strategies to achieve those goals (Allen, 2004; Beus and Dunlap, 1990; Henderson, 1998).

Grassroots AAM initiatives were initially focused on long-time populist concerns regarding the viability of small and mid-size independent family farms and the overall structure of the agricultural sector and its relationship to the broader economy. Attention was also focused on production techniques and the environment (Allen, 2004; Henderson, 1998; Lockeretz, 1986). Taken together, these concerns were soon characterized as an alternative agriculture paradigm (Beus and Dunlap, 1990), distinct from the "conventional agriculture paradigm" in the following ways: priority of decentralization versus centralization in markets and governance; independence versus dependence on external inputs and outside knowledge; community cooperation versus individual farm business competition; harmony with nature versus domination of nature, diversity (and systems-orientation) versus specialization in crops and livestock; and restraint for long-term viability of society and the environment versus exploitation of one's self and of other resources for short term gain (Beus and Dunlap, 1990).

AAM further grew to include greater concern for economic structural issues, while later uniting concerns of urban and rural producers and consumers with hunger, conservation and the environment, and health and nutrition (Allen, 2004). To describe their activities, AAM groups have adopted labels such as fair trade, civic agriculture, sustainable agriculture, food sovereignty, slow food, community food security, and local food campaigns (Friedland, 2010; Hendrickson and Heffernon, 2002). Together, these groups would later be referred to as part of the AAM (Allen, 2004; Constance et al., 2014). While each a separate effort, taken together, the AAM "represent(s) a broadly based alternative movement juxtaposed to the conventional agrifood system" (Friedland, 2008; pg. 197).

Given its diversity of interests, the AAM has never had a single political agenda and the current agenda for this movement is quite broad as it is inclusive of the actors and efforts seeking to create environmentally sustainable, economically viable and socially just food systems (Constance et al., 2014). This movement finds some unity in what it opposes, namely the global, primarily market-driven food system, which benefits particular actors in the food system, often large agri-businesses occupying the middle of the food supply chain (Allen, 1999). Yet it is important to note that a lot of the projects associated with the AAM still operate in market-based systems, and viability of these systems often rests on 'scaling-up' efforts, albeit via value-based supply chain relationships (Allen and Guthman, 2006; Stevenson et al., 2011).

Although no unifying political agenda defines all AAM activity, some central tenets are associated with it, ranging from production to consumption, such as democratizing and civic engagement in the food system (with a focus on community control and power), reducing distance (both physically and relationally) between producers and consumers, place-building and community development, embedding social and ecological considerations in food transactions (integrating value-based decision-making into a market-based system), sustainability (with a foundation in sustainable agriculture and a particular attention to social equity), and

[2] Here we refer to an agenda as a set of underlying concerns and objectives that drive policy solutions. While we refer to the agrifood system 'agenda,' we do not suggest there is one single agreed upon agenda, as noted in Section 2.1. Rather, we contend that there are many initiatives that fall broadly under the tenets outlined in that section.

[3] A research domain is a specialized sphere of study and knowledge creation.

[4] See Feenstra (1997) for a literature review of early works covering everything from diet impact on sustainability, loss of culture and community, corporate control and effects on farmers, farm workers and consumers.

systems-thinking (Allen, 1993; Allen et al., 2003; Clancy, 1997; DeLind, 2011; Feenstra, 1997; Goodman, 2003; Hassanein, 2003; Lyson, 2000; Sonnino and Marsden, 2006).

2.2. Federal agrifood system policy markers

Over the four decades, AAM organizations would combine efforts, grow a coalition and increase in scope and political power enough to begin pushing forward issues at the federal level. Having their interests represented in federal policy is one marker of the emergence of the agrifood system agenda in the policy arena. In this section, we describe some of the coalition building around, and inclusion of, the agrifood system agenda in the Farm Bill,[5] the major legislation impacting the US food and agricultural sector.

Paralleling the coalescing of the AAM in the 1970s, the United States Department of Agriculture (USDA) also focused on the structure of agriculture and production issues in two reports during this era (Bergland et al., 1981; USDA, 1980). Just days before leaving his post, USDA Secretary Robert Bergland issued "A Time to Choose: Summary Report on the Structure of Agriculture." Beginning in 1979, the research project, dubbed "The Structure Project," focused on examining the current structure of US agriculture, the impacts of this structure on small and mid-size family farms, and recommendations of alternative policies to address these impacts. In the foreword, Secretary Bergland indicated this report was intended to spark a national dialog on the structure of agriculture in the US, and in particular, to discuss power and control in the food system.

Soon after the start of The Structure Project, Secretary Bergland commissioned a report on organic farming, responding to requests made to the agency concerning issues such as declines in soil productivity, water pollution from erosion and inputs, hazards to human health, effects of agricultural chemicals on soil quality, decreases in family farms and local and direct markets (USDA, 1980; Youngberg et al., 1993). This report, along with the report on the structure of agriculture, were not greeted warmly by the incoming Reagan administration. The organic report was buried and 'organic' agriculture was cast in a bad light (Heckman, 2006). Advocates of organic agriculture determined to rebrand themselves, searching for a more palatable term around which to build a coalition; they turned to 'sustainability' (Allen, 2004; Heckman, 2006; Youngberg et al., 1993). The umbrella of sustainable agriculture became a home for a range of organizations concerned with both environmentally-oriented production issues and small and mid-size independent farm livelihoods (Allen, 2004; Henderson, 1998).

