



## Review of Scientific Pluralism and its Motivations to Agribusiness

The term “agribusiness” first appeared in Davis and Goldbergs’ (1957) seminal book titled “A concept of Agribusiness”, which described three distinct yet interdependent sectors in a global food system. The sectors include suppliers of agricultural inputs, producers of agricultural commodities, and institutions that perform the functional aspects associated with marketing food and fiber products. The functional aspects of marketing include product exchange, processing, storage, and transportation, as well as suppliers of market information, risk management, and financial services related to product distribution. Fundamental to the concept of agribusiness is that many problems related to agriculture are interrelated and dependent upon political, sociological, economic and behavioral factors (e.g. King et al. 2010; Ng and Siebert 2009; Sonka and Hudson 1989). The study of agribusiness is arguably complex and involves the study of problems that spans across various levels of analysis – firm, inter-firm, value chains and markets. Due to its increasingly complex nature, agribusiness is an applied field that requires different theoretical as well methodological approaches to the resolution of agribusiness problems (Ng and Siebert 2009).

Yet, despite the growth and interest in agribusiness, a definitive consensus as to what constitutes the “field of agribusiness” remains a point of contention and confusion among academics, university administrators, and practitioners in the agribusiness system (i.e., agribusiness managers and policy makers). In this special issue, we argue that the “field of agribusiness” is inherently a “scientifically pluralistic” endeavor to which efforts to define it as an academic discipline are not conducive to the advancement of agribusiness as an applied field (Harling 1995; Ng and Siebert 2009). A scientific discipline consists of a common set of ontological (i.e. assumptions about the nature of reality) and epistemological assumptions (i.e. assumptions about the way of knowing the nature of reality) (Lewis and Keleman 2002; see also Peterson this issue). This consists of a common census and accepted world view on basic assumptions, concepts, theories and methods (Markoczy and Deeds 2009). Yet, discipline-based definitions of agribusiness are necessarily elusive because they reflect but one aspect of the complex realities confronting agribusiness. Namely, as the problems dealt by agribusiness managers are complex and multi-faceted, agribusiness researchers are often required to extend their training beyond the discipline of economics to include other social sciences (Sonka and Hudson 1989; Harling 1995; Ng and Siebert 2009; King et al. 2010). Multiple view points and/or methods of analysis have been increasingly called for when studying agribusiness phenomena (see e.g. Boehlje et al. *this issue*). This was recognized earlier by Westgren and Cook (1986) and many others (Harling 1995; Ng and Siebert 2009; King et al. 2010) who had noted, “if inroads are to be made in agribusiness management research, cross-disciplinary efforts are necessary” (p. 488).

Such pluralism has long been widely recognized in organization and management. Pluralism rests on the premise that “truth” is revealed not through the lens of a particular paradigm or discipline, but through many (Jackson 1999). The goals of scientific pluralism are distinct from a singular disciplinary focus. A singular focus promotes a consensus of views that promotes a common basis to assess, compare and refine theories, methods and results (Markoczy and Deeds 2009). This promotes an examination and explanation of certain facts of organizations that is consistent with the paradigm without a need to clarify conflicting viewpoints (Markoczy and Deeds 2009). Under such a disciplinary orientation, novel facts and empirical irregularities tend

to challenge the accepted paradigm and thus are often discounted as nuisances to the development of the paradigm (Lewis and Keleman 2002; Kuhn 1970). While, in contrast, the goals of scientific pluralism do not seek to explain organizational phenomena in ways that conform to the accepted paradigm, but rather “encourages inquiry across paradigms and to foster greater understandings of organizational plurality and paradox.” (Whitley 1984). This follows Kuhn’s (1970) arguments that the singular pursuit of a paradigm can yield political processes that perpetuate a paradigm well beyond its useful value. Kuhn argues revolutions in science or true knowledge can only develop when alternative viewpoints are pursued to challenge the legitimizing forces of paradigm development.