A 'win' for sustainable agriculture advocates was achieved with passage of the 1985 Farm Bill and inclusion of authorization for funding of what became known as the Low-Input Sustainable Agriculture (LISA) research and education program. This program began to receive funding in 1988 to create "a science-based, grassroots, problem-solving, business-not-as-usual grant program,"; it has subsequently become Sustainable Agriculture Research & Education (SARE) (Sustainable Agriculture Research and Education, 2012). Grants first focused on basic sustainable approaches, including cover crops, rotational grazing and composting. Now grants are made that connect sustainability work to 'marketing,' 'sustainable communities,' and 'systems research' (Sustainable Agriculture Research and Education, 2012). More discretionary funding for sustainability research came in the 1990 Farm Bill, but was never fully authorized. Indeed, the 1990 Farm Bill was not the step forward that sustainable agriculture interests had hoped (Youngberg et al., 1993). The 1990 Farm Bill also contained the Organic Foods Production Act of 1990, which was intended to establish a set of national standards – the organic certification program would take 12 years to be finalized, in 2002 (Heckman, 2006).

Leading up to the 1996 Farm Bill, advocates wanted to build on the foundation of sustainable agriculture in 1990 Farm Bill but provide greater momentum to ensure more even adoption and implementation of sustainability goals. They sought to create an expanded coalition to ensure greater strides could be made in sustainable agriculture, but also to introduce issues of concern for the broader coalition and more systems-oriented approaches (Gottlieb and Fisher, 1995). Gottlieb and Fisher (1995) suggested that sustainable agriculture advocates (including rural populist and environmental advocates), and those with urban food agendas, could be linked through a community food security[6] framework; it was believed that by joining forces, these groups were more likely to make the necessary inroads in the 1996 Farm Bill debate. Urban–rural coalition building is not a new strategy in Farm Bill politics and had been employed in previous Farm Bills. Gottlieb and Fisher (1995) argued that by joining forces they could open up "opportunities for policy innovation, including community empowerment strategies, direct marketing, urban greening and food production, farmland protection, inner city food retail store approaches, and community and economic development, are explored individually and as part of an overall policy framework for community food security" (p. 2). Gottlieb and Fisher also made specific calls for engaging in community planning and creating local food policy councils. In short, what Gottlieb and Fisher outline is an explicit call for an agrifood policy agenda rooted in a systems approach, focusing on community, seeking connections between urban and rural, re-embedding agriculture in all points on the supply chain, addressing equity and sustainability.

As a result of this coalition building, the "Community Food Security Empowerment Act" was passed in the 1996 Farm Bill (Gottlieb and Fisher, 1995). The legislation created the Community Food Projects Competitive Grants Program with $16 million in discretionary funding. This grant program serves as a national incubator for food system innovation at the community-level (Maretzki and Tuckermanty, 2007). In 2002, this program was reauthorized and the funding, while still discretionary, was doubled. Now this program receives mandatory funding.

The most recent Farm Bill (2014) continues to support and expand policy and programming aligning with the interests of the AAM, although there were some programs that did not get the support advocates wanted, such as the National Farm-to-School program, and other areas where funding was reduced, such as conservation. In areas of healthy food access, rural development, organics, and food system development, mandatory funding through the 2014 Farm Bill is slated to invest $501 million over five years, which is over a 50 percent increase from the previous Farm Bill (National Sustainable Agriculture Coalition, 2014).

As the above review illustrates, the interests of the AAM have found a place in agriculture and food policy at the federal level and their influence continues to grow as more and more issues are taken up in public policy. A recently published 86-page guide, titled "Building Sustainable Farms, Ranches and Communities" confirms

[5] Other significant pieces of legislation, such as the WIC Farmers' Market Nutrition act of 1992, were passed outside of the Farm Bill process. However, given space, we focus generally on the emergence of the agrifood system agenda, not every piece of related legislation. See Henderson (1998) for a review of the AAM up to the 1996 Farm Bill.

[6] Community food security is defined as "a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice (p. 37)" (Hamm and Bellows, 2003).

this diversity describing the current offering of 63 federal grant, loan and technical assistance programs in agrifood systems (Krome et al., 2014). Federal policy and programming now covers sustainable agriculture, the needs of small farmers and connections to low income residents, food system infrastructure development and community level food system priorities.

2.3. Local agrifood system policy

While federal food and farm policy evolved to include the agrifood system agenda, local and state governments have also responded by taking on new roles in food system governance. Early on, calls within the AAM called for a focus on local policy (Winne et al., 1997). For example, the Community Food Security Coalition and the California Sustainable Agriculture Working Group (1999) wrote "Getting Food on the Table: An Action Guide to Local Food Policy" which provided instructions on how to do a food policy inventory, examples of cases of local food policy efforts, and recommendations on organizing to move agendas. Early policy work across six cities (Pittsburgh, PA, Los Angeles, CA, Moyers, WV, Austin, TX, Berkshire County, MA, and a nine county region around Rochester, NY) focused on hunger and food security, sustainable agriculture and economic and community development, and land preservation and human health (Dahlberg et al., 1997).

The local and state scales are attractive for those seeking to move the agrifood system agenda. If federal policy provides the parameters for the current food system, then municipalities, states and nonprofits are exploring their role in creating alternatives (Scherb et al., 2012). When experimentation occurs in new policy areas, new forms of governance emerge, namely local partnerships between government, local institutions and community organizations (Mendes, 2008). These partnerships use tools and resources to facilitate governance and build capacity for local government to address new arenas (Mendes, 2008).