In spite of the merits of scientific pluralism, it has been criticized on various fronts. Critics contend that pluralism can lead to a lack of scientific consensus and hinders the advancement of a shared paradigm (Markoczy and Deeds 2009). While the development of a shared paradigm is important to advancing the status and prestige of a discipline, philosophers of management contend the field of management has grown in prominence not because of a lack of a disciplinary consensus but has grown because of it (e.g. Mahoney and McGahan, 2007; Zahra and Newey 2009). For instance, as Scherer (1998) notes “the conventional wisdom in management research has been a continued call to welcome the search for new paradigms and to which many contend theoretical pluralism is generally advocated as a fruitful expansion (Smirch and Stubbart 1985; Daft and Buenger 1990; Bowman 1990, 1995; Thomas and Pruett, 1993). When ‘uniqueness’ is seen as scientifically valuable, researchers have an incentive to create even more perspectives” (151). Such varied perspectives however do raise a problem of incommensurability. A lack of scientific consensus can promote the combining of paradigms that have incompatible assumptions, theories and or methodologies (Scherer 1998). Remediating such concerns remains a key challenge in advancing a scientific pluralistic agenda. Various solutions exist. For instance, some contend that the use of positivism and empirical hypothesis testing can be used to help sort false hypotheses or viewpoints (see also, Scherer 1998; Zahra and Newey 2009). In the long run, the falsification of different paradigms can “lead to a coherent set of law-like explanations that are considered a true picture of the world” (Scherer 1998, 152).

Due to the complex nature of agribusinesses problems, we believe, the pursuit and discovery of alternative paradigms are not only conducive to developing better understanding of the field of agribusinesses, but also serves to develop normative prescriptions that are relevant to agribusiness managers. Our motivation for this special issue was driven by this basic premise. Our goal is to encourage agribusiness researchers to discover and/or integrate different perspectives to addressing the challenges faced by agribusinesses. In particular, we envision this publication as one small step to a longer journey in developing a coherent and integrated body of assumptions, theories and methods that define the complex and applied nature of the agribusiness field. While, we were pleased to have received many submissions to this special issue, the articles we selected were chosen because they advanced, each in their own unique way, the pursuit of this longer term objective. Although we regret not being able to provide the opportunity for other authors to expressing their unique perspectives on agribusiness, we nevertheless want to thank the authors for their efforts in defining and shaping the field that is agribusiness. We also would like give special thanks to the reviewers of IFAMR. As evidenced by their detailed and thoughtful comments, the reviewers of IFAMR have placed much effort in not only the selection of articles in this special issue, but were instrumental in shaping their

development in ways consistent to the goals of this issue. As guest editors, we thank you for your dedication and commitment to the scholarship of agribusiness.

In what follows, we provide a brief commentary about each of the featured articles<sup>1</sup>. These commentaries represent our interpretations of the featured articles and their relationships to the goals of our special issue. Our perspectives may differ from those intended by the authors and any errors in our interpretation are solely our responsibility and not that of the authors. In conducting our synopsis, we outline the central agribusiness concerns of each article, how the author(s) have tackled the study of agribusiness from a pluralistic perspective and identify their implications to agribusiness as a field. From a broader perspective, we conclude with a discussion about the opportunities and challenges of scientific pluralism for agribusiness.

### **Editors' Synopses of Featured Articles**

*Peterson:* As agribusiness researchers often operate in agricultural economic departments, Peterson's study attempts to resolve a basic tension faced by agribusiness faculty (see also Detre et al., *this issue*). Agribusiness faculty face pressures to conform to the positivism of their agricultural economic peers, but also to develop scholarship that is practical and relevant to agribusiness managers. This philosophical tension was raised earlier in Harling's (1995) study in which agribusiness researchers "...want to be true to their own predilections towards management yet have to satisfy the majority [agricultural economics] that thinks in terms of economics." (Harling 1995, 509). In particular, as agribusiness is an "applied" or "practical oriented science", Peterson argues a "practical" science places different epistemological (ways of knowing what one knows) demands on agribusiness researchers relative to their agricultural economic counterparts. The practical nature of agribusiness underscores that decision making and the context to which such decisions are made are fundamentally inseparable. This stands in contrast to the positive method of agricultural economics because it rests on an implicit assumption that the decision maker can be separated from their natural context (Peterson *this issue*). For instance, behavioral experiments are designed in laboratory settings that are divorced from the natural settings of the decision maker. Incidentally, behavioral experiments have been heavily criticized because decisions made in such laboratory settings may not be generalizable to real world decision settings. To understand the context in which decisions are made, Peterson proposes that the epistemology of agribusiness should not be based on a positive method but should be founded in a "ground theory" approach. This is because a grounded theory approach involves using case study to jointly analyze decision making and the context in which decisions are made. Such a grounded theory approach yields "practical" knowledge, while at the same time is scientific because it involves a "Kantian cycle of induction, deduction and verification" (pg. 8). The implication raised by Peterson is that while agricultural economics is also an applied science, its positivistic epistemology is ironically incompatible to its applied nature. In distinguishing itself from the discipline of economics, applied agricultural economists underscore that policy makers operate in a decision context that is uniquely agricultural. Policy makers operate in a natural setting involving matters such as seasonality, drought, geographical distribution, uncertainty in biology production process, lagged production cycles, storage,

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<sup>1</sup> Readers should note that all papers including "invited" papers have been subject to a double and at times triple blind review process. All articles have been subjected to at least two revisions.

perishable nature of food, government policy intervention, etc. Yet, as the positive method is the preferred method, positivism is incompatible to an “applied way of knowing” in agricultural economics. This is because an adherence to a positive method by its very nature separates the context that has distinguished itself from its economics counterpart. As a result, Peterson’s grounded theory approach is appealing not only to the advancement of agribusiness, but under the conditions ascribed by Peterson yields a “practical knowledge” not found in the positivism of agricultural economists. Specially, in distinguishing from the positivism of economics, Peterson argues that a “grounded theory” approach when combined with a “trans-disciplinary” approach can be useful in gaining a “practical knowledge” to managing problems in agribusiness.

*Sporleder and Boland:* What characteristics make agrifood supply chains unique and different from other supply chains in the global economy? This is a fundamental question that defines agribusiness as a specialty area. Sporleder and Boland discuss seven unique aspects of agrifood supply chains and provide insights into how idiosyncratic economic problems of agrifood systems shape the research agenda for agribusiness scholars, and discuss implications of the agribusiness research agenda for managers. The seven characteristics discussed are: 1) risk emanating from the biological nature of agrifood supply chains, 2) the role of buffer stocks within the supply chain, 3) the scientific foundation of innovation in production agriculture having shifted from chemistry to biology, 4) cyberspace and information technology influences on agrifood supply chains, 5) the prevalent market structure at the farm gate remains oligopsony, 6) relative market power shifts in agrifood supply chains away from food manufacturers downstream to food retailers, and 7) globalization of agriculture and agrifood supply chains. The paper discusses each of these characteristics in some detail, and asserts that complexities and interdependencies of agrifood supply chains necessitates research case studies and other qualitative methods (such as Peterson’s grounded theory) of analysis to understand these complexities. The authors also discuss the usefulness of institutional economics and traditional economic methodologies. An important implication being that the richness of detail provided by qualitative analysis improves the specification of economic models and quantitative methodologies.

*Boehlje et al.:* Boehlje et al.’s study also focuses on the uniqueness of agrifood supply chains, and introduces a varied set of decision tools and concepts to managing the uncertainty, innovation and structural changes in agribusiness. Economic treatments of uncertainty are primarily based on the concept of probabilistic risk (Lawson 1988; Davidson 1991; Langlois and Cosgel 1993). Distinct from Knightian uncertainty (Knight 1921), the concept of probabilistic risk rests on the ontological assumption that the likelihood of a future outcome can be predicted from a similar and observable past (Davidson 1991). This directly follows from the positive method of economics in which the study of “uncertain” phenomena is restricted to only those future outcomes that can be objectively observed over repeatable instances (Knight 1921; Lawson 1988; Davidson 1991; Langlois and Cosgel 1993). Yet, Boehlje et al.’s study distinctly recognizes that agribusiness managers do not have access to such objective and quantifiable data and thus often deal with an “uncertainty” that cannot be directly quantified. Fundamentally speaking, Boehlje et al.’s study tackles the problem of how one should manage future uncertainties that cannot be directly measured? Hence, the goals of their study were to introduce to agribusiness managers a diversity of tools and concepts that deal with Knightian forms of uncertainty. In describing such uncertainty, Knightian uncertainty is not just an inability to

assign probabilities to a future outcome state, but it refers to a basic ignorance of the state itself. Boehlje et al. study introduces various decision tools and concepts to reducing the ignorance of such states. For instance, they introduce score carding and heat mapping tools as a means to imagining future outcomes states. Furthermore to understand structural change, they draw on concepts from transaction costs economics and resource based reasoning to develop a causal understanding of the drivers of future outcome states. The implication of this study is these varied tools and concepts not only introduce a different approach to understanding uncertainty but also a means to managing it. That is, the management of uncertainties in agribusinesses is not only confined to uncertainties that can be directly measured or observed, but also includes those that cannot. This is because as noted by Einstein, “not everything that can be counted counts, and not everything that counts can be counted”.