In the case of agrifood system agenda, emergent governance partnerships have been driven by food policy councils (FPC), networks and coalitions. These citizen-oriented groups undertake activities that identify and define problems that could be addressed through policy initiatives (Clancy et al., 2007). The first FPC was established in 1981 in Knoxville, TN.[7] The most recent census shows over 200 FPCs in the US (Center for a Livable Future, 2014). FPCs take many forms, from loose coalitions, to non-profit organizations to local government task forces and recognized government entities. Eighty-five percent of FPC survey respondents report they are involved in policy in some way, ranging from problem identification to development of policies to education and lobbying to implementation, but fewer (20 percent) discussed evaluating policies (Scherb et al., 2012). Further, published research on FPCs is limited and there is little evaluation on the role of FPCs in the policy process, or overall effectiveness (Chen et al., 2015; Scherb et al., 2012). Other types of groups are beginning to work on agrifood system policy, such as food business clusters, food hubs, and cooperatives (see the census at Center for Livable Future, 2014).

Scholars have pointed out that AAM-related efforts did not always emphasize the role of local policy for various reasons, including limited availability of local policy tools (as a result of this being a new policy area for local government), uncertainty of where food concerns belonged in local government, a focus on alternatives to the global food system instead of changing the system, and the rise of volunteerism and charity (Allen, 1999; Goodman, 2003; Harper et al., 2009; Mendes, 2008). Yet a recent survey of nearly 2000 local governments illustrates the widespread adoption of policies (Goddeeris, 2013). Further, over a dozen local governments have institutionalized food policy as government program areas (Hatfield, 2012). Two local policy databases have recently been published, with one compiling over 100 local policies[8] and the other over 100 local, state, tribal and regional policies.[9] The local policies focus on supporting (in rural areas) or enabling (in urban areas) local production of food; procuring local/regional food for institutions (such as farm-to-school); increasing the accessibility of healthy food through the local retail environment (mobile, restaurants, grocery, corner, farmers markets and farm markets, CSAs); facilitating the development of food system infrastructure (processing and aggregation); conducting nutrition education; emergency provisioning of foods; managing food waste and recovery; and, promotion of organic farming practices. Evaluation of these types of interventions (such as urban agriculture, healthy food retail and using federal food assistance at farmers' markets) is on the rise, but still limited (Chen et al., 2015).

3. An examination of the agrifood systems policy research domain

As the agrifood system agenda made its way into federal policy and found footing in subnational policy arenas, a corresponding body of research began to examine these efforts. Roots of scholarship concerned with the AAM, in general, can be traced back to the 1970s when the farm crisis in the US gave rise to the "invisible college" that became the agrifood cluster in the Rural Sociological Society and the International Sociological Association (Friedland, 2008). The reference to this group of scholars as an invisible college is meant to signify the interdisciplinary nature of the group (which would include many more disciplines than sociology), which is loosely collected, and had no specific venue for professionally meeting and publishing work. Rather, these scholars would meet ad hoc or in special interdisciplinary meetings, such as Agriculture and Human Values conferences, and publish in interdisciplinary outlets such as Sociological Ruralis and the Journal of Rural Studies (Friedland, 2008).

In this section we begin to focus our attention on the scholarship associated with the AAM and focused on agrifood system policy. We take a research domain analysis (RDA) approach, which is used to describe the whole of publishing in an area of specialized research (Börner et al., 2003; Janssen et al., 2006; Kajikawa et al., 2007). Using a comprehensive and specialized database we describe the basics of the research domain, including the number of published articles, the top ten journals in terms of numbers of articles published, and the countries from which the primary author published. This analysis allows us to determine if there is a common core of seminal publications that would indicate the existence of a research domain.

Additionally, we evaluate attributes of this research domain, including examining what levels of governance agrifood system policy research is aiming to inform (local, regional, state, national, international) as well as examining what phase of the policy process (agenda-setting, formation and legitimation, implementation, evaluation and decisions about the future) the research seeks to inform.

While policy stages have been criticized as suggesting the policy

[7] See Dahlberg et al. (1997), in particular the section by K. Clancy entitled "A Timeline of Local Food Systems Planning" for an early history of early food system planning which includes the start-ups of food policy councils. See Chen et al. (2015) for a recent food policy council literature review.

[8] http://growingfoodconnections.org/tools-resources/policy-database/.

[9] http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/projects/FPN/resource/online/index.html.

process is linear, they provide a useful way of categorizing policy research (Smith and Larier, 2013). By using the policy stages model (Ripley, 1985) we are not implying there is a linear relationship in the policy making process. We use this model to systematically identify a point in the policy process (a snapshot), not the relationship of this point with other points in the process.

To answer these questions, we utilize basic bibliometrics and knowledge network analysis to analyze academic publishing from January 2000–May 2013, which enables us to examine the whole of agrifood system policy research. Bilbliometrics, or analysis of publishing, can be used to define an academic field as publications are considered peer acceptance of research. Also basic bibliometrics and domain visualization are two approaches common for understanding fields of study (Börner et al., 2003; Janssen et al., 2006; Kajikawa et al., 2007; Wagner et al., 2011). The bibliometric data we used was developed using a publically available database from the University of California, Davis Sustainable Agriculture Research and Education Program. Campbell et al. (2013) review this database in a recently published article. They designed the database to inform the research-to-practice continuum in sustainable, local and regional food systems.

The Davis research team used three main approaches to develop the database. First, they read through every issue of what they determined to be leading journals in the field since 2000. This included *Community Development, Rural Sociology, Agriculture and Human Values, Journal of Environmental Hunger & Nutrition, Renewable Agriculture and Food Systems (*formerly *American Journal of Alternative Agriculture, and Journal of Agriculture, Food Systems, and Community Development)*. However, their search was not limited to these journals. They also used just over 150 key search terms related to sustainable, local or regional food systems in Google Scholar and Web of Science (WOS) to find articles outside of these journals. The total number of unique journal titles represented in the full database is over 500. Lastly, they consulted reading lists from University of California–Davis food system classes and bibliographies. (See the user guide for their methodology, including search terms: http://asi.ucdavis.edu/programs/sarep/research-initiatives/fs/assessment/community-food-system-resources) The Davis research team excluded articles focused on agricultural production practices. The resulting database includes publication type, author, title, year published, source, methodology used to find work, and relevant subcategories.

All 2153 publications were placed in one to three of 41 subcategories found in the database. To develop the subset of publications we worked with, we selected four most relevant subcategories: "local policies/regulations/governance," "state/regional policies," "national policies/regulations/governance," and "policies, regulations and governance." Other subcategories included themes such as farmers' markets, farm to restaurant and processing and distribution. Our four subcategories encompassed 408 policy-oriented publications. This became our working dataset and included 14 books, six book sections, five conference papers, eight edited books, one electronic article, 17 government documents, 350 peer reviewed journal articles, and seven reports. To make sure we were not missing any additional policy publications, we also reviewed the publications in the other 39 subcategories that may be policy-related, including "city and regional/foodshed planning," "economic development," "farm to institution" and "local control and democracy." We checked all publications in these four subcategories to find any that were policy-related, reading abstracts to determine if they addressed policy development, implementation or evaluation. When we identified policy-related publications, we made sure that they were also coded in at least one of the four policy subcategories that we used to create our dataset. We did not discover any publications in the other subcategories that were policy-related and that were not already included in our dataset.

Next we searched for the 408 policy-oriented publications in Scopus and Web of Science (WOS). We chose Scopus over WOS because 259 of the 408 publications were indexed in Scopus, which were approximately 100 more records than WOS. A limitation to using Scopus is that books are not indexed, thus, they are not included in our final data. Another shortcoming of using Scopus, or WOS, is that some journals, such as the Journal of Agriculture, Food Systems, and Community Development, are not indexed. The Scopus-derived dataset was then converted from a WOS file to an ISI-compliant file to be used in software described later in this section using Leydesdorff's (2011) conversion tool. These 259 records will be referred to as the "Scopus" dataset. Finally, we cleaned the Scopus dataset by ensuring consistency between citation text entries (both the publications themselves and the works they cite). We recognize our data has limitations. First, the original bibliography development has limitations. These are covered by Campbell et al. (2013) and include the fact that any categorization scheme of such an interdisciplinary area has the potential to be arbitrary. For our work, we were also limited by the fact that Scopus does not index books and does not index some journals. Finally, we are unable to compare this research domain to the domain in previous time periods as such analysis or data for earlier time periods does not currently exist.

To identify the scholarly roots of published research on agrifood system policy we follow the method utilized by Janssen et al. (2006) to describe the research domain of the human dimensions of global environmental change. We used the Scopus dataset to calculate the frequency of the over 10,000 works cited by the Scopus dataset using *HistCite* (Garfield, 2004). We then used *HistCite* and graphed the citations most cited by publications in our Scopus dataset and the relationships between these most cited works.

To further outline the character of this research domain, we first seek to determine the scale of governance the research aims to inform. The Scopus dataset was hand-coded by asking, according to who is the intended governance audience(s) and at what scale(s) do they operate? We used the article abstracts, reviewing the entire article when needed (e.g., no abstract accompanied the article, or the scale was not clear in the abstract), to determine the scale. For example, an article evaluating the USDA national organic certification program, would be coded as 'national.' Some articles have multiple audiences that work at different scales, which is common in the federal system in the US. For example, a national policy that is implemented locally, and the article provides insights and/or recommendations to both local and national audiences. In recognition of this, articles could be coded in more than one category. For example, if an article was clearly about local implementation of a national policy and the article aimed to provide insights and/or recommendations to both audiences, then the article was coded as both 'local' and 'national'; this occurred in 12 percent of the articles. But if the article concerned local implementation of a national policy and the intent of the article was to improve local implementation of the policy, then the article was coded as only 'local.' The codes for scale of governance are local, regional, state/province, national, global and supranational. Articles were coded 'global' if they were general policy framing articles aimed at any state. Articles aimed at European Union governance, or multiple nations, were coded 'supranational.' Two of the three authors coded the scale independently and the results were compared to ensure intercoder reliability. When differences existed, the authors discussed and reconciled the assignment of scale. Differences occurred in a few instances, such as when a publication was evaluative of a federal policy that is implemented locally.

Finally, we characterized each article in relation to the policy stage organizing framework. Policy stages, while not without critique, provide a useful, albeit basic, organizing framework for policy research (Smith and Larier, 2013). Ripley (1985) provides a set of basic policy stages: 1) agenda setting – which includes the perception of the problem, problem definition and mobilization of support to include the problem on the policy agenda; 2) formulation and legitimation of goals and programs – which includes the collection analysis and dissemination of information to assess alternatives and persuade, the development of alternatives, coalition building and compromise and negotiation; 3) program implementation – which includes resource acquisition, interpretation, planning organizing and providing services; 4) evaluation of implementation, performance and impacts – which includes analysis of performance and impacts; and, 5) decisions about the future of the policy and program – which includes decision to reenter the policy process at any other point after a policy is in place. We used a similar process of coding abstracts according to the policy stage the research addressed as we did with scale. As with scale of governance, some publications fell into more than one category (stage) (about five percent of the articles). One difficulty was determining if a publication was about agenda setting or if it was decisions about the future of the policy/program. For example, it was agreed upon by the coders that if a publication was about a policy that failed for reasons that were related to things such as improper implementation, the publication would be coded as decisions about the future of the policy/program because the indication is that the policy needs to reenter a previous policy stage for tweaking, but would not need to garner new support (agenda setting). However, if a publication was about a policy that failed and needed new support for a new angle, the publication would be considered agenda setting.