*Dentoni and Peterson.* In Dentoni and Peterson’s study, they illustrate environmental sustainability as one example of a “wicked problem”. Wicked problems involve complex problems consisting of divergent stakeholder interests to which cannot be solved but merely managed (Peterson *this issue*). Environmental sustainability constitutes a wicked problem because it involves managing divergent stakeholder interests toward a sustainability goal that cannot be fully defined or specified. As an application of Peterson’s grounded theory approach, Dentoni and Peterson draw on a trans-disciplinary approach in which stakeholder theory, the theory of reasoned action, and status theory were used to illustrate and manage the “wicked problem” of environmental sustainability. Specifically, in drawing on an inductive method involving a case study analysis of the 50 largest multi-national corporations (MNC), one of the objectives of this study is to introduce the phenomena of multi-stakeholder sustainability alliances (MSSA) to agribusiness research. Most notably, they argue that the status and environmental focus of alliance members are positively associated with acting favorably to the sustainability interests of the MNC. Such arguments yield normative prescriptions that are relevant to the practicing agribusiness manager. It suggests that a MNC’s ability to signal its commitment to environmental sustainability initiatives requires more than the production of products and services with “environmental friendly” attributes but also requires identifying and managing those stakeholders that support the production of these attributes.

*Nganje and Skilton:* This paper develops a conceptual framework for analyzing what is perhaps the most significant distinction of agrifood supply chains from other supply chains in the global economy – food safety risks. The authors outline ways management may design B2B systems to detect, prevent, and respond to food safety/defense risks in food supply networks by learning from error based disruptions. Minimization of Type I (false positives) and Type II (false negatives) errors in detecting and sourcing food safety risks are central to a safe food system. The paper develops three propositions relating threat, vulnerability and consequence of food safety risks to investment in control based food safety systems. These propositions provide a foundation for research models to aid managerial decisions regarding investment in control based food safety systems.

*Ward et al.* As agribusiness is an applied science, extension has played an important role in applying the principles and prescriptive insights of agribusiness research to the practical needs and challenges to various stakeholders in the agribusiness system. The objective of Ward et al.’s study was to provide a historical examination of extension as it relates to agribusinesses, and

articulate synergies between research, teaching and extension. In terms of its contributions, historically, the commodity focus of farm production has directed extension efforts to improvements in farm production efficiencies. Yet, with the increasing globalization of food markets and advancements in new information technologies, there are increasing demands on extension faculty to provide services that extend beyond this commodity focus. This requires developing management skills that involve a greater attention to the consumer, agribusiness entrepreneurship, integration and coordination of production and distribution. In their paper, they also assert that extension contributes important input into teaching and research programs in agribusiness. Such synergy not only provides students and researchers greater practical understanding of the challenges faced by agribusiness stakeholders, but also provides a means to apply principles and concepts to solving the challenges faced by these stakeholders. While it is difficult to anticipate the future directions of extension programming given increasing fiscal pressures, the opportunities to capitalize on synergies between research, extension and teaching will be one important area of growth. Specifically, the client base of extension is largely confined to small farm businesses and hence, given limited extension resources, one of the challenges faced by Ag. Extension is not only to leverage the research and teaching of agribusinesses but to apply such experiences to the growth of small businesses into world food markets.

*Detre et al.* This paper summarizes the results of a survey of “agribusiness” and “non-agribusiness” faculty among departments of agricultural economics in the United States and globally. “Agribusiness” faculty are broadly defined as scholars that study issues related to agribusiness management, agricultural chemicals, agricultural finance, biotechnology and bioenergy, food marketing, food safety, labor and human capital, nutrition, and supply chain management. The current status of attitudes and perceptions by agribusiness and non-agribusiness faculty regarding the role and expectations of agribusiness programs within departments of agricultural economics are discussed. The survey elicits information regarding the time agribusiness faculty allocate to teaching, research, extension, grantsmanship and service, and discusses the expectations of faculty regarding promotion and tenure. The paper also provides a current description of the most prominent journals in which agribusiness faculty publish and aspire to publish their work. The principal conclusion of the study is that research FTE’s in the areas of agribusiness and agribusiness management are underfunded relative to the teaching FTE’s. A corollary being that agribusiness faculty teach more courses relative to non-agribusiness faculty, which is not surprising given the relative growth of undergraduate student numbers in agribusiness relative to traditional agricultural economics. The study also concludes that agribusiness faculty have similar promotion and tenure expectations to non-agribusiness faculty, but less time is devoted to extension and outreach by agribusiness faculty because of heavier teaching loads.