4. An examination of the agrifood systems policy research domain: findings and discussion

We begin our report of the analysis with some basic description of the dataset. As discussed in the methods section, the original dataset includes 408 publications. Focusing on publications between January 2000–May 2013, we examine the rate of publishing by year. Fig. 1 illustrates the 383 books, reports and articles published during this time period, identifying both the number of publications per year and the cumulative number of publications. The pattern revealed in Fig. 1 suggests that the agrifood system policy research domain has slowly grown commensurate with the emergence of federal and local agrifood system policy, perhaps even gaining some momentum in terms of total publications in the last couple years. The 26 publications in 2013 only represent the first five months of that year, as indicated by a broken line. The authors do not have an explanation for the discernable drop in publications in 2011.

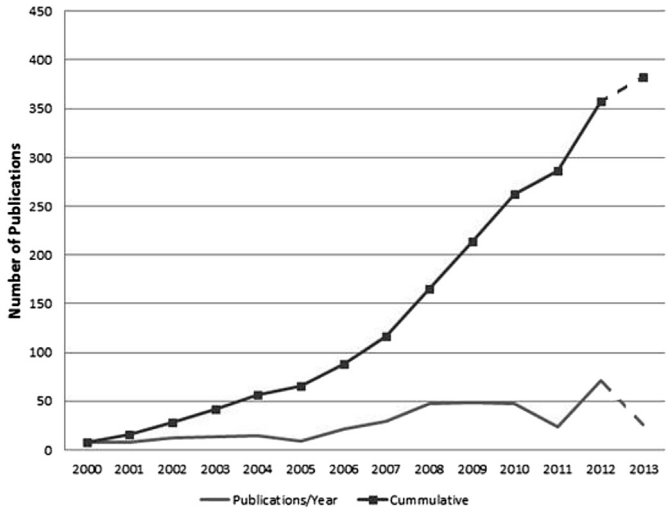

Fig. 1. Rate of publishing and cumulative published works January 2000–May 2013 (n = 383).

Table 1 lists the top 10 journals represented in our complete bibliographic database. This list includes both journals that were specifically targeted in the bibliography development, such *Agriculture and Human Values* and *Journal of Hunger and Environmental Nutrition*, and journals that were not on the targeted list. Aside from the *Journal of the American Dietetic Association* (now the *Journal of the Academy of Nutrition and Dietetics*), all journals are considered to be primarily interdisciplinary.

Table 2 lists the top 10 countries associated with the primary author's mailing address. Given that the Davis team limited their scope by excluding articles that primarily focused on agricultural production practices and those outside of the US and Europe, it is not surprising that the US and United Kingdom (UK) are at the top of the list.

Next we seek to identify the seminal publications in the area of agrifood system policy research. Identifying the seminal works in agrifood system policy is critical to the understanding of the core knowledge of the domain. The publications in our Scopus dataset cited a total of 10,306 works. Seventy-five percent of the publications share citations with more than one other publication in the Scopus database, with each publication on average having common citations with 14 other publications. These statistics suggests that there is a clustering of papers and a development of a core knowledge through co-citation (Janssen et al., 2006).

We identified the top 20 cited publications. Fig. 2 illustrates the citation relationship of these publications with one another, in addition to providing a timeframe. Publication nodes are smaller or larger depending on their local citation count, or the number of times the published work is cited in the Scopus dataset. If the node is filled in, then the publication is also an article found in our original Scopus dataset. Four of these works are found in the original Scopus dataset. Nodes are connected if a publication published later in time cites an earlier publication. Finally, as the US and UK dominated the publishing counts overall, authors from these countries are also the most cited. Authors are highlighted in blue if they have primarily published in the US, and red if they have primarily published in the UK. These authors represent such fields as geography, sociology and rural sociology, environmental science and nutrition education. Table 3 is a list of these publications and includes the local citation count (the number of times the work was cited by one of the 259 publications in the Scopus database) and the global citation count (the number of times the work has been cited

Table 1
Top 10 journals in the complete dataset (n = 408).

Journal name	# of publications
Agriculture and Human Values	28
Journal of Hunger & Environmental Nutrition	25
Land Use Policy	11
Geoforum	9
Journal of the American Dietetic Association	8
Journal of Rural Studies	8
Journal of Agricultural and Environmental Ethics	7
Food Policy	6
Public Health Nutrition	6

Table 2
Top 10 countries (n = 259).

Country	# of publications	Percentage
United States	96	37.0%
United Kingdom	71	27.4%
Canada	26	10.0%
Australia	10	3.9%
Netherlands	10	3.9%
Italy	8	3.1%
Spain	8	3.1%
New Zealand	6	2.3%
Belgium	5	1.9%
France	5	1.9%
Germany	5	1.9%
Sweden	5	1.9%
Switzerland	5	1.9%

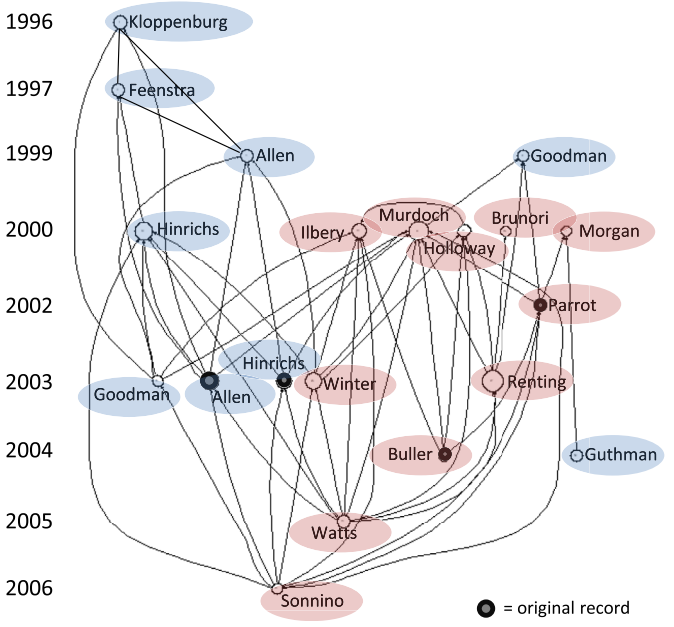

Fig. 2. Paper citation network of the most highly cited publications (blue nodes = United States; pink nodes = United Kingdom). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

by any other publication indexed by Scopus). Reviewing the list reveals that these articles are published in mostly interdisciplinary journals.

All of the most highly cited publications are connected via citation networks, further suggesting a core knowledge (Janssen et al., 2006). Aside from the Guthman (2004a,b) article, later publications cite several of the previously published most cited publications. The two latest articles, Sonnino and Marsden (2006) and Watts et al. (Watts et al., 2005), cited nine each of the preceding 18 publications, suggesting a core of knowledge. It appears that US and UK authors more frequently cite work from institutions in their home countries, suggesting two simultaneous but related streams of publishing. However, the two newest publications cite both the core US and core UK publications, suggesting the potential for greater cohesion of framing in the future.

Content wise, the 20 most cited articles generally reflect the concerns of the AAMs and the need to address increased industrialization, globalization, concentration, and consolidation in the food supply chain which simultaneously increases distance between marginalized consumers and producers and creates greater food insecurity, health impacts and environmental degradation. Several of these articles are cited at the end of Section 2.1 when describing the central tenets of the AAM. At the core, these works focus on conceptualizing alternatives to the global food system and methods for implementing these concepts on the ground. Most articles speak to embedding social concerns in the economic realities of the food system, with later articles questioning exactly how 'alternative' efforts are, or should be.

Looking more closely at each work, the earliest published work is Kloppenburg et al.'s (1996) description of 'foodsheds,' analogous to the watershed, as an organizing construct for alternative food systems that have clear connections between producers, consumers, community and environment. Foodsheds are the conceptual and methodological unit of analysis for alternative agrifood systems, offering a way to visualize embedding social and environmental in the economics of the food systems, in addition to offering a place-based perspective for policy development. Then Feenstra (1997) offers a literature review of the practical application of alternative agrifood systems. Allen (1999) provides the first friendly critique of the AAM in this group of articles, frankly suggesting alternative agrifood strategies (in this case, community food security strategies) should exist alongside larger government food safeguards and that community food security is not a realistic replacement for such federal assistance. A set of papers from 2000

Table 3
Top 20 most cited works. LCC = Local Citation Count; GCC = Global Citation Count; Original = record found in our original dataset.

Author(s), journal, volume, page	Year	LCC	GCC	Original
Kloppenburg J, Agriculture and Human Values, V13, P33	1996	12	373	N
Feenstra G, American Journal of Alternative Agriculture, V12, P28	1997	11	236	N
Allen P, Agriculture and Human Values, V16, P117	1999	11	191	N
Goodman D, Sociologia Ruralis, V39, P17	1999	10	83	N
Murdoch J, Marsden T, Banks J, Economic Geography, V76, P107	2000	25	214	N
Hinrichs CC, Journal of Rural Studies, V16, P295	2000	22	203	N
Ilbery B, Kneafsey M, Journal of Rural Studies, V16, P217	2000	15	98	N
Holloway L, Kneafsey M, Sociologia Ruralis, V40, P285	2000	13	94	N
Morgan K, Murdoch J, Geoforum, V31, P159	2000	9	104	N
Brunori G, Rossi A, Sociologia Ruralis, V40, P409	2000	9	59	N
Parrott N, Wilson N, Murdoch J, Euro. Urban Regional Studies, V9, P241	2002	11	98	Y
Renting H, Marsden T, Banks, J, Environment & Planning A, V35, P393	2003	27	175	N
Allen P, Fitzsimmons M, Goodman M, Warner K, J. Rural Stud, V19, P61	2003	21	147	Y
Winter M, Journal of Rural Studies, V19, P23	2003	19	193	N
Hinrichs CC, Journal of Rural Studies, V19, P33	2003	17	431	Y
Goodman D, Journal of Rural Studies, V19, P1	2003	10	122	N
Guthman J, Environment & Planning A V36, P511	2004	10	42	N
Buller H, Morris C, Environment & Planning A, V36, P1065	2004	9	31	Y
Watts DCH, Ilbery B, Maye D, Progress Human Geography, V29, P22	2005	11	90	N
Sonnino R, Marsden T, J Economic Geography, V6, P181	2006	10	64	N

largely focuses on interplay between social embeddedness and economics in the emergence of local food system initiatives, and consequently the advent of new consumption spaces (farmers markets, CSAs, etc.), the power of local collective action, and the quality-turn as it is constructed by demand for specialty food products instead of food safety (Brunori and Rossi, 2000; Hinrichs, 2000; Holloway and Kneafsey, 2000; Ilbery and Kneafsey, 2000; Morgan and Murdoch, 2000; Murdoch et al., 2000).