## **Future Directions and Challenges of a Scientific Pluralistic Agenda for Agribusiness**

Although agribusiness bears considerable parallels to the scientific pluralism of management, agribusiness faculty face opportunities and challenges that are distinct from those in management (Ng and Siebert 2009). Unlike management, agribusiness researchers are often housed in agricultural economic departments (see, Harling 1995; Ng and Siebert 2009). Agribusiness

researchers thereby face a unique opportunity from that of their management counterparts. They cannot only engage in cross disciplinary exchanges with their agricultural economic counterparts, but as a consequence identify points of complementary interest (see also, King et al, 2010). On the other hand, the pursuit of new theories, and the use of methods from other social sciences, are not readily accepted by our peers in agricultural economic unless they complement economic explanations of agribusiness phenomena (see also, King et al. 2010) - this is an issue that remains a challenge for agribusiness faculty. This concern seems to emerge from a fear that pluralism can promote an “anything goes perspective” (Scherer, 1998), which may detract from a positivist scientific rigor. The discipline of economics is often the dominant and accepted paradigm for scientific research in most agricultural economic departments in the United States. Agribusiness research is thereby evaluated through the lens of economics. Hence, while agribusiness researchers face unique opportunities to combine the various social science disciplines within the dominant economic paradigm of their department, pluralistic research endeavors are likely to be governed by an economic world-view. Interdisciplinary pursuits that venture too far from the accepted premises of an economic world-view may either be treated at best as a marginal advancement, or worse, a nuisance to the study of agribusiness issues. Hence, the pursuit of pluralistic or inter-disciplinary agribusiness research involving the various fields from management is likely to be a high risk strategy, especially for those involved in the tenure process (see also, Detre *this issue*; Markoczy and Deeds 2009). This suggests that although various departments of agricultural economics have offered agribusiness programs reflect an “agribusiness focus”, departments that do not reflect a “true” change in the way non-agribusiness faculty view agribusiness research will likely face challenges blending agribusiness and traditional agricultural economics programs.

Agribusiness undergraduate and graduate teaching programs have experienced increasing growth in enrollment (see, Detre et al. *this issue*). Given the applied nature of agribusiness, we believe the interdisciplinary focus of management complements and enhances a students’ agricultural economic training. We argue that undergraduate and graduate agribusiness teaching programs that emphasize the application of different perspectives rather than a singular disciplinary focus can capitalize on enrolment opportunities in agribusiness education. Departments who recognize this basic premise will not only serve the interests of its agribusiness students, but will also provide greater flexibility in conducting applied research that is relevant to a broader set of stakeholder needs.

Agribusiness faculty are well positioned to capitalize on teaching opportunities, but there are challenges. Agribusiness is a less established field and thus has fewer faculty than that of its agricultural economic counterparts. As a result, despite an increasing growth in undergraduate and graduate enrolment in agribusiness, there are fewer faculty resources available to satisfy such growth. In fact, relative to growths in enrolments, the smaller number of agribusiness faculty are likely to face greater teaching demands than their peers. This appears to be borne out in Detre et al.’s survey of agribusiness faculty that finds agribusiness faculty not only tend to face higher teaching commitments, but also face pressures to develop research programs that satisfy both agricultural economic and management related fields (see also, Harling 1995). Given that pluralism is a high risk strategy in the promotion process, a department’s ability to satisfy its agribusiness teaching commitments may need to concurrently examine both facets when overcoming such faculty constraints. It is also important to note that the subject content of an

agribusiness faculty member's teaching and research programs are not mutually exclusive, and underfunding the research component marginalizes the quality of undergraduate and graduate programs in agribusiness.

Early faculty retirements and faculty departures are likely to pose challenges to a department's ability to maintain its undergraduate and graduate agribusiness teaching commitments. Staffing challenges are likely to be amplified by current fiscal pressures. Overcoming such faculty resource constraints will likely be an ongoing concern. Partnerships with business schools are one way to address staffing shortfalls in management, finance, marketing and related fields. Examples of successful partnerships include jointly administered Undergraduate, Masters and Ph.D. programs in Agribusiness and Managerial Economics by the Department of Agricultural Economics and Mays Business School at Texas A&M. Purdue University's MS-MBA in Food and Agribusiness Management is jointly offered by the Department of Agricultural Economics and the Kelley Business School at the University of Indiana and also serves the dual role of contributing to executive education and outreach programs in agribusiness. However, business school partnerships create their own set of challenges. Business school administrators and faculty are generally unfamiliar with agribusiness programs and they may be skeptical about the value of such partnerships.

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