Then in 2003, the Goodman publication prefaced the collection of papers presented at an influential 2001 workshop at the University of California, Santa Cruz (International Perspectives on Alternative Agro-Food Networks: Quality, Embeddedness, Bio-Politics). The purpose of this workshop was to critically examine the 'quality-turn' in alternative agrifood networks and problematize the labeling of this turn (local, embedded and quality) as unidimensional (Goodman, 2003). Consequently, these papers generated the reflection that perhaps local embeddedness has been overly conflated with quality and there may be more nuanced political factors involved in the determination of consumer motivation for local food (Allen et al., 2003; Goodman, 2003; Hinrichs, 2003; Winter, 2003). To that end, this workshop produced a new research agenda calling for less attention on production as it ignores consumption, and further, a call for future research to retreat from embeddedness as it can create an exaggerated dismissal of economic processes.

Lastly, as previously mentioned, Guthman's (2004b) publication does not have a direct connection to the other papers, as shown in Fig. 2. This publication has a food governance angle and posits that organic regulations created barriers to entry for smaller farms (e.g., cost and strict standards), which lead to distortion of the intention of organic farming; and consequently, the creation of scarcity of organic food because the incentive of growing and selling goes only to those who are willing to endure the regulations attached to it. Finally, the publications from 2005 to 2006 cited many of the aforementioned publications. These two articles provide research agendas which focus on the complex, hybrid landscape of alternative food networks suggesting a need to expand the binary conceptualization of alternative and conventional and to examine 'alternatives' as networks embedded in the same competitive landscape as conventional food systems (Sonnino and Marsden, 2006; Watts et al., 2005).

Because Scopus does not index books, they are not included in Fig. 2 or Table 3. The most cited books (in order of most cited at 19 cites to least cited at 12 cites) include: Lang and Heasman's (2004) *Food Wars: The Global Battle For Mouths, Minds and Market*; Morgan et al. (2006) *Worlds Of Food: Place, Power and Provenance in the Food Chain*; the Report of the World Commission on Environment and Development (1987) "Our Common Future: From One Earth to One World"; Allen's (2004) *Together at the Table*; Guthman's (2004a) *Agrarian Dreams: The Paradox of Organic Farming in California*; and the volume *Between the Local and the Global: Confronting Complexity in the Contemporary Agri-food Sector*, edited by Marsden and Murdoch (2006).

The final research domain analysis conducted focuses on identifying the scale of governance the research intends to inform and the stage of the policy process to which the research contributes. Ideally research is contributing to the full range of the policy processes and to all levels of governance as agrifood system policy is being instituted at local, state and federal levels in the US. Table 4 presents the findings of the scale of governance at which each publication is directed. Note that each publication could be coded in more than one category. The gray cells reflect the number of publications found only at that scale. The white cells reflect the number of publications that can be found across more than one scale. The total for each scale is at the bottom of each column in italics. Because publications can be coded in more than one category, publications may be double-counted and therefore the total is greater than the 259 publications used in the analysis.

Local has the most publications (103 publications), but it is followed closely by *National* (94), *State/Province* (27), *Regional* (26), and *Global* (24) and *Supranational* (24). Given the new found roles of local government in food policy described in Section 2.3, it is not surprising that slightly more publications are aimed at the local level and that these local publications are dominated by the US. *Local* publications cover such topics as food system planning, community gardens, farmers markets, land use and healthy food access strategies. *Regional* articles are almost entirely articles from Europe, with a couple from Canada. *State/Province* articles are mostly US articles with a couple from Canada and Europe. Topics covered here include state farm-to-school programs or land use policies. *National* articles are dominated by the UK. The publications from the US cover polices such as the Farm Bill, the Farmers Market Nutrition Program, funding for sustainable agriculture research or policies for national organization such as the Community Food Security Coalition (which is no longer an organization) and the Academy of Nutrition and Dietetics (formally known as the American Dietetic Association). Most *Supranational* articles are aimed at European Union policies, such as the Common Agricultural Policy. Finally, *Global* articles address Agenda 21, the Kyoto Protocol, general issues in food citizenship and food democracy and supply chain governance. Forty-one articles speak to multiple levels of governance.

Next, we report the findings related to the policy stage that is focused on by each publication (Table 5). Table 5 is read the same as Table 4. As with scale of governance, each publication could be coded in more than one category. The publications in the Scopus dataset overwhelmingly address the policy stage of *Agenda Setting* with 177 out of 259 publications falling into this category. The topics covered in this stage encompass a range issues, without a particular focus. *Evaluation*, the second most common policy stage has only 44 of the publications addressing it and tended to cover longer standing programs such as farmland preservation, farm-to-school and the Farmers Market Nutrition Program in the US, or rural development and labeling in the EU. *Formulation and Legitimation* of goals and programs (33 publications) included exploration of policy options (carrots or sticks, for example) or exploring models to maximize local production or the best distribution models. Other articles provided justification for policy approaches, such as why FPCs are the best way to organize to address food policy concerns or why food hubs make sense for economic development. Fewer publications are associated with the remaining stages – *Decisions about the Future* (11 publications) and *Program Implementation* (7 publications). These results confirm what was suggested earlier, that this is an emergent area of food policy and, therefore, much of the work is still focused on legitimizing the issues of interest and less attention is paid to evaluation.

5. Conclusions

Post-Depression and WWII era objectives of food policy focused on the goals of low-cost and abundant food. While these objectives continue to be a priority in the US today, new concerns have gained attention, found champions, and made their way via agrifood system agendas into policy debates—ultimately emerging in US federal food and farm policy and creating new roles for local and state governments. Food policy objectives have broadened to include priorities we associate with the agrifood system agenda, including policy outcomes related to sustainable agriculture, small and mid-size farm viability, increasing healthy food access, community-building and development of local and regional food systems. The

Table 4
Scale of governance (n = 259).

	Global	Supranational	National	State/Province	Regional	Local
Global	23					
Supranational	1	23				
National	0	0	74			
State	0	0	5	7		
Regional	0	0	0	2	19	
Local	0	0	15	13	5	70
Total	24	24	94	27	26	103

Table 5
Policy stages (n = 259).

	Agenda setting	Formulation & legitimation	Program implementation	Evaluation	Decisions about the future
Agenda setting	170				
Formulation & legitimation	7	26			
Program implementation	0	0	6		
Evaluation	0	0	1	39	
Decisions about the future	0	0	0	4	7
Total	177	33	7	44	11

'old' policy frame was built around federal responsibilities and consumer participation in markets (Wilde, 2013); whereas the 'new' policy frame is wider, more systems-oriented, and includes responsibility at all levels of government with a part of the agenda being set by actors in the Alternative Agrifood Movement.

The growing body of research focused on the agrifood system policy agenda is: 1) generally published in interdisciplinary journals, including its seminal works; 2) grounded in the scholarship of geography, sociology and rural sociology, environmental science and nutrition education; 3) has seminal works oriented around the concerns of the AAM, providing conceptual, practical and critical perspectives of food system alternatives; 4) weighted slightly more toward informing local governance than national governance, and 5) focused mostly on framing the issues, or agenda-setting. From this research, we do know that, while being interdisciplinary, agrifood system policy research is drawing from a core knowledge. While a quarter of the publications do not have any common citations with one another, 75 percent do have common citations, with each publication on average having common citations with 14 other publications. Further, the 20 most highly cited publications are cited a total of 282 times by publications in the database and all highly cited publications are connected with one another via citations.

One potential limitation to agrifood system research domain is the noticeable absence of some scholarly voices within the domain. While agrifood system policy research has attracted a wide variety of disciplines (e.g., geography, sociology and rural sociology, environmental science), researchers from the long tradition of food policy research, such as agriculture and development economists, for the most part, are less visible in this area of research. Future work in the agrifood system research domain can potentially benefit by integrating traditional disciplines with AAM research so that practical solutions to the concerns of the agrifood system agenda can be attained in a holistic manner, alleviating potential limitations of siloed research.

Based on our research, we have four recommendations concerning the future of the agrifood research agenda. First, the agrifood system policy research agenda should continue to focus on agenda-setting, but also should be attentive to the design and evaluation of policies, how to govern, organize and manage their implementation, as well as how to finance these efforts. Second, specifically regarding evaluation and following the critique provided in the seminal works, evaluation research should include methods for measuring the extent to which agrifood system agendas, once activated through policy and implemented, are realized. Metrics to address the following should be considered in evaluation: the extent of democratization of and civic engagement in the food system, reduction of the distance between producers and consumers, place-building and community development, embedded social and ecological considerations in food transactions, sustainability, social equity, and systems-orientation.

Third, the explorative, descriptive research in this manuscript provides a basis from which to compare future publishing of agrifood system policy research to study how the domain evolves over time. Thus, these findings lend themselves to future comparative analysis examining the relationship of the agrifood system policy research domain with the whole of food policy scholarship in terms of contributing disciplines, seminal works, the extent of co-citation and the scales of governance and policy stages that the research intends to inform. Follow-up questions could focus on why connections, or disconnections, exist between these research domains. For example, if it is found that traditional and agrifood system research domains are drawing from different disciplines, one could ask if there is a selective bias concerning who is adhering to certain cannon? The future of the agrifood system policy agenda could be that eventually it becomes indistinguishable from mainstream food policy agendas as agrifood system issues are co-opted or integrated into the dominant actors agenda (Som Castellano, 2014) and the unique policy niches for AAM actors dissolve (Scott, 2015). In this case, we might expect to see agrifood system policy research join the traditional food system policy domain—future research could help to discern the integration or continued distinctiveness of agrifood system policy research.

Acknowledgements

We thank Dave Campbell, Gail Feenstra, Ryan Galt, Courtney Marshall, and Ildi Carlisle-Cummins from UC Davis for making their database publically available and encouraging its use. Thanks to Neal Hooker for his support and Caroline Wagner for assistance with methods. The authors also thank Kate Clancy, Patricia Allen, Gail Feenstra, Hugh Joseph, C. Clare Hinrichs and Ken Dahlberg for sharing their insights during the early stages of the research process. Finally, we thank Michael Carolan for shepherding this manuscript and the two anonymous reviewers who provided excellent feedback on initial versions. This research was made

possible, in part, by funding from the Ohio State University Food Innovation Center and USDA/NIFA AFRI Food Systems Program (NIFA Award # 2012-68004-19894).

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